

An Exploration of British Columbia's TVET Instructors'
Perceptions that Influence their Curriculum Choices

by
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Abstract

Instructors' perceptions, values, and belief structures influence their curriculum decisions and may fundamentally overlap, contradict, and/or conflict, leading to a confluence of curricula cultures within the classroom. This study investigated Trades and Vocational Education and Training (TVET) instructors' perceptions to gain a better understanding of how those perceptions give rise to cultures of curriculum, particularly those that inhabit postsecondary TVET in British Columbia (BC). A total of 37 TVET instructors from BC participated in this study. Collectively, the participants represented a total of 10 Red Seal trades. Joseph's (2000) conceptualization of curriculum as culture was used as the theoretical lens to investigate vocational instructors' general perceptions regarding (a) their role as a teacher, (b) the intellectual capacities of their students, and (c) the purpose and future needs of vocational education. Q Methodology (Stephenson, 1935) was selected as the optimal research approach. Q factor analysis resulted in a four-factor solution, revealing the correlation of participants' shared curricular beliefs and values as four statistically distinct perspectives. Factor array tables and interview transcripts were reviewed to interpret and name the viewpoints as expressed by the participants grouping together in each factor: Factor 1 – the constructivist crew, Factor 2 – the canonical cluster, Factor 3 – the experiential team, and Factor 4 – the 21st century progressives. Two major findings were gleaned from this study. First, tensions exist between the theoretical underpinnings of competency based education and training (CBET) and the curricular beliefs held by Factors 1, 2 and 4. Factor 3, however, is found to be in broad agreement with the goals and pedagogies associated with CBET. Second, distinct views held by each factor are theoretically opposed to those of other groupings, creating incompatibilities and divisions within the education system. The findings from this study have implications for future research, practice, policy, and theory and lend support to other curriculum studies in both mainstream education and TVET. My intention is for these findings to bring forth awareness of the largely unexamined theoretical confusion that I found to exist within the BC TVET system and to provide a reference point for stakeholders' discussions and future curricular decisions.

Keywords: trades and vocational education; TVET; curriculum studies; 21st Century skills; Q methodology

Dedication

This dissertation is dedicated first to my dad, William Alexandre Tomb (Bill). I am so grateful for the many hours I spent with him and for the learnings I took from the stories he shared with me. From a very young age, I loved listening to my dad's views on life and have always admired his ability to overcome adversity, despite the odds. I am grateful, too, for his gift of humour, which has enabled me to communicate across borders, and to keep me going even when things get tough. It is upon my dad's shoulders that I stand to write and think and to believe that change is possible.

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Table of Contents

| | |
|---|-----------|
| Approval | ii |
| Ethics Statement..... | iii |
| Abstract..... | iv |
| Dedication..... | vi |
| Acknowledgements..... | vii |
| Table of Contents..... | viii |
| List of Tables | xii |
| List of Figures..... | xiii |
| List of Acronyms | xiv |
| Glossary | xv |
| Chapter 1. Introduction | 1 |
| 1.1. Situating the Study..... | 1 |
| 1.2. Research Problem | 4 |
| 1.3. Research Purpose and Questions | 5 |
| 1.4. Theoretical Framework..... | 6 |
| 1.5. Significance of Study..... | 6 |
| 1.6. Methodology..... | 6 |
| 1.6.1. Participants..... | 7 |
| 1.6.2. Data Collection and Analytic Plan..... | 8 |
| 1.7. Study Limitations and Delimitations | 11 |
| 1.8. Ethical Considerations | 12 |
| 1.9. Situating the Researcher in the Study..... | 12 |
| 1.9.1. Researcher’s Autobiography in Brief: Family, Class, and Trans-Atlantic Influences on Educational Assumptions..... | 13 |
| 1.9.2. Power, Politics, and Curriculum | 16 |
| 1.10. Organization of Dissertation | 16 |
| Chapter 2. Review of the Literature | 18 |
| 2.1. A Brief History of Vocational Education | 18 |
| 2.2. The Academic–Vocational Divide..... | 19 |
| 2.3. Trades and Vocational Education and Training in British Columbia, Canada..... | 22 |
| 2.3.1. The Roles and Responsibilities of the ITA | 22 |
| 2.3.2. The ITA Industry-Led Program Development Model..... | 23 |
| 2.3.3. Critique of TVET Program Development Model | 25 |
| 2.3.4. Influences that Shape TVET Instructors’ Pedagogy..... | 28 |
| 2.3.5. Learning to teach TVET | 29 |
| 2.3.6. Standardized Curriculum – Standardized Texts | 33 |

| | | |
|-------------------|--|-----------|
| 2.3.7. | The Role of C-BET | 36 |
| 2.4. | 21st Century TVET: A New Approach | 38 |
| 2.4.1. | The 21st Century Workplace | 39 |
| 2.4.2. | New Vocationalism..... | 40 |
| 2.4.3. | Paradigms Collide..... | 44 |
| 2.5. | Blurring the Lines Between Academic and Vocational..... | 46 |
| 2.6. | Curriculum Studies – Orientations, Ideologies, and Cultures | 48 |
| 2.7. | Analysis of Curricula: Frameworks Discussed..... | 48 |
| 2.7.1. | Eisner’s Five Orientation Framework..... | 51 |
| | Orientation 1: Development of Cognitive Processes | 51 |
| | Orientation 2: Academic Rationalism..... | 52 |
| | Orientation 3: Personal Relevance..... | 53 |
| | Orientation 4: Social Adaption and Social Reconstruction | 54 |
| | Orientation 5: Curriculum as Technology | 54 |
| | Summary of Eisner’s Five Orientation Framework..... | 55 |
| 2.7.2. | Eisner’s Five Orientation Framework Compared with Schiro’s Four Curriculum Ideologies | 55 |
| 2.7.3. | Curricula’s Evolving Nature | 56 |
| 2.7.4. | The Concept of Multiple Curricula..... | 58 |
| | Implicit Curriculum | 59 |
| | Modification of Learners’ Behaviour | 60 |
| | Hidden Curriculum | 60 |
| | Null Curriculum | 62 |
| | Taught and Learned Curricula | 63 |
| | Collateral Learning | 64 |
| | The Tested Curriculum | 65 |
| 2.7.5. | Theoretical Framework Explored for this Study | 66 |
| | Defining Culture in the Context of Curriculum..... | 67 |
| | Constructivism | 70 |
| 2.7.6. | Theoretical Framework that Informed and Guided this Study | 73 |
| 2.8. | Chapter Summary | 74 |
| Chapter 3. | Methodology..... | 76 |
| 3.1. | Situating Q Methodology in a Mixed-Methods Paradigm..... | 76 |
| 3.2. | Origins of Q Methodology..... | 78 |
| 3.2.1. | Examples of Q Methodology Research | 80 |
| 3.2.2. | Comparing Q with Other Qualitative and Mixed-Method Approaches..... | 81 |
| 3.3. | Application of Q Methodology to this Study..... | 83 |
| 3.3.1. | Research Purpose and Questions | 84 |
| 3.4. | Procedures..... | 85 |
| 3.4.1. | Concourse | 85 |

| | |
|--|------------|
| Developing the Concourse..... | 86 |
| Study's Implementation of Concourse..... | 86 |
| 3.4.2. Q sample | 87 |
| Study's Implementation of Q Sample..... | 87 |
| Participant Recruitment and P Sample | 88 |
| Recruiting Participants for this Study | 88 |
| P Sample for this Study..... | 89 |
| 3.4.3. Performing the Q Sort..... | 90 |
| Study's Application of Q Sort..... | 91 |
| Participant Instructions for this Study..... | 91 |
| Interview debrief of the Q sort data and process in this study..... | 93 |
| 3.4.4. Factor Analysis | 94 |
| Factor Analysis for this Study..... | 95 |
| 3.4.5. Interpretation..... | 96 |
| 3.5. Ethical Considerations | 99 |
| Participant confidentiality | 99 |
| 3.6. Limitations and Delimitations for the Study..... | 101 |
| 3.7. Chapter Summary | 103 |
| Chapter 4. Q Factor Analysis | 104 |
| 4.1. Q-Factor Analysis: Results | 105 |
| 4.2. Chapter Summary | 113 |
| Chapter 5. Analysis, Interpretation, and Results | 115 |
| 5.1. Factor 1 Sketch: The Constructivist Crew | 116 |
| 5.1.1. Distinguishing Statement for Factor 1 | 126 |
| 5.1.2. Interview Excerpts for Distinguishing Statements | 127 |
| 5.2. Factor 2 Sketch: The Canonical Cluster | 129 |
| 5.2.1. Distinguishing Statement for Factor 2: The Canonical Cluster..... | 134 |
| 5.2.2. Interview Excerpts for Distinguishing Statements | 135 |
| 5.3. Factor 3 Sketch: Experiential Team..... | 135 |
| 5.3.1. Distinguishing Statement for Factor 3: The Experiential Team | 142 |
| 5.3.2. Interview Excerpts for Distinguishing Statements | 142 |
| 5.4. Factor 4 Sketch: The 21st Century Progressives | 143 |
| 5.4.1. Distinguishing Statement for Factor 4: The 21st Century Progressives | 149 |
| 5.4.2. Interview Excerpts for Distinguishing Statements | 150 |
| 5.5. Consensus Statements..... | 151 |
| 5.6. Factor Summaries | 153 |
| 5.6.1. Factor 1: The Constructivist Crew..... | 153 |
| 5.6.2. Factor 2: The Canonical Cluster | 154 |
| 5.6.3. Factor 3: Experiential Team..... | 155 |

| | |
|--|------------|
| 5.6.4. Factor 4: The 21st Century Progressives | 156 |
| 5.7. Chapter Summary | 157 |
| Chapter 6. Discussion | 158 |
| 6.1. Discussion of Findings..... | 159 |
| 6.2. Research Question 1: What are the General Perceptions of Vocational Instructors Regarding Their Role as a Teacher? | 160 |
| 6.2.1. Section Summary | 163 |
| 6.3. Research Question 2: What are the General Perceptions of Vocational Instructors Regarding the Intellectual Capacities of their Students? | 164 |
| 6.3.1. Section Summary | 166 |
| 6.4. Research Question 3: What are the General Perceptions of Vocational Instructors Regarding the Purpose of Vocational Education? | 167 |
| 6.4.1. Section Summary | 169 |
| 6.5. Research Question Four: What are the General Perceptions of Vocational Instructors Regarding the Future Needs of Vocational Education?..... | 170 |
| 6.5.1. Section Summary | 173 |
| Chapter 7. Conclusion..... | 175 |
| 7.1. Future Research | 177 |
| 7.2. Limitations and Delimitations | 179 |
| 7.3. Personal Reflections | 180 |
| References | 182 |
| Appendix A. Methodology Response Grid | 193 |
| Appendix B. Q-Sort Instructions | 194 |
| Appendix C. Letter of Invitation | 195 |
| Appendix D. Q-Sample..... | 197 |
| Appendix E. Consent Form | 201 |
| Appendix F. Post Sort Interview Questions..... | 206 |
| Appendix G. Demographic Survey..... | 207 |

List of Tables

| | |
|--|-----|
| Table 2.1. Table to Reflect Changes in Predicted Competencies Over a 5-Year Span.. | 41 |
| Table 2.2. Comparisons of the Curriculum Frameworks: Joseph, Eisner, and Schiro... | 69 |
| Table 3.1. Example of By-Factor Q-Sort Values | 96 |
| Table 3.2. Example of By Factor Q-Sort Values..... | 96 |
| Table 4.1. Correlations Between Final Factors Scores..... | 107 |
| Table 4.2. Factor Loadings (P Sample) | 108 |
| Table 4.3. Factor Arrays: Factor Q-sort Values (Q-sv) for each Statement..... | 109 |
| Table 5.1. Distinguishing Statement: Factor 1 | 127 |
| Table 5.2. Distinguishing Statement: Factor 2 | 135 |
| Table 5.3. Distinguishing Statement: Factor 3 | 142 |
| Table 5.4. Distinguishing Statement: Factor 4 | 150 |
| Table 5.5. Consensus Statements | 152 |

List of Figures

| | | |
|-------------|--|----|
| Figure 3.1 | Flow chart of Q methodology methods to provide a graphic overview..... | 85 |
| Figure 3.2 | Q-sort matrix. | 91 |
| Figure 3.3. | Participant performing a Q sort. | 93 |

List of Acronyms

| | |
|----------|---|
| BC | British Columbia |
| C-BET | Competency-Based Education and Training |
| CCDA | Canadian Council of Directors of Apprenticeship |
| GCSE | General Certificate of Secondary Education |
| ITA | Industry Training Authority |
| K–12 | Kindergarten to Grade 12 |
| P Sample | Person Sample |
| PIDP | Provincial Instructors Diploma Program |
| Q-sv | Q-Sort Value |
| REB | Research Ethics Board |
| RSE | Red Seal Endorsement |
| RSOS | Red Seal Occupational Standards |
| SFU | Simon Fraser University |
| SMEs | Subject Matter Experts |
| T&L | Teaching and Learning (centre activities) |
| TRU | Thompson Rivers University |
| TVET | Trades and Vocational Education and Training |
| VET | Vocational Education and Training |
| VIU | Vancouver Island University |

Glossary

| | |
|-------------------|--|
| Apprenticeship | An arrangement in which a novice learns an art, trade, or job under the supervision of a master craftsman. |
| New Vocationalism | In the context of Trades and Vocational Education and Training (TVET), the term has been used in reference to the fundamental shift required to move TVET from its task-oriented and skill-specific focus toward the goal of preparing students for lifelong learning necessary for 21st century work. |
| Old Vocationalism | Vocational education was developed in direct contrast to academic education and aimed primarily to educate the lower socioeconomic group and the lower academic achievers to become useful and financially independent members of society (Dewey, 1916; Green, 2000). |
| Competency | “The ability to manage different existing and future challenges in working life and many other fields of practice” (Illeris, 2009, p. 1). |

Chapter 1.

Introduction

1.1. Situating the Study

The British Columbia 21st Century Trades and Vocational Education and Training (TVET) curriculum is currently in a complicated crossroads situation. On one hand, its transition from within is moving TVET away from its traditional industrial roots toward informational modes due to rapid advances in technology and influences of global economies that are changing the nature of work and reshaping job descriptions (Pfeiffer, 2015; World Economic Forum, 2016). On the other hand, from the outside, where TVET resides within the broader context of curriculum (Joseph, 2000), it competes with other cultures, such as academic and social efficiency and their influences (Rose, 2005; Schön, 1987). Both transitions are happening simultaneously and have a potential impact on forming instructors' curriculum choices in different ways.

Since TVET is situated within a broader context where other curriculum ideas exist, there is a need to analyze the coexistence of multiple curriculum discourses that may influence instructors' viewpoints from the outside (Cuban, 1993; Eisner, 1985; Joseph, 2011). Analysis of curricula exposes underlying epistemological, political, economic, and social belief and value structures that collectively represent particular schools of thought. Each school of thought, worldview, or orientation prioritizes one form of knowledge over another (e.g., academic education compared to vocational). It is from these standings that perceptions are formed in regard to the role of the teacher and the capacities of the learner (Billett, 2001a; Joseph, 2011; Rose, 2005). Consequently, these perceptions shape what is taught and which pedagogical approaches are deemed appropriate (Lucas, Spencer, & Claxton, 2012).

Through the exploration of the following theoretical frameworks, I exposed a coexistence of multiple curriculum cultures that are discussed in the literature review of this study: Joseph's (2000, 2011) framework for conceptualizing curricula as culture;

Eisner's (1985) notion of multiple curricula; Cuban's (1993) framework of inquiry, claiming discrepancies exist between the official, taught, learned, and tested curricula; and Schiro's (2008) curriculum framework for inquiry. As a result of this multiplicity, the cadre of instructors is also eclectic. Consequentially, some instructors belong to one school of thought, and some to another. Thus, research questions arise in order to gain a better understanding of the existing cultures of curriculum that inhabit postsecondary TVET in British Columbia (BC). This study investigated BC TVET instructors' perceptions that influence their curriculum choices, with the understanding that these value and belief structures may fundamentally overlap, contradict, and/or conflict, leading to a confluence of curricula cultures within the classroom.

On the understanding that instructors' ideas and beliefs are shaped over time through interactions with others and by social, political, and economic forces (Brookfield, 1995; Eisner, 1985, 2005; Joseph, 2000, 2011; Nesbit, 2000), I determined an investigation into the internal and external forces surrounding the TVET system was required. As TVET curriculum, throughout its history the educational system as a whole has used TVET curriculum, to fulfill social, political, and economic needs of society, the curriculum decision-making process has been comprised of collaborations between government, industry, and labour unions, which has limited instructors' voices, leaving them with little to no say (Billett, 2016). Instruction, therefore, in this setting becomes a "socially embedded process" (Nesbit, 2000, p. 1), in which instructors' curriculum choices are influenced by standardized program outlines and standardized exams developed by outside influences (Billett, 2016; Joseph, 2000; Lucas et al., 2012).

The foundations of TVET culture, and hence the curriculum and ways of teaching, are shaped by the collective demands of government, industry, and labour unions, which form an education system designed to fulfill the economic needs of specific industries and to meet the demands for economic growth and development of the country as a whole, and/or specific regions and provinces (WorkBC, n.d., 2014). Therefore, the focus of the TVET system aims primarily toward demand-driven skill development. This notion of an education system primarily for skill development has shaped general perceptions about the kind of student that is most suited to TVET, leading

to the belief that those who excel in hands-on work, rather than in academics, are appropriate for this stream (Marshall, 1997; Rose, 2005; Taylor & Freeman, 2011). While it is correct to say that those who identify as manually minded do tend to excel in these programs, the creation of a dualistic system, one for hands-on learners and the other for academic gain, assumes much, and possibly overlooks intelligence associated with manual work (Green, 2000; Rose, 2005). One consequence of this ideology is seen where schools continue to stream children by gender, class, and academic ability (Dewey, 1916; Nesbit, 2000), resulting in the labeling of TVET as the perfect dumping ground for underachievers and members of the lower socioeconomic group (Nesbit, 2000; Rose, 2005; Taylor, 2016).

When comparing the fundamental principles of TVET curriculum culture alongside those of a traditional academic or canonical culture, differing educational aims are evident: academic for mind (intellectual development), and vocational for body (skill development). These differing aims raise questions regarding the neglect of vocational students' intellectual development (Green, 2000; Rose, 2005; Taylor & Freeman, 2011). Elements of today's TVET system remain rooted in utility and grounded in the hand-mind binary belief structure that is associated with the needs of the 20th century predigital age, thereby representing a set of values referred to as old vocational thinking (Grubb & Lazerson, 2005; Rose, 2005; Taylor & Freeman, 2011). Through the analysis of literature, combined with an investigation of the existing Industry Training Authority (ITA) system, I identified elements of old vocational thinking reflected in the roles of the ITA and of industry; in addition, I found elements of old vocational thinking influencing instructional roles and in the overuse of competency-based education and training (C-BET) within the system. These four areas are explored in more detail in Chapter 2 of this study. In doing so, I discuss 21st century learning outcomes, and I compare the aims of old vocational thinking and practices to those of new vocationalism.

As the end of the first quarter of the 21st century is fast approaching, evidence suggests the very nature of the workplace will continue to change rapidly throughout the foreseeable future. Such changes, led by advances in technology that, in turn, drive changes in tasks, materials, and tools within the trades, impact and alter learning

outcomes for TVET students. As a consequence of these changing demands, the responsibilities for TVET instructors in the BC postsecondary system have changed significantly from the days of their predecessors, whose skillsets served them throughout the lifetime of their careers. This pace of change has created a need for instructors to stretch beyond mastery of their trade and to broaden their skillset to include competence and the ability to teach 21st century essential skills (Billett, 2016; Rose, 2005). Consequently, the historical practice of apprenticeship that relies heavily on the relationship between master and novice, combined with TVET's utilization of standardized program outlines and C-BET methodologies based on the occupational analysis of existing trades, is no longer appropriate (D. Cadeuix, personal communication, April 17, 2019; J. Skipsey, personal communication, April 14, 2019). The TVET system must now investigate how best to prepare vocational students with the appropriate knowledge and skills for the workplaces of today and the ability to adapt to changing demands in the future, while at the same time equipping instructors to teach students for a future that is unknown and for jobs that have yet to be created (Carey & Ferreras, 2017; Pfeiffer, 2015).

These circumstances create a need for the education system to produce graduates who have developed robust and transferable skills, an understanding of requirements for practice (Billett, 2003, 2016; Bourner, Greener, & Rospigliosi, 2011; Lucas et al., 2012; Rose, 2005), and the “capacity and disposition of graduates to learn” (Bourner et al., 2011, p. 15). In order to respond appropriately, the education system must come together as a whole—in its full capacity and with its multiplicity of curriculum cultures—and in collaboration with its stakeholders, in order to understand the changing requirements of vocational practice and act accordingly.

1.2. Research Problem

I have considered the changing environment of the 21st century information age workplace and related it to the traditional role of vocational education in which the aim to prepare workers for existing jobs with current skill sets dominated the curriculum. In doing so, I conclude that these two paradigms represent different interest groups, thus

leaving vocational education and educators torn between new and old vocational goals. The literature suggested old vocational education is no longer sufficient and claimed that work and life demands in the 21st century require a new vocational culture with much broader goals (Carey & Ferreras, 2017; The Economist, Intelligence Unit, 2015; Lucas et al., 2012; Taylor, 2016). This requires a fundamental change in belief structures to enable a more holistic and humanistic approach to learning with longer-range outcomes, disrupting the focus of vocational education from its behaviourist approach to skill development toward fostering the learners' capacity to learn and adapt long after specific skill sets have become obsolete. Collectively, these issues have shaped my research.

1.3. Research Purpose and Questions

The purpose of this study was to gain a better understanding of the existing cultures of curricula that inhabit postsecondary TVET in BC. Specifically, this study investigated BC TVET instructors' perceptions that influence their curriculum choices with the understanding that these value and belief structures may fundamentally overlap, contradict, and/or conflict, leading to a confluence of curricula cultures within the classroom.

I used the following questions to guide this study:

1. What are the general perceptions of vocational instructors regarding their role as a teacher?
2. What are the general perceptions of vocational instructors regarding the intellectual capacities of their students?
3. What are the general perceptions of vocational instructors regarding the purpose of vocational education?
4. What are the general perceptions of vocational instructors regarding the future needs of vocational education?

1.4. Theoretical Framework

Given that successful educational change begins through gaining an understanding of the existing culture of curricula reflected in the beliefs, values, and behaviours held by stakeholders (Fullan, 2001; Joseph, 2000; Nesbit, 2000; Rose, 2005; Schwab, 1983), I selected Joseph's (2000) cultures of curriculum theoretical framework to guide my research.

Joseph's (2000) framework for inquiry, which builds on the theories of Cuban (1993), Eisner (1985), and J. Schwab (1983), investigates curriculum through the following areas: "visions, assumptions about learners, teachers, content, milieu, planning assessment, curriculum evaluation, dilemmas of practice, and critique of the orientation and aims" (Joseph, 2000, p. 23). Collectively, this range of variables provided a broad, yet focused lens, enabling me to capture and interpret significant features and variations across a range of curriculum cultures found to exist within the current BC TVET system.

1.5. Significance of Study

The insights gained from this study may, in turn, provide a new understanding of the requirements for TVET instructors' professional development in the 21st century. Findings from this study may also influence practices in the design of program standards, program and curriculum design, pedagogical approaches, and ultimately student learning outcomes.

1.6. Methodology

Since the situation is complicated, I have selected Q methodology, a mixed-methods approach that aims to provide a clear vision of the issues under study. William Stephenson first developed Q methodology in 1935; this methodology has been recognized for its strength in providing an "objective measure of subjectivity" (Ramlo, 2015, p. 28). This methodology provides a scientific and systematic approach to exploring a variety of subjective viewpoints within a unique blend of qualitative and

quantitative methodologies (Brown, 1993; Hurd & Brown, 2004; Watts & Stenner, 2005).

The advantage of Q methodology over other mixed-method approaches lies in its unique intertwining of “scientific and subjective approaches” (Watts & Stenner, 2005, p. 5) used to explore a variety of subjective viewpoints (Brown, 1993). The five interwoven stages of Q methodology consist of the concourse, the Q sample, the Q sort, factor analysis, and interpretation. These are better understood as a continuum between qualitative and quantitative paradigms rather than a dichotomy (Ramlo, 2015). It is within these five stages of this approach that the lines between scientific and subjective paradigms are blurred to form a symbiotic relationship making Q methodology significantly different from other mixed methods where a qualitative dimension to a quantitative study, or vice versa, has been added (Creswell, 2014).

1.6.1. Participants

I invited 51 potential participants via email to take part in this study. I recruited participants from five postsecondary institutions in BC based on my ability to connect with instructors, all of which teach ITA trades programs. I did not prioritize any one institution over another. In total, 37 TVET instructors elected to take part in this study; they varied in age, years of experience in trade, years of experience teaching, highest academic credential, and highest trades specific credential. Participants represented the following Red Seal trades: Automotive Service Technician, Baker, Carpenter, Cook, Electrician, Hairstylist, Heavy Duty Equipment Technician, Horticulturist, Welder, and one non-Red Seal trade: Aircraft Maintenance Technician.

As the principal investigator and having been a trades instructor in BC for the past 20 years, I have many contacts throughout BC who teach ITA trades programs, which served positively in my efforts to recruit participants for this study. I selected participants for this study on the understanding that they currently teach an ITA trades program at a postsecondary institution within BC or have previously taught in such a program within the past 2 years. I made contact with known potential participants via email through a

Letter of Invitation (see Appendix A); additionally, I used a snowballing approach, when appropriate, which enabled me to recruit further afield.

To enhance maximum variation sampling further, I purposefully drew the participant sample from five BC postsecondary institutions based on my assumptions that (a) multiple institutions would add to the diversity of the participant group and (b) a diverse group of participants would “express interesting, or pivotal viewpoints” (Watts & Stenner, 2005, p. 79). My assumption was that differences in institutional culture could exist, which would add to the richness of the data collected. Participants drawn from institution throughout BC were required to express their own views only, not to speak on the behalf of the institution. I specifically aimed the focus and questions that guided this study to explore the perceptions held by individuals, which was evident in my choice of methodology and design, including data collection methods.

1.6.2. Data Collection and Analytic Plan

S. R. Brown (1993) explained that Q begins with the development of a concourse “from the Latin *concursum*, meaning ‘a running together,’ as when ideas run together in thought” (Brown, 1993, p. 95). A concourse is a range of statements assembled by the researcher to capture the full discourse surrounding the chosen topic. The uniqueness of the concourse in relation to Q is that it provides the participant with a broad range of viewpoints, which they are required to sort and rank into categories of most and least agreement (Brown, 1993; Ramlo, 2015; Watts & Stenner, 2005). This action alone requires the participant to interact with viewpoints and vocabularies other than their own without first ascribing prior meaning (Stephenson, 1953).

The literature I reviewed for this study offered a wide range of values, beliefs, opinions, and topics in an effort to capture the broad conversations that surround TVET and then, in turn, provide a discourse from which I generated the concourse for this study. I selected a total of 75 statements, either directly or with amendments, from the literature review to form the concourse. I reduced the concourse to a 62-statement Q sort following the pilot study.

I invited participants to take part in a Q-sort activity, which involved the sorting and ranking 62 statements (see Appendix B) using the Q-sort matrix (see Appendix C) as represented in Figure 3.2. The Q sort matrix forces the participants to select a limited number of statements under each of the following column headings -4, -3, -2, -1, 0, +1, +2, +3, +4, noting that 5 statements can be placed under the -4 +4 columns increasing to 6 statements under -3 +3, and progressing by increments of 1 until the neutral column 0 is reached where 10 spaces exist. The Q sample statements are matters of opinion only, and it is the Q sorter that “is ranking the statements from their own point of view ... [that] brings subjectivity in to the picture” (Brown, 1993, p. 95). Participants could freely change their minds during the sorting process and could switch items around as long as the total number of requested items were placed according to the response grid.

Once participants had completed the Q sort, I took a series of digital photos using my cell phone. This digital record captured the placement of each numbered statement card sorted and ranked by each participant. Post Q sort, I conducted individual interviews with 26 participants. The purpose of these interviews was to gain an understanding of the participant’s rationale for placing their Q sort statements under columns labelled -4 and +4 (most disagree and most agree). I sought this understanding with the intention to later describe, understand, and interpret the resulting factor groupings from the perceptions held by the participants. I used a structured list of questions to guide the interviews (see Appendix D); however, many participants chose to stray from the questions and to reflect on their Q sort experience. S. R. Brown (1993) noted that it is important for an interview to follow each completed Q sort, when possible, as “meanings are not found solely in the categorical cogitation of the observer, but as well (and even more importantly) in the reflections of the individual as he sorts the statements in the context of a singular situation” (p. 101). With participants’ permission, I digitally recorded and then transcribed all interviews. Recording of interviews ranged from the shortest being 13 minutes 22 seconds, to the longest at 54 minutes 12 seconds. Due to time constraints in their work schedules, nine participants chose not to perform post Q sort interviews. Four participants provided second interviews during the data analysis phase. The final step of participation included the completion of a five-question demographic survey (see Appendix E), which I issued at the time of participation.

Once all 37 participant Q sorts and post Q sort interviews had been performed, I entered the data collected using alphanumeric code names into PQMethod software (Schmolck, 2014), which is specifically designed to analyze Q sorts. I entered the raw data as a matrix with preassigned value ranging from -4 to +4 for each statement. I performed centroid and varimax rotation in order to analyze the Q sorts and extract resultant factors. In Q, people with similar views and attitudes toward the statements in the Q sort develop the resultant factors. Therefore, factors represent groupings of participants that share similar views, and hence Q sort in similar ways. Using the z scores that reflect participant's highest ranking statements on a by-factor basis, the perceptions held by participants within the resultant groupings surfaced. As the principal investigator, my focus was on the statements placed in categories -4 and +4 within the different groupings. I also paid close attention to distinguishing statements for each factor, that is, those that are statistically different from the placements of the other groupings.

As described, I used the PQMethod to analyze the raw data and determine the statistically distinct clusters of statements that represent distinct perceptions related to the research question. However, as the researcher, the articulation of the emergent perspectives was my responsibility. The factor analysis merely determines the number of statistically distinct views that exist—it is up to the researchers to describe, understand, and interpret them (Madoc-Jones & Gajdamaschko, 2005). First, I reviewed participant interview transcriptions to aid interpretation of the distinct perspectives held by those grouping together in each extracted factor. Second, I used Joseph's (2000) cultures of curriculum framework as an analytical lens to interpret the distinct views held by each factor as represented by the high ranking of Q sort statements and as interpreted through participant interviews.

In this study, a four-factor solution resulted from Q factor analysis. The four extracted groupings signify that participants in this study cluster together into four distinct groups, representing four distinct perspectives on TVET curricula.

1.7. Study Limitations and Delimitations

Several limitations impacted this study due to its design. First, the participant sample represented a limited number of the skilled trades taught at postsecondary institutions throughout BC. I selected participants based on their willingness to take part in this study; I did not select participants due to the nature of their trades. Second, participants' years of teaching, interest in curriculum studies and pedagogy, and years of formal education are variables that I did not aim to control. I assumed participants taking part in this study did so because of their interest in the subject matter and that participants answered truthfully based on their personal values and beliefs, as opposed to those represented by specific trades or institutions. Third, the methodology used required participants to interact with vocabulary, viewpoints, and opinions other than their own. I assumed participants, as TVET instructors, had a level of familiarity with the vocabulary used that permitted them to interact in a meaningful way with the data collection process. Last, as a member of the TVET community having worked in a similar capacity to the participants in this study, I am known to many participants, which may have in some way influenced their responses or decisions to participate.

As the researcher, my bias is reflected in my choice of theoretical framework, in the creation of the research questions, and my decision to employ Q to perform this study, all of which shaped and served to limit this study. Further delimitations include my decision to recruit participants from five postsecondary institutions within the Lower Mainland and across Vancouver Island in BC. I made this decision due to both financial and time constraints placed on me as a doctoral student. I chose to limit the study to 37 participants following the data collection and Q factor analysis process, which resulted in a four-factor finding, as such no further recruitment was required.

Lastly, every study is limited by the participant sample, which, in turn, restricts the generalization of findings. The nature of qualitative research findings, even within a mixed-methods design, limits generalization because the strength of such approaches lies in the particular views and experiences held by specific individuals within the context of the study (Creswell, 2014).

1.8. Ethical Considerations

As a faculty member at Vancouver Island University (VIU) and a doctoral candidate at Simon Fraser University (SFU), my research was considered multijurisdictional; therefore, once I had received approval from SFU Research Ethics Board (REB), I submitted the SFU Letter of Approval to the REB at VIU in order to gain organizational permissions and approvals prior to commencement of the study. The application for ethical review was approved and deemed minimal risk to participants.

As previously noted, all study participants drawn from institutions within BC were required to express their own views only, and not speak on behalf of their institutions. I developed the focus and questions for this study to explore the perceptions of individuals. I reinforced this through my choice of methodology, research design, and data collection methods. Watts and Stenner (2005) noted Q is concerned with individual viewpoints of participants, as opposed to an institutional perspective. Due to the research focus, organizational permission was not required from the institutions of potential participants.

1.9. Situating the Researcher in the Study

My interest in studying TVET began partly from my own unique educational journey. More recently, this interest has grown into a passion due to my role as a key player in a Caricom Education for Employment partnership between VIU and Trinidad and Tobago Youth Training Employment Program Limited to develop vocational standards and curricula for the Caricom region, and with the Kenya Education for Employment Program to strengthen and support technical and vocational education and training in Kenya. Additionally, for the past 20 years, I have been a vocational instructor and administrator at a teaching university in BC.

While writing this dissertation, I have been fulfilling an ongoing secondment as a curriculum developer focusing on TVET development at a university setting within BC. These collective experiences have shaped my thinking and led me to reflect on my own practices as both an instructor and administrator, and, in doing so, to consider

determining factors that influence my own curriculum and pedagogical decisions. Above all, these experiences have provided me with opportunities to explore my own epistemological belief structures in regard to what it means to know, learn, and to understand.

In order to create researcher transparency and to mitigate researcher bias throughout this study, I provide a brief autobiography to shed light on elements of my life experiences and educational background that I see as having significantly shaped the way I think and see the world and to explain what drives me to explore the perceptions held by vocational instructors that shape their curriculum decisions.

1.9.1. Researcher's Autobiography in Brief: Family, Class, and Trans-Atlantic Influences on Educational Assumptions

I was born in small town north of London, England, where I lived with my parents and two older sisters until I completed my secondary school education at age 16. My family owned and operated the local grocery store and were well known and respected in this small town. The business had been in my mother's family for one generation, and she had worked there since she was old enough to be useful and continued fulltime after leaving school.

My father was born in Northern Ireland to a farming family. His father, being the second eldest son and having no prospects of inheritance, chose to move his family to Canada in 1927 with the hope of a new life. Two years later, at the age of 7 years, my father returned to Ireland following his mother's death and onset of the Great Depression. By the time my father married my mother, some 30 years later, he had experienced many walks of life ranging from the lower socioeconomic group common to farming communities in Northern Ireland and to new immigrants living in Canada, then into poverty following his mother's death and onset of the Great Depression. World War II introduced him to imprisonment. At age 18, he was captured and taken Japanese prisoner of war from 1942–1945; during this time he experienced the loss of most basic human rights. Returning from the war physically unharmed, my father joined the police force and enjoyed a level of social status and sense of individual agency that he had not

experienced before. Throughout these diverse lived experiences, my father developed a social conscience that has influenced me in many ways, some of which became apparent throughout the course of this study. I am grateful and privileged to share in the wisdom he constructed throughout his life's journey.

My own unique educational journey has been strongly influenced by my parents' lack of academic aspirations for their children. At the age of 11 years, I sat and failed the Eleven Plus government exam. Both my parents and the school had left me unprepared for this exam. Many decades later, I now know that the Eleven Plus system deliberately separates students from the top who are deemed worthy of an academic education from those below who are not. Nesbit (2005), concerned with the injustice of such systems, stated, "Educational practices produce, reproduce, and maintain the complex inequalities of social class across varied contexts" (p. 1). Simply put, the Eleven Plus exam is a method of streaming students, in theory, by their academic ability, but in reality is it neatly aligned with social class and the privileges associated with schools that focus on exam preparation and/or parents with strong academic backgrounds combined with academic aspirations for their children and access to appropriate exam preparation resources. The pass mark of this exam is dependent on the amount of seats available in one particular catchment area and is calculated using the bell curve statistical method that allows for a predetermined distribution of grades.

I think it is fair to say that the desire to reinforce social class was deeply embedded within the British Eleven Plus educational system. The question is, so what? What does it mean to pass the Eleven Plus, and more importantly to me, what does it mean to fail? Had I passed this exam, I would have attended a publicly funded Grammar School and begun a traditional canonical education in preparation for university. However, failing this exam meant further streaming at the secondary school level. Secondary school students were sorted into streams for either General Certificate of Secondary Education (GCSE) college prep, with a possibility that A Levels may be taken at a later date, or Certificate of Secondary Education work-base prep with no suggestion of college or continued education.

I was content to be streamed with the GCSE students and paid very little attention to how this school placement might impact my future social, educational, and career opportunities. At 13 years of age, I became distracted by teenage activities, including fashion, and found myself a weekend job in a hair salon. It was a lot of fun, which seemed very important to me at that time. I was due to finish school at age 16, as per the norm in the United Kingdom, and so an apprenticeship in hairdressing seemed to be an ideal fit. Interestingly, this was not an ideal fit in the eyes of the school. I had been streamed into the GCSE group with the intended goal of college, and much to their disappointment I was stepping outside the boundaries of this explicit streaming system. My parents too were somewhat disappointed and felt I could do “so much better.” These voiced responses to my decision to enter the trades were my first introduction to the social stigma associated with trades, particularly the softer trades (Chi, Glaser, & Farr, 1982; Green, 2000; Kemmis & Green, 2013; Rose, 2005).

At 32 years of age, I immigrated to Canada with my husband, Dean, and our two children, Charlie age 5 and Liberty age 3. Both my husband and I found work with reasonable ease, myself as a hairdresser and my husband as a carpenter. As we became immersed in Canadian culture and our children went to the local public schools, we became increasingly aware of the absence of an overt social class and the burden of its associated rules. An explicit class system such as the one we had known in England viewed the world from a middle class culture standpoint, shaped by its academic lens (Nesbit, 2005), and this was not overtly present in the part of Canada that we had chosen to live.

Five years later, with the psychological constraints of social class and the failure of the Eleven Plus no longer part of the culture in which I lived, I began my teaching career at a nearby publicly funded community college hairdressing program. Being in a formal educational role for the first time gave me the confidence and encouragement that has led me to further my own learning in the field of adult education. After the completion of my Provincial Instructors Diploma in 1997, and determined to learn and know more about adult education, I enrolled in the Adult Education Diploma through Vancouver Community College, which later provided me access into the Master of

Education program at SFU as a nontraditional learner. In 2010, I graduated from SFU having successfully completed a Master of Education degree: Curriculum and Instruction.

1.9.2. Power, Politics, and Curriculum

During my master's program, I gained an understanding of how power and politics are embedded throughout curricula decisions, and I learned how these decisions result in opportunities provided, or withheld, for all members of society. Having gained this understanding, I was driven to pursue this doctoral journey believing that my ability to influence positive societal change could be achieved through the intentional development of curriculum. This aim required me to gain a far deeper understanding of the theories that underpin the field of curriculum studies.

Furthermore, my own educational journey combined with my own practice as a trades instructor and previous research studies have led me to deepen my understanding of the role instruction plays in relation to the learner's intellectual and skill development. I have reflected on how my curricula and pedagogical decisions directly impact student learning outcomes. It is, therefore, instructors' perceptions that shape their curricula and pedagogical decisions that are of interest to me, as I strive to provide new understandings on the requirements for TVET in the 21st century.

1.10. Organization of Dissertation

This dissertation is organized in to seven chapters. Following this introductory chapter is Chapter 2: Literature Review, in which I provide a review of the literature that grounds this study, firstly, in the context of TVET within BC and, secondly, in the field of curriculum studies. In Chapter 3: Methods, I provide an in-depth explanation of the research design and my rationale for choosing Q. I then describe the steps taken to recruit participants within the stated geographical location and outline the data collection and data analysis procedures. Chapter 4: Q Factor Analysis, I provide the results as presented by Q factor analysis using PQMethod software (Schmolck, 2014). In Chapter 5: Analysis, Interpretation, and Results, I review participant interview excerpts and Joseph's (2000) cultures of curriculum theoretical framework as an analytical lens, and, in doing so, I

provide summaries of the four extracted factor groupings. In Chapter 6: Discussion, I present the findings resulting from this study. Finally, in Chapter 7: Conclusion, I present the study conclusion and put forward suggestions for future research.

Chapter 2.

Review of the Literature

This literature review chapter sets the context of this research by drawing on the work of scholars in the fields of TVET, 21st century workplace demands and skills, and curriculum studies. I begin by providing a brief history of the fundamental underpinnings of TVET. In doing so, I draw particular attention to the long-standing academic–vocational divide before continuing to discuss how this binary understanding has shaped current belief and value structures held within the TVET system. I then present areas of changing demands associated with the 21st century Information Age and discuss how these changes may impact the TVET system as a whole, claiming that current TVET practices conflict with the future goals of education due to changing life and workplace demands. Then, having framed this study in the context of BC’s TVET system, I situate my research in the field of curriculum studies and present the theoretical framework that guides this study.

2.1. A Brief History of Vocational Education

Vocational education originally developed as a response to the needs of the Industrial Age as innovative advances in machinery took over the work that had previously been manual. This significant shift from human power to machine power required working adults to seek further education in order to develop both knowledge and technical skills required to meet changing demands in the workplace. Vocational education was developed in direct contrast to academic education and aimed primarily to educate the lower socioeconomic group and the lower academic achievers to become useful and financially independent members of society (Dewey, 1916; Green, 2000). The term vocational is used here in association with education that prepares people for specific professions, trades, or crafts and is based on occupational and employment needs. Consequently, when comparing the fundamental principles of TVET curriculum alongside those of a traditional academic curriculum, differing educational aims are

evident: academic for mind (intellectual development) and vocational for body (skill development; Rose, 2005).

2.2. The Academic–Vocational Divide

This age-old dualism—academic versus vocational—has shaped educational thinking since the days of Plato’s (2000) *Republic*: “Myth of Metals,” a societal hierarchy that places those of high intellect at the top and trades people at the bottom based on a mythical biology. Rose (2005) drew attention to an account in which “Plato mocks the craftsman who would pursue philosophy for his soul is warped and maimed by his work – such men are incapable of culture” (p. 100), and, in doing so, suggested that such statements reflect belief structures supporting both physical and conceptual boundaries placed between the values of pure and applied knowledge. Despite the evolution of vocational work with its attendant requirements for educated technicians, there is evidence to suggest that Plato’s philosophical ideals have resided firmly in the minds of some educators and policymakers today (Billett, 2016; Worthen, 2012). Both Billett (2016) and Worthen (2012) claimed the vocational–academic divide runs far deeper than two domains of knowledge—the divide is about the probabilities of social privilege or stigma and the possibilities or restrictions bestowed upon the learners. Other scholars concurred with this notion, including Bruner (1996), Dewey (1916), and Nesbit (2000) who claimed issues of power, politics, social class, and gender are never far removed from curriculum.

In 1903, Du Bois (2014), also concerned by the limitations of an education system that divides those worthy of an academic education from those more suited to manual work, wrote,

I am an earnest advocate of manual training and trade teaching for black boys, and for white boys, too.... Nevertheless, I insist that the object of all true education is not to make men carpenters, it is to make carpenters men; there are two means of making the carpenter a man, each equally important: the first is to give the group and community in which he works, liberally trained teachers and leaders to teach him and his family what life means; the second is to give him sufficient intelligence and technical skill to make him an efficient workman. (p. 222)

Du Bois (2014) is seen here in 1903 to advocate a full education for all (albeit limited by gender and race), proposing an education that prepares students to participate fully as members of society as well as the ability to earn a living through intelligence and technical skills.

Approximately 100 years later, authors such as Taylor and Freeman (2011) and Billett (2016) continued to advocate in a similar light to Du Bois (2014), claiming that a binary view of education shapes and fuels the recapitulation of Plato's (2000) philosophical underpinnings and grounds the academic–vocational divide, which, in turn, reinforces belief structures fostering generations of youth to identify as either “hands-on rather than book learners” (Taylor & Freeman, 2011, p. 65). Other scholars claimed this ideological binary justifies the streaming of children by academic ability, leading to issues of marginalization linked to gender, race, and class (Dewey, 1916; Nesbit, 2000), which, in turn, perpetuate the following belief: “Once these students are enrolled into the vocational education system there is no need to justify anything other than preparation for work” (Kaplan, 1997, p. 37). Furthermore, Young (2013) argued, “This is a social justice issue about the entitlement to knowledge of students regardless of whether they reject it or find it difficult” (p. 109), claiming, “If some knowledge is ‘better’, how can we deny it to all pupils?” (p. 109).

This notion of an education system primarily for skill development has shaped general perceptions about the kind of student that is most suited to TVET, leading to the belief that those who excel in hands-on work, rather than in academics, are appropriate for this stream (Marshall, 1997; Rose, 2005; Taylor & Freeman, 2011). Such practices have led some to label TVET as the perfect dumping ground for underachievers and members of the lower socioeconomic group, raising important questions regarding the neglect of vocational students' intellectual development and the notion of a hidden curriculum (Green, 2000; Rose, 2005; Taylor & Freeman, 2011). While it is correct to say that those who identify as manually minded do tend to excel in these programs, the creation of a dualistic system, one for hands-on learners and the other for academic gain, assumes much about the intelligence associated with vocational and trades work (Billett, 2003; Green, 2000; Kemmis & Green, 2013; Lucas et al., 2012; Rose, 2005; Taylor &

Freeman, 2011). According to Rose (2005), and others such as Billett (2016) and Lave (2014), this is because research on vocational education seldom pays attention to the cognitive dimension of practical work, which, they claimed, is linked to the epistemological binary lens through which vocational education has been viewed. Rose (2005) argued privilege obscures the view of “mental activity embedded in real-time flow of work, rituals, routines, distractions, and social complexity” (p. 201), claiming that, because of the lens used, the “cognitive features of an entire field of study are muted” (p. 178). For Billett (2016), this muting of cognitive features within TVET curriculum has resulted in the assumption that “knowledge required for the kinds of occupations prepared through vocational education is easily learnt and measured” (p. 198).

Consequently, TVET’s origins, grounded in Plato’s (2000) philosophies and associated epistemologies supporting mind–body and head–hand dichotomies, have shaped curriculum from its beginnings (Billett, 2016; Worthen, 2012). Utilizing Joseph’s (2000) *Cultures of Curriculum* lens of inquiry, Green (2000) found TVET curriculum is framed on all levels from government funding, standardized curricula, teaching or instructor qualification and professional development, to students’ characteristics, in economic terms that are closely tied to labour market needs, thus creating a culture of curriculum that she described as “training for work and survival” (p. 29). Wheelehan (2015) went further, arguing, “[T]VET is a key way in which social inequality is mediated and reproduced because it excludes students from accessing the theoretical knowledge they need to participate in debates and controversies in society and in their occupational field of practice” (p. 751). While TVET is presented as a mechanism for social inclusion (Rose, 2005; Wheelehan, 2015; Young, 2013), by providing a hands-on work-based solution for students, Green (2000) and others agreed that certain features unique to TVET curriculum, such as its overarching purpose of schooling combined with general perceptions related to intelligence and practical work, have been framed within a paradigm of utility, making this curriculum distinctly different from that of other educational goals, and ultimately limiting students future opportunities (Billett, 2001a; Rose, 2005; Taylor & Freeman, 2011).

Elements of today's TVET system remain rooted in a framework of utility, grounded in the hand–mind binary belief structure that is associated with the needs of the 20th century Preinformation Age, thereby representing a set of values referred to as old vocational thinking (Grubb & Lazerson, 2005; Rose, 2005; Taylor & Freeman, 2011). Through my analysis of literature, combined with an investigation of the existing ITA roles, responsibilities, and values, I found aspects of old vocational thinking reflected in the following four interconnected components of the TVET system within BC:

- (a) government support, including the responsibilities of the ITA;
- (b) industry-led program development model;
- (c) instructors' identities, roles, and responsibilities; and
- (d) the utilization of C-BET.

2.3. Trades and Vocational Education and Training in British Columbia, Canada

In BC, the education system is overseen by two ministries: the Ministry of Education provides leadership, direction, and funding to the Kindergarten to Grade-12 (K–12) education system and the Ministry of Advanced Education, Skills, and Training provides leadership, direction, and funding for the postsecondary education and skills training sector.

The Government of BC, Ministry of Advanced Education, Skills, and Training (2019) works with postsecondary partners, employers, and industry to align and deliver postsecondary education and skills training programs that aim “to prepare British Columbians for career opportunities and the jobs of the future” (p. 5). In the context of TVET, the ministry also provides oversight and funding to the ITA Crown corporation.

2.3.1. The Roles and Responsibilities of the ITA

At the provincial level, ITA is responsible to regulate the trades education and training system within BC. As of September 2019, ITA manages over 100 trades programs, 49 of which are Red Seal trades, and all are delivered by ITA-accredited training providers throughout the province. Currently, 16 postsecondary public training providers (four of which gained regional university status in 2008, offering certificate,

diploma, and degree programs), approximately 32 private training providers, and 18 school district trades and career centres (ITA, n.d.-b). The ITA, managed by a board of directors, appointed by the Minister of Advanced Education, Skills, and Training, also manages and certifies apprenticeships, invigilates final exams, and issues credentials in accordance with the Red Seal Occupational Standards (RSOS).

The RSOS is an endorsement to standardize apprenticeships across Canada, which permits the mobility of apprentices during their education and supports qualified tradespeople to seek work outside of their home province. The Canadian Council of Directors of Apprenticeship (CCDA) manages RSOS at the national level. The CCDA is an intergovernmental voluntary partnership that exists among the provinces and territories; its aim is to support the development of skilled trades in Canada and takes responsibility for the Red Seal program. The CCDA is currently undertaking the Harmonization Initiative in 30 Red Seal trades (ITA, n.d.-c). This initiative aims to substantively align the apprenticeship system across Canada by making apprenticeship training requirements more consistent from one province to another in 30 Red Seal trades by the year 2020 (ITA, n.d.-c).

The ITA works closely and collaboratively with the CCDA to align program standards in BC with the national Red Seal program. As part of this process, the ITA hosts program development workshops in consultation with business, employers, training providers, industry representatives, labour unions, and employees in order to establish program standards and program outlines, including competencies, learning objectives, and assessment tools. These multiple external interest groups inform the TVET system via the ITA.

2.3.2. The ITA Industry-Led Program Development Model

Within the ITA model, representatives from industry play a key role in the standardization of program outlines and assessment tools. The strength of industry members' involvement in this process comes from their currency in the industry and their knowledge and experience as subject matter experts (SMEs). Despite industries' general lack of knowledge regarding educational theory (Schwab, 2016), their collaborative

voices are understood to provide a view of what is required for the performance of work. TVET instructors are included in this collaborative process and work alongside industry members to determine the content of the standardized program outline and required competencies, the development of learning objectives, learning tasks, test banks, and recommended time allowances. ITA program outlines equate to curriculum guides.

During program development workshops, the ITA requires a 3:1 ratio of industry representatives to instructors, which prioritizes industries voice over that of the educators. From my own experience, I know this ratio may vary due to availability of participants and on many occasions this ratio is reduced to 2:1. The rationale behind this industry–instructor ratio rests in the governance model of the ITA, and, as its name states, the skill and trades training sector is purposely designed to be driven by industries’ needs.

The involvement of external interest groups in the decision-making process and in shaping the TVET curriculum can be seen as distinctly different from other educational sectors, underscoring the economic enterprise driving the TVET system (Billett, 2001a; Rose, 2005; Worthen, 2012). Given that TVET is understood to be in contrast to academic education, it is shaped by the collective demands of multiple stakeholders whose aim is to form an education system that will fulfill the economic needs of specific industries and meet the demands for economic growth and development of the country as a whole, and/or specific regions and provinces (WorkBC, n.d., 2014). For this purpose, the stakeholder group consists of three main bodies: the public sector, representing government, local authorities, and labour unions; the private sector, representing industries, business, parents, and families; and the educational communities, comprising administration, instructors, content providers, and professional organization (Voogt & Roblin, 2012).

The influence of multiple stakeholder groups, including industry, on TVET curricula is not limited to BC. This collaborative approach to program development is used throughout Canada, and in many other countries such as the United Kingdom (National Vocational Qualification), Australia (Australian National Training Authority), Trinidad and Tobago (CARICOM Vocational Certificate), and Kenya (Curriculum

Development Assessment and Certificate Council). This system, however, has drawn criticism for prioritizing industries needs over the educational needs of learners (Schwab, 2016).

2.3.3. Critique of TVET Program Development Model

Critics of this model include Billett (2001a), whose concerns are voiced from an educational perspective, claiming this process allows for decisions to be made regarding program outlines and required competencies from a place that is “remote from actual work practice” (p. 3) and runs the risk of overlooking requirements at the situational level. Concurring with this notion, J. J. Schwab (1983) stated,

Firstly, such strings of objectives atomize matters which may be of great importance into bits and pieces which, taken separately, are trivial or pointless. Lists of objectives often trivialize because they atomize, not only subject matter, but teachers’ thoughts about it, the pattern of instruction used to convey it, the organization of textbooks, and the analysis and construction of tests. (p. 240)

The issues brought to light by Billett (2001a) and J. J. Schwab (1983) related to the defining of occupational practice without consideration of the discrepancies that exist between its disembedded occupational level (i.e., what should be) compared to the embedded situational level (i.e., what is). For Billett (2001a), “only when occupational practice is manifested (embedded) in particular circumstances is it possible to identify the actual requirements for performance at work” (p. 3). Billett (2001a) further noted, “What may be deemed competent performance in one setting may be quite inappropriate in another” (p. 1).

Instances of Billett’s (2001a) concern regarding situational competence have risen to the surface during the CCDA recent pan-Canadian harmonization initiative to substantively align 30 Red Seal apprenticeship systems across Canada by 2020. For example, in the building and construction trades, building codes, materials, and processes used on the East Coast of Canada vary considerably from those on the West Coast due to climate extremes. Other variances may relate to the cultural differences from region to region. For example, the diversity of client ethnicity throughout regions of Canada will

determine which competencies will be of most importance to the hairstylist, noting that an area that has a high number of Caribbean-Canadian clientele will specialize in services such as chemical relaxers and curl-reforming. These are services that Indigenous Canadians and Caucasian Canadians do not require because of their different hair texture. At this level, the conversation is focused on which competencies should take priority over others. But for Billett (2001a) and J. J. Schwab (1983), their concerns rest at a deeper level.

Concurring with both Billett (2001a) and J. J. Schwab (1983), Lave (1991) claimed what has been overlooked in the development of competencies disembedded from context are the decisions and actions made minute by minute while the competency is being performed in unique situations. I wholeheartedly agree with this claim because I frequently see evidence that supports it, such as a roof renovation in which some existing timbers are rotten or, in another context, where the hair client suffering with alopecia requests a chemical service. These situations require something outside the range of predetermined competencies—they call for what Rose (2005) referred to as “the choreography of hand, eye, ear, brain” (p. 22), and in doing so emphasized the “ever-presence of abstraction, planning, and problem solving in everyday work” (p. 22).

Other scholars such as Worthen (2012) and Taylor (2016) shared similar concerns to Rose (2005), stating that when competencies are determined outside of their context, program outcomes privilege the needs of external stakeholders and the desire to standardize curriculum over learners’ needs. Researchers have suggested such practices as these narrow the curriculum by overlooking the cultural, historical, and situational context of competence (Dewey, 1916; Lave & Wenger, 2014) and deny the learner access to the scientific principles that underpin such competencies (Young, 2013).

Rose (2005) discussed higher order cognitive skills, such as “abstraction, planning, and problem solving in everyday work” (p. 22), which go beyond spontaneous concepts (Vygotsky, 1978) that are formed through everyday experience (Young, 2013). Higher order thinking is dependent on access to scientific concepts that allow learners to generalize beyond their experience (Young, 2013). “For example, electricians need

access to mathematics and not just formulas if they are to be autonomous practitioners. Childcare workers need access to theories about child development” (Wheelahan, 2015, p. 753). However, TVET’s utilitarian focus places emphasis on work-based training and procedural knowledge, meaning it is far less likely to focus on theoretical knowledge. The ITA program development model reinforces this division of knowledge structures.

While many agree an industry-led collaborative approach, inclusive of both industry and instructional representation, is critical to the successful development of standardized program outlines, stakeholders involved in this process have raised concerns (British Columbia Federation of Labour, 2017). According to this report, discrepancies exist in the points of view held by members representing the stakeholder group, specifically around different strategies for building and maintaining an optimized trades training system (British Columbia Federation of Labour, 2017). External stakeholder groups typically aim to represent all sectors of industry, ranging from single self-employment to high-end big business and corporations; therefore, a range of perspectives exist amongst members based on their own business needs or personal preferences (Rose, 2005). British Columbia Federation of Labour (2017) reported the introduction of modular training and certification for specific competencies prompted members of the stakeholder group to question the development process, claiming that it was not fully inclusive. Claims such as these shed light on the possible pitfalls of this collaborative approach between groups of industry and instructional representatives and bring forth issues related to the decision-making process, indicating decisions made may benefit single interest groups (Billett, 2001b). With evidence of dissatisfaction amongst the stakeholder group (British Columbia Federation of Labour, 2017), it is important to consider that those developing program outlines may tend to do so without a theoretical understanding of curriculum (N. Gajdamaschko, personal communication, July 4, 2016).

Concurring with this notion, Wheelahan (2015) stated, from a global perspective, “the loss of knowledge as the object of curriculum is exemplified most strongly in the field of vocational education and training (VET)” (p. 750). This is because VET “has been recast as about skills and not knowledge” (Wheelahan, 2015, p. 750); therefore, the focus of the VET curriculum rest firmly on the skills needed to get the job done and “any

content of knowledge has been subordinated to and tied to skills” (p. 751). This view of VET as skills for work has removed curriculum theory from the picture, “thus exempting VET curriculum from the obligation to provide students with access to the knowledge that they cannot get at work, at home, or in the community” (Wheelahan, 2015, p. 751).

My own experience mirrors the finding of Wheelahan (2015). I have observed that many participants attending program development workshops at both the provincial and national level lack a theoretical understanding of curriculum, including instructors as well as industry representatives. As one workshop participant said to me, “I’m not a curriculum specialist, nor are the SMEs—there is a notable lack of specialists involved in this process” (J. Wright, personal communication, April 4, 2019).

Given that a typical career trajectory for an industry practitioner or TVET instructor does not include or require formal education in the discipline of program and curriculum development, I can only conclude that those making the decisions regarding who will be included in the stakeholder group have excluded curriculum theorists. It is important to recognize this omission because it loads much on to the shoulders of the instructors who not only deliver the program but are also the de facto curriculum developers. In addition, variations in their curriculum and pedagogical beliefs lead to inconsistencies during program development that ultimately disrupt the efficacy of programs.

2.3.4. Influences that Shape TVET Instructors’ Pedagogy

Postsecondary TVET instructors, generally speaking, have different career trajectories than K–12 teachers. This is because trades instructors must first succeed in industry within their chosen trade before embarking on a teaching career. They are considered to be second-career educators who “bring extensive and diverse experiences with them” (Tigchelaar, Vermunt, & Brouwer, 2014, p. 111), with the belief that their years of experience in industry and mastery of trade overrides their lack of formal teacher education. The instructional role within the TVET model has been shaped partly by the history of apprenticeship associated with trades, but also because TVET instructors, as

former tradespeople, are recognized for their ability to prioritize work relevance over academic goals (Kemmis & Green, 2013).

The cultural and historical tradition of apprenticeship is a theme that can be seen in several areas of the TVET model, including instructors' pedagogy. Lucas et al. (2012) claimed TVET instructors' pedagogical approaches tend to reflect the assumption that competency in the industry automatically translates to aptitude in the classroom; therefore, new instructors rely heavily on pedagogies reminiscent of how they like to learn and how they were taught. Joseph (2000) concurred with this observation, claiming along with these belief structures come "folk pedagogies" (p. 30), that is, "a collection of deeply embedded notions of learning, schooling, and teaching passed along from generation to generation" (p. 30), that consequently shape what is taught and what is learned regardless of standardized curricula (Cuban, 1993; Rose, 2005). I am in agreement with Joseph regarding folk pedagogies shaping pedagogical decisions, because I am frequently privy to instructors' decision-making processes that are based on incongruent ideas related to student learning and notions of learning styles. These decisions are typically based on the instructor's own experience. For example, one instructor plays music in class during testing periods because he believes it relaxes students and allows them to focus, while another instructor asks the class to handwrite notes because of the instructor's belief that it facilitates memorization and retention.

2.3.5. Learning to teach TVET

Many instructors, who know and love their subject, do not invest time in acquiring teaching skills and instead rely on how they were taught themselves (Tigchelaar et al., 2014). This statement comes as no surprise to TVET instructors who have taken the leap from industry to teaching, as, in the absence of any formal teacher education, educators mimic and default to the mannerisms of previous teachers (Lucas et al., 2012). The strength of this approach is something that Mackinnon (1996) explored during formal K–12 teacher training, the difference being that Mackinnon taught alongside novice teachers, mirroring an apprenticeship model of master and novice while fully immersed in the teaching environment. The strength of Mackinnon's approach, like

that of Lave and Wenger (2014) presented in *Communities of Practice*, is that student teachers learn to teach first “through mimicry in the practice setting” (Mackinnon, 1996, p. 653), as theories of practice, technique, and teaching philosophies blend in thought and action. A key component of such activity is the mentor’s role in guiding student teachers through daily reflection practices.

Reflection on action and in action (Schön, 1987) provides learners with a deeper understanding of theory learnt through practice, and practice learnt through theory. The preparation of K–12 teachers is seen to differ significantly from that of TVET instructors who learn to teach in the isolation of their own classrooms, shut away from peers and mentors. Mackinnon (1996) warned, “Apprenticeship without critical reflection will do nothing more than to propagate current practices” (p. 659). However, most new TVET instructors are not exposed to such formal mentorship and reflection as they learn to teach. Alternatively, according to Lucas (2014), influences that *do* bear on the teaching practices of new TVET instructors include the following:

learning by watching, learning by imitating, learning by practicing (trial and error), learning through feedback, learning through conversation, learning teaching by helping, learning by real-world problem-solving, learning through enquiry, learning by listening, transcribing and remembering, learning by drafting and sketching, learning on the fly, learning by being coached, learning by competing, learning through virtual environments, learning through simulations and role play, learning through games. (p. 5)

To support new instructors during this transitional period between industry and the classroom, most trades instructors in BC are required, or encouraged, to complete the Provincial Instructors Diploma program (PIDP) within their first few years of employment. The PIDP is unofficially recognized as the standard teaching credential for trades instructors in adult education within BC; however, this diploma program aims to meet the needs of all adult educators, not specifically those teaching TVET. The PIDP covers subjects such as theories of adult learning, curriculum development using a design a curriculum approach, strategies for instruction and evaluation, plus a recent addition of educational technologies. Structured for the most part from an applied perspective of Bloom’s (1956) taxonomy, the PIDP claims to provide a solid introduction to the

teaching profession with an emphasis on the practical application of teaching and learning (Vancouver Community College, n.d.). According to the PIDP *Summary of Survey Results: 2014 to 2018* (BC Student Outcomes, 2018), 45% of program participants are employed college vocational instructors, and, overall, 98% of participants said they were very satisfied or satisfied with the education they received.

From my experience as a department chair and direct contact with new instructors transitioning from industry to teaching trades, the PIDP is an essential component to instructor professional development. This is because the program provides a foundation in educational theory and practice that affords instructors the ability to enhance their teaching practices, typically by shifting from practices grounded in their own prior experience, to pedagogical approaches grounded, somewhat, in educational theory. Lucas et al. (2012) reported a similar conclusion, stating, “Our view is that vocational teachers need a clear understanding of the variety of learning methods that lead to different learning outcomes, before they can make informed and effective pedagogical decisions” (p. 10).

Despite efforts made to support instructors as they learn to teach, Lucas (2014) reported, “Vocational pedagogy is under-researched and under-theorised” (p. 2), claiming that TVET is seen as the “poorer cousin of academic education” (p. 2), hence the lack of formal education for instructors. Consequently, very little is known about vocational pedagogy (Young, 2013), which drove Lucas (2014) to pose the question, “How can VET teachers become more confident and competent in vocational pedagogy?” (p. 5). In an attempt to answer this question, Lucas provided a framework for dialogue aimed to explore all facets of TVET from teaching methods to the breadth and depth of desired outcomes.

Similarly, Serafini (2018) provided an international perspective, claiming research is scant in the area of professional development for VET teachers, despite wide acknowledgement and buy-in from European Union member states, candidate countries, and European economic area countries. Serafini focused particularly on the ongoing technical training for VET instructors, arguing, “VET teachers not participating in

training lose contact with latest development in the fast evolving areas of knowledge, skill and competences which the labour market will require from their pupils” (p. 3). Despite the evident need for increased professional development for VET instructors, particularly in Italy, Serafini found barriers within the stakeholder group, such as the absence of incentives, lack of employer support, time-related factors (including time away from family), gender, age, and low educational attainment, compared to non-VET teachers.

As such, professional development for TVET instructors extend beyond the requirement of learning to teach while teaching; it also requires ongoing professional development in the domain of the trade as reported in Serafini’s (2018) study. With this thought in mind, I suggest that TVET instructors’ professional development requires a three-prong approach: pedagogy, trades-specific theoretical knowledge, and work-based competency. My view is that the need for professional development is more pertinent in the 21st century than in previous years because of rapid changes and advances in technology. Similarly, Wheelahan (2015) argued the knowledge demands of jobs are increasing due to growth in technology and the complexity of society, which allows for people to progress in the workforce. This demand not only increases the educational purpose of TVET in order to support students’ occupational mobility (Wheelahan, 2015), but also it increases the professional development requirements for TVET instructors.

I conclude this discussion by saying TVET instructors, generally speaking, have different career trajectories from K–12 teachers in BC. While, K–12 teachers begin their teaching careers holding undergrad degrees and teaching certificates, TVET instructors have Red Seal endorsements specific to their trade and a minimum of 5 years of industry experience. As such, learning to teach as a TVET instructor differs considerably from the approach needed for K–12 educators. For TVET instructors, learning to teach from the ground up—or from the trenches, as some like to call it—involves amassing skills while teaching, in what is referred to as the sink-or-swim approach (D. George & J. Sutton, personal communication, April 17, 2019).

2.3.6. Standardized Curriculum – Standardized Texts

With this second-career identity (Tigchelaar et al., 2014), TVET instructors' teaching practices have been supported and shaped by standardized program outlines consisting of prepackaged standardized texts, workbooks, assignments, and external assessment. In total, these curriculum components create what is referred to as a teacher-proof curriculum package (Aoki, 2003). For others, this approach to teaching is described as a recipe model (Lucas et al., 2012; Taylor & Freeman, 2011), meaning that teaching and learning is understood in this context to be procedural and mechanical, allowing instructors to follow a series of preplanned lesson plans, worksheets, notes, video links, and typically, endless slideshows, all designed to meet predetermined outcomes (Flinn, 2018). I am comfortable in saying that from my own experience these approaches to teaching and learning have dominated teaching practices in the trades for the past 20 years.

Concerned with this practice, other scholars, such as Schiro (2008), claimed teachers in these settings are conceptualized as implementers of curriculum, which both limits and shapes their role to “one of a monitor ... spending their time organizing and supervising learners to work through a series of progressive objectives that lead towards mastery of predetermined competence” (p. 79). In agreement with the claim, Wheelahan (2009) argued, despite the façade surrounding training packages, “they merely specify the outcomes of learning ... leaving instructors free to develop their curriculum approach” (p. 232). Wheelahan (2009) went on to state, “It is clear that training packages *do* shape teaching and learning, and that they constitute an important component of the curriculum, because they specify *what* is to be taught and, in broad terms, *how* it should be assessed” (p. 232). Instructors shaped by these practices, perceive themselves as employed to deliver the curriculum as opposed to being “empowered professionals” (Joseph, 2011, p. 3). When I consider Joseph's term empowered professional, I think about my academic colleagues who frequently argue for their rights to academic freedom, which is not something I have heard discussed within the trades faculty.

From my experience as a trades instructor in BC for the past 20 years, and an active consultant with the ITA and the RSOS, combined with my review of literature presented on this subject within this study, I am confident in saying that teacher-proofed curriculum packages, equating to Aoki's (2003) recipe model, are deeply embedded within TVET's culture, including its focus on skill-based curriculum, which, ultimately, shapes instructional delivery methods across trades program throughout BC. The use of standardized program outlines exists outside of BC also, expanding across Canada to meet the needs of the Red Seal endorsement (RSE) – interprovincial exam.

Despite the strength of standardized curriculum in guiding both instructors and students consistently through a course of study, support for this approach varies widely. Aoki (2003) argued curriculum, when standardized, is understood as a practical tool concerned with the organization, delivery, and evaluation of both teaching and learning, which results in a standardized procedural and mechanical approach to program delivery. Others concerned with this issue, such as Joseph (2000), worried that when curriculum is replaced by teacher-proofed packages it narrowly focuses on specialized skill sets, and in doing so places emphasis on “technique over substance” (p. 2), thereby valuing efficiency of delivery over content and learning. Hence, good teaching within this context, is measured by how accurately the curriculum is followed, which, in turn, is measured by how well students perform on standardized exams (Aoki, 2003, Rose, 2005).

In reality, as Gardner (1985) argued, standardized testing is designed to foster standardized answers, which he claimed miss the purpose of education. Gardner (1985) stated, “We need to educate a generation who will do more than simply solve existing problems. We need people who have the ability to raise fresh questions” (p. 13). In agreement with Gardner (1985), Aoki (2003) reported that this technical view of curriculum, meaning “curriculum-as-plan” (p. 2), is the most challenging obstacle for curriculum developers today. In keeping with this concern, Apple and Beyer (1998) exposed the following underlying issues related to the use of standardized curricula:

We are referring here to the transformation of curriculum theory and practice from concerns about *what* should be taught and *why* we should teach it to those problems associated with *how* to organize, and about all

now, evaluate curriculum and teaching. The difficult ethical and political questions of content, of what knowledge is of most worth, have been pushed to the background in our attempts to define technically oriented methods that will “solve” our problems once and for all. (p. 3)

Aoki (2003), Beyer and Apple (1998), and Schiro (2008) agreed problems associated with how to organize content, evaluate learning, and assess teaching now dominate the development of curriculum, and, in doing so, philosophical and theoretical insights that address the bigger questions, the moral and social visions of education, are lost in the aim for technical efficiency. This simplification of curriculum, according to J. J. Schwab (1983), is due to design shaped only by theories, “theories of mind and knowledge ... overlooking the culture of the discipline” (p. 8).

J. J. Schwab (1983) brought forth these issues in 1969, claiming the failure within the field of curriculum development is due to its overreliance on the theoretical. This author stated the renewal of the system requires the bulk of its “curriculum energies to be diverted from the theoretic to the practical” (Schwab, 1983, p. 1). J. J. Schwab’s (1983) use of the term practical relates to what he called choice and action, which sits in contrast to the theoretic. Choice and action can be better understood by what Rose (2005) described as “the mind’s best work” (p. 72) when attention, perception, judgment, knowledge, and values are actively engaged during the performance of manual work.

My own view aligns with Aoki (1997) and Billett (2016), who stated the complexity of curriculum has been simplified and reduced through standardization and, as a result, focuses only on part of the story by teaching what is measurable. Other scholars such as Young (2013) also argued that only part of the TVET curriculum is being taught, noting the absence of theoretical knowledge. Concurring with this notion, Wheelahan (2015) claimed the loss of theoretical knowledge from VET curriculum has become more pronounced since it has been viewed globally “both as the mechanism to promote economic growth by providing skilled labour to the workforce, and social inclusion, particularly to disadvantaged groups who do not do well in school” (p. 751). From this discussion I concur, TVET curriculum that is shaped purposely to promote economic growth through skill base training is aimed at a specific demographic of society.

2.3.7. The Role of C-BET

TVET's economically driven curriculum, situated in the frameworks of Schiro's (2008) technical efficiency ideology, Eisner's (1985) curriculum as technology, and Green's (2000) "training for work and survival" (p. 29) culture of curriculum, lends itself to the standardization of program outlines and curricula that has resulted in the widespread use of C-BET curriculum throughout the TVET arena. The C-BET curriculum design begins with a backward mapping approach in which an occupational analysis is performed to establish a full understanding of the requirements of practice from an industry perspective. The process then continues by determining competencies required for practice as per the occupational analysis, followed by a process to deconstruct knowledge and skills into modules of subject matter, and finally content is broken down into teachable, measurable, and observable learning objectives and learning tasks. The C-BET approach "assumes that outcomes can be achieved by directly teaching to the outcomes" (Wheeahan, 2009, p. 237)—its goal is to educate all learners, regardless of their academic ability, through a delivery model that scaffolds learners' achievements toward the level of competency as defined by industry (Chehayl, 2018). The strength of C-BET in the context of TVET has been recognized in BC (WorkBC, 2014), and throughout the Organisation for Economic Co-operation and Development (2015) member countries.

The C-BET curricula have become a mainstay of TVET (World Economic Forum, 2016), reflecting the assumption that "knowledge required for the kinds of occupations prepared through vocational education is easily learnt and measured" (Billett, 2016, p. 198). With this assumption underpinning the belief structures of TVET, the use of C-BET and its associated behavioural measures align accordingly. By contrast, some academic schooling has rejected the use of C-BET, refuting its worth for teaching and learning practices in which outcomes of higher order thinking are required (Billett, 2016).

Those refuting the worth of C-BET claimed that the approach exemplifies the acceptance of behavioural measures as evidence that learning has occurred (Biemans,

Nieuwenhuis, Poell, Mulder, & Wesselink, 2004) and overlooks the limitations of competence when disembodied from the situational level (Billett, 2001b; Lave & Wenger, 2014; Rose, 2005). In doing so, this practice neglects the sociocultural and sociohistorical aspects of practice and overlooks the notion that competence in one setting may be quite inappropriate in another (Billett, 2001b; Lave, 1991). The C-BET's focus is on procedural knowledge; it "downplays the importance of embodied and tacit knowledge" (Wheehehan, 2009, p. 237) because this kind of knowledge is not observable, and, therefore, not measurable. Furthermore, Wheehehan (2009) claimed the lack of context-specific knowledge is only part of the problem, with the bigger concern being, "while all jobs require context-specific knowledge" (p. 229), future demands in the workforce will require workers to use theoretical knowledge, especially as the complexity of their work grows and the context of their work changes. However, C-BET's outcome-based approaches, combined with assessment methods such as multiple-choice testing, limit theoretical knowledge to rote memorization, which forces instructors to deconstruct theory from practice for the purposes of testing. The C-BET approach assumes that the whole is a sum of its parts, which has led to skills being taught in isolation from the situational level of practice, separated from the scientific principles that underpin practice (Billett, 2001a; Rose, 2005), resulting in an approach to teaching and learning that is procedural and mechanical. The concern for J. J. Schwab (1983) is that this practice creates "endless strings of objectives ... that often, even usually, anatomize matters which may be of great importance in to bits and pieces, which, taken separately, are trivial and pointless" (p. 240). This is obviously problematic to the learner whose access to a full theoretical understanding is denied. Furthermore, when knowledge is deconstructed, it influences "teachers' thoughts about it, the pattern of instruction used to convey it, the organization of textbooks, and the analysis and construction of tests to measure it" (Schwab, 1983, p. 240).

Despite these concerns related to the overuse of C-BET, the TVET system, grounded in the dualism of an academic–vocational divide, has served the needs of industry throughout the last century and thus far into the current one. With the relative success of this approach, some might question the need to investigate its structure. I, however, suggest that changing demands associated with the 21st century call for a new

approach to TVET, and I question the ability of the old vocational model, meaning the industry-driven approach to program development, TVET instructors' lack of continuous professional development in curriculum theory, pedagogy, and technical skills, and the overuse of C-BET approaches to adequately prepare vocational students with the appropriate knowledge and skills for today's workforce, and for a future that is unknown with jobs that don't yet exist (Battelle for Kids, n.d.; Taylor & Freeman, 2011).

2.4. 21st Century TVET: A New Approach

As the end of the first quarter of the 21st century is fast approaching, evidence suggests that the very nature of the workplace will continue to change at an accelerated pace throughout the foreseeable future (Pfeiffer, 2015). Employees entering the workforce are a new generation of workers who have different expectations than their predecessors. Branson (n.d.) reported that this generation assumes workplaces will be innovative and creative, in which lifelong learning and growth are both expected and required and in which technology will allow for flexible working conditions. The concept of a job for life would not exist, leading to frequent changes in careers. As a consequence of these changes, the responsibilities for TVET instructors in the BC postsecondary system have changed significantly from the days of their predecessors whose skillsets served them for the lifetime of their careers. This evolutionary shift is a reflection of the 21st century pace of industrial change enabled by advances in technology, which in turn drives changes in tasks, materials, and tools. This accelerated pace of change has disrupted the long-standing history of mentorship so closely tied to apprenticeship and the mastery of craftsmanship (Rose, 2005), creating a need for instructors to continually update their own trade specific skillsets in order to teach current and relevant content (D. Cadeux & J. Skipsey, personal communication, April 15, 2019). Consequently, the historical practice of apprenticeship that relies heavily on the relationship between master and novice combined with TVET's utilization of standardized program outlines and C-BET methodologies based on the occupational analysis of existing trades is no longer appropriate. The TVET system must now investigate how best to prepare vocational students with the appropriate knowledge and skills for today's workforce while also

equipping instructors to teach students for a future that is unknown and for jobs that don't yet exist (Battelle for Kids, n.d.; Taylor & Freeman, 2011).

2.4.1. The 21st Century Workplace

Due to the diversity of the modern workplace and its associated fast-paced changes in technology, K. Schwab (2016) asserted we are now living on the edge of a 4th industrial revolution. This revolution, “characterized by a range of new technologies that are fusing the physical, digital and biological worlds, impacting all disciplines, economies and industries, and even challenging ideas about what it means to be human” (Schwab, 2016, “The Impact on People,” para. 1) is predicted to be a reality by 2020. Not everyone subscribes to this notion, and opinions differ as to whether the current blending of digital, biological, and physical worlds represents a 4th revolution or rather a continuation or evolution of the 3rd (Pfeiffer, 2015). Despite these differences in opinion, many authors agreed globalization, automation, and the reality of living with job insecurity are ubiquitous with the 21st century, and collectively these variables create new demands on workers that, in turn, demand a new approach to education as a whole, including vocational education (Billett, 2016; Pfeiffer, 2015).

Much of the current TVET model, including curriculum development, relies heavily on old vocational practices that aimed to teach what was already known and practiced within the industry. Consequently, the current model is deemed no longer adequate in preparing 21st century employees (Billett, 2016; Carey, Davis, Ferreras, & Porter, 2015; Grubb & Lazerson, 2005; Lucas et al., 2012; Pfeiffer, 2015; Taylor & Freeman, 2011). Collectively, these issues have led many to advocate for a new vocational model, claiming that it is TVET's responsibility to prepare graduates with the intellectual capacity to respond to rapidly changing landscapes of 21st century workplaces (Carey et al., 2015; Grubb, 1996; Lucas et al., 2012; Pfeiffer, 2015; Taylor & Freeman, 2011).

2.4.2. New Vocationalism

The term new vocationalism, first coined in the 1970s, speaks to the reform of educational systems, both academic and vocational, that aim to better prepare workers for the 21st Century. In the context of TVET, the term has been used by others such as Grubb (1996), Lucas et al. (2012), and Green (2000) in reference to the fundamental shift required to move TVET from its task-oriented and skill-specific focus toward the goal of preparing students for lifelong learning necessary for 21st century work. New vocationalism is, therefore, in response to requests from governments, businesses, and employers for skilled and adaptable people who have the intellectual capacity to respond to new methods and new technology and are prepared to pursue lifelong learning either independently or as a member of a team (Battelle for Kids, n.d.; Dede, 2010; Schwab, 2016; Voogt et al., 2012; WorkBC, n.d., 2014). These changing requirements place new demands on workers, which, in turn places additional requirements on the education system as a whole, including the role of the instructor.

As governments and educators alike scramble to determine how best to prepare students for an unknown future, rankings of in-demand skills have become a major influence in guiding educational program and policy development, government-led employment initiatives, and labour market strategies (Battelle for Kids, n.d.; Dede, 2010; Schwab, 2016; Voogt & Roblin, 2012). This approach, however, is not without its challenges, as demonstrated in Table 2.1. This table was originally produced by World Economic Forum (2016), entitled “Jobs for the Future,” and I adapted it to compare the top 10 employer requested competencies from 2015 to 2020. In doing so, I identified that seven of the listed core competencies in 2015 are predicted to change rankings by 2020. In addition, cognitive flexibility and emotional intelligence are introduced, replacing quality control and active listening. Changes this rapid present a challenge, especially for those working both on and within the educational system.

Table 2.1. Table to Reflect Changes in Predicted Competencies Over a 5-Year Span

| Predicted Top 10 Competencies in 2020 | The Top Competencies in 2015 |
|---------------------------------------|---------------------------------|
| 1. Complex Problem Solving | 1. Complex Problem Solving |
| 2. Critical Thinking | 2. Coordinating with Others |
| 3. Creativity | 3. People Management |
| 4. People Management | 4. Critical Thinking |
| 5. Coordinating with Others | 5. Negotiation |
| 6. Emotional Intelligence | 6. Quality Control |
| 7. Judgment & Decision Making | 7. Service Orientation |
| 8. Service Orientation | 8. Judgment and Decision Making |
| 9. Negotiations | 9. Active Listening |
| 10. Cognitive Flexibility | 10. Creativity |

Note. Adapted from World Economic Forum (2016).

In the same thread as the World Economic Forum (2016), The Economist, Intelligence Unit (2015) ranked “problem solving, team working, and communication” (p. 3) as the top three most in-demand skills. Similarly, the Partnership for 21st Century Skills (Battelle for Kids, n.d.) provided a framework to guide educators and, while promoting cross-curricula as an essential element for 21st century learning, identified four key skills entitled the “Four Cs” (The Economist, Intelligence Unit, 2015, p. 12) for 21st century learning: “communication, collaboration, critical thinking and problem solving, and creativity and innovation” (The Economist, Intelligence Unit, 2015, p. 12). Despite the variation amongst the terms used in identifying predicted skill requirements, a common theme is apparent throughout the literature that Voogt and Roblin (2012) have captured and categorized into the following three pillars: (a) transversal skills, meaning skills that are not directly linked to one occupation but relevant across many fields; (b) multidimensional skills, which combine knowledge, skills, and attitude; and (c) both transversal and multidimensional skills, which are to be merged with higher order skills and behaviours that afford the learner the ability to cope with complex problems and unpredictable situations (Voogt & Roblin, 2012; World Economic Forum, 2016).

The TVET system is not alone—the educational system as a whole has been influenced by the changing demands related to the 21st century. For example, in 2018, the Ministry of Education in BC launched the newly redesigned K–12 curriculum grounded in the notion that today’s technically rich world, in which knowledge and information change extremely quickly—disrupting ways of interacting socially, personally, and at work. This requires a significant shift in student learning outcomes (Government of BC, n.d.). The mission behind this redesign of curriculum is to prepare students for the future, recognizing that much of the future is unknown. As such, “the memory and recall of facts that previously shaped education around the globe for many decades” (Government of BC, n.d., para. 4) is no longer sufficient.

BC’s redesigned K–12 curriculum aims to prepare learners to succeed in the 21st century on the understanding that learners need to develop multifaceted ways of knowing, understanding, and performing (Government of BC, n.d.). To achieve this goal, the curriculum focuses on three key pillars: literacy and numeracy foundations, essential skills, and core competencies. Literacy and numeracy foundations include text literacy, number and financial literacy, visual literacy, and digital literacy. Essential skills are described as concept-based and competency driven, which is understood to be in complete contrast to competency-based education by placing more emphasis on deeper understanding of concepts, as opposed to the memorization of facts and information. Core competencies include three areas: creative and critical thinking, communication, and personal and social (Government of BC, n.d.). The Government of BC (n.d.) described these areas as sets of “intellectual, personal, and social skills that all students need to develop” (para. 11) in order to engage in deeper learning.

From my review, it appears that BC’s redesigned K–12 curriculum is student centred and grounded in the theory of constructivism, allowing for more emphasis to be placed on deeper understanding of concepts and the application of processes than on the memorization of isolated facts and information (Government of BC, n.d.). My own view is that this approach to learning will provide more flexibility for both teachers and learners, as all areas of learning are now based on a know–do–understand model that allows teachers to create authentic and culturally appropriate learning opportunities so

that students can take ownership and responsibility for their learning and ultimately meet 21st century learning outcomes.

In order for K–12 teachers to shift to this learner-centric, authentic, and culturally appropriate concept-based curriculum, the Ministry of Education must redefine their role, by stating responsibility for “‘what’ to teach but not the ‘how’ to organize time, space, or methods to teach it” (Government of BC, n.d., Flexible Learning Environments section, para. 2). The how of teaching is now placed clearly in the hands of the school system and, ultimately, the teacher. Another significant change to teachers’ daily practice is the shift in assessment. Students historically have been graded throughout their K–12 years utilizing a series of standardized exams and predetermined outcomes, but in the new model students in years K–9 will not take standard level exams, nor will students receive grades (Government of BC, n.d.). Alternatively, they will receive regular classroom assessment in the form of formative and summative feedback. There are no changes to assessment in Grades 10–12 (Government of BC, n.d.).

Overall, BC’s redesigned K–12 curriculum has responded to the changing demands of the 21st century. Much of the success of this curriculum redesign appears to rest primarily in the hands of the school administrators and teachers and their pedagogical approaches. For this reason, I suggest the success of these outcomes not only require changes in teachers’ daily practices, but they may also necessitate changes in teachers’ mindsets and personal teaching philosophies (Battelle for Kids, n.d.; Joseph, 2000).

My purpose for this brief discussion regarding changes to the BC K–12 curriculum and pedagogical approaches is that BC’s TVET system will soon be impacted by these changes. By the year 2022, graduates of this new curriculum will enrol in postsecondary TVET programs prior to entering the workforce. These students will have experienced concept-based learning in a know–do–understand environment throughout their K–12 years, fostering innovation and creativity in an environment in which they took ownership and responsibility for their learning. In my opinion, collectively, these pedagogical approaches, grounded in constructivism, can be seen to stand in stark contrast to competency-based education and the current TVET system.

2.4.3. Paradigms Collide

Aware of the changing goals facing education and educators driven by 21st century demands, Voogt and Roblin (2012) suggested that it is time for teacher and instructor training to change, claiming, “The teacher’s role today is to model a filtering, problem solving, critical reflection frame of mind in a relationship where both teacher and student become interrogators of knowledge” (p. 20). As demonstrated in Table 2.1, complex problem solving is consistently ranking high on the list of in-demand skills for the 21st century, meaning that vocational instructors and workers require higher levels of literacy and numeracy than in previous times (Lucas et al., 2012; Rose, 2005; Taylor & Freeman, 2011; Worthen, 2012). These instructor characteristics can be seen to differ from those previously associated with vocational curricula. As Joseph (2011) claimed, “It is feasible that instructors teaching in the system may not share the same perspective for change, leaving them ill equipped and without the competencies to teach from a different culture” (p. 21).

Concerned with the impact of changing demands on instructors, Dede (2010) suggested the implementation of 21st century skills requires a two-prong approach: first, it requires a trading of current content and goals of education and, second, for instructors to embrace these changes it requires an unlearning of existing beliefs, values, assumptions, and perceptions. Concurring with Dede’s (2010) views, Joseph (2011) claimed existing belief structures must be addressed during the process of change, stating a “re-culturing curriculum cannot succeed where beliefs and visions are incongruent with the institutional structure” (p. 72).

Changes significant as those discussed also pose pedagogical challenges for instructors, which Voogt and Roblin (2012) claimed is evident in their data collected regarding the implementation of 21st century competencies. Furthermore, they claimed this issue left both teachers and administrators wondering how newly required skill sets were to be acquired (Voogt & Roblin, 2012). This is because successful adaptation from old to new paradigms of vocationalism requires a review of current teaching and learning practices in order to develop a better understanding of what the current state of play is,

and then to determine how to foster learners' innovation, agility, and adaptability in preparation for a new industrial and economic reality (Carey & Ferreras, 2017).

Given the enormity of this paradigm shift, Rose (2005) suggested that such a review must look beyond current teaching and learning practices and begin with an investigation in to the hidden intelligence of the vocational worker. This, he claimed, could only be achieved through turning the epistemological table away from its current binary lens (Rose, 2005). Concurring with this notion, Billett (2016) stated that it is time to view trades from a lens that captures the combination of knowledge and skill required for occupational competence, thereby shifting the focus away from competency-based curriculum laden with predetermined content to be covered. There are others alongside Billett (2016) and Rose (2005), such as Taylor and Freeman (2011), who advocate for a new model of vocationalism. They, too, have called for a reimagining—a restructuring of schooling that starts by disrupting the fundamental underpinnings supporting the traditional academic–vocational divide (Billett, 2016; Rose, 2005; Taylor & Freeman, 2011). Curricula, they claimed, should merge rather than reinforce the separations of disciplines if students are to be prepared cognitively for the workplaces of the 21st century (Billett, 2016; Rose, 2005; Taylor & Freeman, 2011). Resting on Eisner's (1985) notion that “curriculum defines a culture of opportunities provided, or opportunities denied” (p. 103), I agree that a merging of curricula will lead to a deeper theoretical understanding of both practical skill and knowledge.

This notion to merge curricula was first brought to light by Dewey (1916), who argued that education from manual skills to scientific principles could be best taught and learned, not for occupations but rather through occupations. Schools today, following Dewey's (1916) principles, develop curricula that merge disciplines “and find in the occupational world rich educational content, that blend learning and doing through projects, public presentations, and portfolios of creative and scholarly work” (Rose, 2005, p. 182). The Two Rivers Charter School provides an example of Dewey's theory in action and demonstrates a cross-curricula inquiry based learning opportunity for Grade-1 students (The Economist, Intelligence Unit, 2015). Students taking part in this authentic learning opportunity operate an in-school Snack Shop that serves the needs of the whole

school while providing learners the opportunity to develop hands-on financial literacy and gaining entrepreneurial skills through conducting economic studies and customers surveys to increase revenue and profit margins (The Economist, Intelligence Unit, 2015).

In the context of trades, some TVET programs have taken a similar approach by offering authentic experiential learning opportunities through the operation of auto shops, bakeries, salons, and spas that provide services to the general public. At first glance, these learning environments take on the façade of industry, yet, without the economic pressure of business, they provide real-life problem-based learning opportunities for students to develop and apply knowledge and skill at the situational level in a safe learning environment with the support of their instructors (Rose, 2005). Authentic experiential learning opportunities such as these are intended to encompass the cognitive actions of experiencing, reflecting, thinking, and acting, which situates theory in action with practice (Kolb & Kolb, 2009).

However, it cannot be assumed that all hands-on experience provides the essential elements of experiential learning. I concur with Billett (2016), who stated that in order for instructors to foster learners' conceptual understanding within a particular occupational practice, the focus must remain on what the student learns throughout the experience and not on the prespecified outcome. Billett's (2016) notion that values experience over outcomes can be seen to differ from the aims of C-BET in which competencies are clearly defined upfront and measured using predetermined criteria. A shift from the paradigm of C-BET requires change to instructional practice, which may require the upskilling of many teachers enabling them to effectively foster higher order thinking skills at the same time as teaching content and practical skills, and, "for some school systems, this would mean a complete reinterpretation of the role of a teacher" (The Economist Intelligence, 2015, p. 12).

2.5. Blurring the Lines Between Academic and Vocational

Students entering the 21st century workforce will need access to theoretical knowledge as well as skill-based training (Wheelean, 2015; Young, 2013), which has

led to decisions to blend curricula across the vocational–academic divide. However, changes this significant require fundamental modifications to existing curriculum and pedagogy, and to existing belief structures, all of which have the potential to disrupt institutional and personal teaching philosophies (Joseph, 2000). It might go without saying, not all educational institutions have bought into this idea, which has resulted over the years in curricula add-ons and minor adjustments (Grubb, 1996) in which changes to the curriculum have been made only at the surface level. Essential skills courses have been added to many of the trades programs in BC to correct gaps in the current program outlines or to meet changing demands in industry (ITA, n.d.-a). Critics of this practice claim the addition of in-demand courses such as technology, essential skills, and critical thinking components, results in a curricula that is “a mile-wide but inch deep” (The Economist, Intelligence Unit, 2015, p. 19), thus diluting all elements of the curriculum.

My view is that the addition of in-demand knowledge and skills, deconstructed from context and theory, represents a mindset that overlooks the complexity of curricula, which is articulated in the following statement made by Joseph (2011):

The need to consider changes in curricula alone will not succeed – leading us to look further at what is taught, and towards learn[ing] if people who teach in the culture, or advocate for it, identify with the ideas expressed, or remain in beliefs established decades or centuries ago. (p. 30)

Indeed, blurring the lines between vocational and academic curricula in the 21st century draws attention to the long-standing separation between these two paradigms and the individuals working with curricula, acknowledging that instructors vary in their pedagogical beliefs and recognizing that some belong to one school of thought, and some to another. This discussion also highlights the notion of turf wars, in which those holding academic knowledge in higher status are resistant to fundamental change, grounded in the belief that vocational education is purely mechanical, procedural, and utilitarian (Rose, 2005).

2.6. Curriculum Studies – Orientations, Ideologies, and Cultures

Since TVET is situated within a broader context where other curriculum ideas exist, there is a need to analyze the coexistence of multiple curricula discourses that may influence instructors' viewpoints from the outside (Cuban, 1993; Eisner, 1985, 2005; Joseph, 2011; Schwab, 1969). Analysis of curricula exposes underlying epistemological, political, economic, and social belief and value structures that collectively represent particular schools of thought (Joseph, 2000). Each school of thought, worldview, or orientation prioritizes one form of knowledge over another. It is from these underpinning belief and value structures that perceptions are formed in regards to the purpose of schooling, the role of the teacher, and the capacities of the learner (Billett, 2001a, 2001b, 2003; Bruner, 2010; Joseph, 2011; Rose, 2005). Consequently, such beliefs shape what is taught and determine which pedagogical approaches are deemed appropriate (Lucas et al., 2012; Nesbitt, 2000).

Thus, curriculum studies provide a means to understand curricula beyond the official and publicly stated goals of the school or higher-educational institutions. In doing so, it serves to illustrate the perceptions held by multiple groups of stakeholders in regards to the purpose of education, the role of the teacher, and the intellectual capacities of the learner (Cuban, 1993; Eisner, 1985; Grubb, 1996; Joseph, 2011; Nesbit, 2000; Rose, 2005; Schiro, 2008; Schwab, 1983). On the notion that successful change in the culture of education begins through gaining an understanding of the existing beliefs and values held by all stakeholders (Joseph, 2011), this exploration of literature provided a foundation for this study, while exposing a coexistence of multiple curricula cultures that is discussed throughout this review.

2.7. Analysis of Curricula: Frameworks Discussed

This study is both informed and guided by Joseph's (2000) cultures of curriculum framework, which builds on Schwab's (1983) four commonplaces model, Eisner's (1985) notion of multiple curricula, and Cuban's (1993) framework of inquiry, which claims discrepancies exist between the official, taught, learned, and tested curricula, as well as

Schiro's (2008) curriculum framework for inquiry. All of these frameworks are discussed and compared in this section of this review.

I begin by defining the term curriculum as it pertains to this study. In doing so, I borrow J. J. Schwab's (1983) definition of curriculum because it captures the multifaceted complexity of curricula and draws no line between curriculum and pedagogy:

Curriculum is what is successfully conveyed to differing degrees to different students, by committed teachers using appropriate materials and actions, of legitimated bodies of knowledge, skill, and taste, and propensity to act and react, which are chosen for instruction after serious reflection and communal decision by representatives of those involved in the teaching of a specific group of students. Who will differ from to time-to-time and place to place. (p. 240)

J. J. Schwab (1983) also identified what curriculum is not, claiming that curriculum is not an endless string of objectives determined by outside governing bodies or specialist in the subject matter, or curriculum specialist, or teachers wielding academic freedom, or parents, students, and legislators. J. J. Schwab's (1983) purpose for defining what curriculum is and what it is not paved the foundation for his following argument, in which he stated curriculum should result from deliberations between all of the constituents mentioned above, noting that not one member is to be valued more over another.

For J. J. Schwab (1983), the failing of curriculum is the result of limited people and perspectives involved during development. Concurring with this notion, Eisner (1985) emphasized that group deliberations provide a variety of perspectives, "including the pros and cons from an educational, practical, psychological, and social point of view" (p. 169). This conceptualization of group deliberations as a means to improving and developing curriculum was a considerable shift from the standard practices at that time when theory (i.e., what to teach) dominated the conversation (Schwab, 1983).

J. J. Schwab's (1983) framework for inquiry conceptualized curriculum using four commonplaces: the learner, the subject matter, the teacher, and the social and cultural milieu of the school. J. J. Schwab offered these four commonplaces as a practical

framework and action plan for facilitating curriculum corrections and development. J. J. Schwab's (1983) somewhat radical notion proposes a curriculum development model consisting of members representing all four commonplaces (meaning they share and have influence on the same educational space either literally, figuratively, or theoretically speaking), and through methods of deliberation the group collectively provide the necessary bodies of knowledge and experience that he believed necessary to make curricula decisions (see also Joseph, 2013). When asked who should be a member of this group, J. J. Schwab (1983) responded by stating, "The first answer to this question is the teacher. Again, and louder: THE TEACHER" (p. 245). This statement captures the enormous value J. J. Schwab (1983) placed on the teacher's involvement in curriculum development. He also asserted a curriculum specialist should guide the curriculum making process so as to facilitate dialogue and to diffuse historical hierarchies that exist between members (i.e., subject experts holding theoretical knowledge are historically held in higher regard by some, compared with teachers whose knowledge is considered practical), which requires a neutralizing and diversion of biases for inquiry purposes throughout the process (Schwab, 1983). Some researchers have referred to the role of curriculum specialist within this model as the fifth commonplace (Kridel, 2010).

Other researchers have built on J. J. Schwab's (1983) framework for curriculum inquiry and development, including Eisner (1985), author of the *Educational Imagination*, who guided his inquiry into curricula by asking questions in the following four categories: What are the overarching aims of the school? What is the content of the curricula, and what body of knowledge does it value over another? What is the role of the teacher, and what and how are the criteria applied to assess the quality of schooling? Eisner's (1985) approach follows similar themes to that of J. J. Schwab's (1983) commonplaces and reflects the notion that curricula are complex and multifaceted.

Eisner (1985), having investigated curriculum using the four categories listed above, presented the following framework, claiming five curricula orientations exist within the North American school system: development of cognitive processes, academic rationalism, personal relevance, social adaption and social reconstruction, and curriculum as technology. In the section that follows, I have provided a brief definition of each

orientation according to Eisner (1985). In doing so, I have expanded on Eisner's (1985) understanding by providing viewpoints from other scholars advocating within each orientation. In addition, I provide examples of areas in which I see curricula today fitting within this five orientation framework. The purpose of this overview is to provide a foundational understanding to rest subsequent discussions that will position TVET within the broader context of curricula orientations.

2.7.1. Eisner's Five Orientation Framework

Orientation 1: Development of Cognitive Processes

The fundamental principle underpinning this cognitive approach to learning is grounded in the notion that the mind operates in a similar manner to a computational device. The cognitive perspective states, "when learning occurs, information is input from the environment, processed and stored in memory" (Driscoll, 2005, p. 74). Therefore, school is understood to be the place where the learner will learn how to learn through activity in deliberate intellectual opportunities aimed to exercise and strengthen the independent faculties of the mind (Merriam & Bierema, 2014). This understanding prioritizes the process of learning over that of the curriculum content, on the understanding that the learner is passive bringing no prior knowledge or intrinsic curiosity or motivation in their acquisition of knowledge (Eisner, 1984). Additionally, knowledge within this paradigm is understood to be hierarchical, meaning that lower-level information must be delivered in a linear approach before higher levels of knowledge, so as to develop a system of mental processing that leads to knowledge acquisition (Kridel, 2010). Besides influencing the pedagogical approaches to learning, beliefs underpinning this orientation have also influenced epistemological decisions favouring scientific principles that can be memorized over more creative aspects of learning.

Development of cognitive processes, situated within the cognitivist movement, was partly fuelled by those challenging behaviourists' theories. For example, the Gestalt psychologists "found behaviourists' explanation too simple, too mechanized, and too dependable on observable behaviour" (Merriam & Bierema, 2014, p. 31). However,

despite the differences underpinning behaviourism that focused on observable changes, compared to cognitivism's representation of learning as a mental processing of knowledge, both theories "recognize knowledge as existing independently from the learner" (Kridel, 2010, p. 345). This understanding, based on the assumption that knowledge preexists and can, therefore, be taught, influenced not only pedagogic approaches, but also perceptions regarding the potential learning outcomes of this orientation. For example, in 1957 when Russia sent up its first satellite, which Bruner (1996) referred to as the Sputnik shock, the American school system, now seen to fall behind Russia, embarked on a restructuring grounded in theories of cognitivism in an attempt to promote scientific thinking.

Orientation 2: Academic Rationalism

Academic rationalism aims to foster intellectual growth through access to the greatest works in pursuit of truth, justice, and knowledge. Content within this curricular orientation is a central value, which differs significantly from the development of cognitive processes orientation in which the act of process is valued over content. Academic rationalism, also referred to as liberal arts education, claims to be integral to democracy by maintaining that a classic education is for all citizens and that, without such a system, intellectual difference will lead to social stratification (Eisner, 1985). Advocates such as Hirsch (1987) concurred with this position claiming,

[A] literate culture is the most democratic culture in our land: it excludes nobody; it cuts across generations and social groups and classes; it is not usually one's first culture, but it should be everyone's second, existing as it does beyond the narrow spheres of family, neighborhood, and region. (p. 21)

The goal of education within this curriculum is to acculturate the young into "civilization's accumulated knowledge and ways of knowing, and on a cultural level, through the discovery of new knowledge" (Schiro, 2008, p. 23). The educator within this context is seen as an oracle of knowledge and expert pedagogue that leads learners to access the great works through the art of Socratic reasoning and the writing of essays that will shape the mind. Fundamental to this paradigm is the understanding that students alone cannot access knowledge stored within the canon without direct instruction.

Not all accept or share this perspective, claiming that the liberal arts canon represents an excessively Western curriculum that is elitist, class bound, male dominant, Anglo Saxon, Protestant, racist, and sexist, that explicitly ignores “non-western intellectual, spiritual, and moral contributions” (Joseph, 2000, p. 67), thereby disregarding oral traditions and the concept of multiple realities. In response to this critique that is shared by many, Gardner (2000) argued, “Certain features ought to characterize good education—or, more properly, good educations—everywhere in the world” (p. 16), claiming that three critical concerns should live within all curricula: the true, the beautiful, and the good. Reflective of the platonic traditional educational vision, Gardner (2000) asserted the disciplines represent people’s best efforts to think systematically about the world, “and that which is crucial about philosophy, art, and morality has been encoded in one or more scholarly disciplines” (p. 38). However, in light of multiculturalism, and postmodernist critiques, Gardner (2000) proposed a pluralistic canon, one that can change and draws from different historical, cultural, and ideological sources (p. 58).

Orientation 3: Personal Relevance

Personal relevance privileges the individual development of learner over the curriculum content within this orientation. Within this orientation the learner is understood to be a stimulus-seeking individual filled with a biological desire to engage in learning. Rousseau’s (1911) philosophy reflects these belief structures, in which the teacher is seen, metaphorically, to take on the role of a gardener by nurturing the growth of the individual (Eisner, 1985). Child-centred philosophies such as the Montessori method and the Waldorf School system sit within this paradigm, focusing in particular “on the whole person including body, mind, and spirit, and the potential for humans growth and development” (Merriam & Bierema, 2014, p. 29). This particular culture of curriculum has been described by Bravmann (2011) as “developing self and spirit” (p. 73), claiming the assumption embedded within this curriculum is first and foremost “that students need love, safety, freedom, to be able to learn” (p. 111).

Orientation 4: Social Adaption and Social Reconstruction

Social adaption and social reconstruction differ considerably in the direction taken to serve the interests of society. First, the aim of social adaption is to reinforce the status quo of society by responding to the demands of the day, both societal and economic. Schools situated within this paradigm aim to provide education that meets the immediate issues of that time and place (Eisner, 1985). For example, today we see the public high schools responding to the current opioid crisis, and the recent legalization of cannabis across Canada, through the inclusion of drug awareness programs such as Cannabis Dialogue (Government of BC, 2017).

Adjustments to curriculum content within this paradigm are also made according to the economic needs of society when gaps in the workforce appear or new initiatives call for a new kind of worker. An example of this can be seen in BC through the implementation of the career tech programs in which Grade-11 and Grade-12 students can attend postsecondary trade schools during their high school years. The career tech program is a direct response to the government's initiative to meet the demands related to the skilled worker shortage predicted to occur in 2020 (WorkBC, 2014).

Second, social reconstruction curriculum content is also driven by the current needs of society; however, it takes an alternate and radical view on what society needs by looking to explore controversial issues of the time, claiming that schools are oppressive systems that reinforce the existing power structure (Eisner, 1985). From this standpoint, all curricula are understood to be politically charged; therefore, if curricula are not aiming actively to disrupt the status quo, they are, by default, reinforcing it (Dewey, 1916; Grubb, 1996; Schiro, 2008).

Orientation 5: Curriculum as Technology

Curriculum as technology is seen to operate within a business model, prioritizing efficiency and effectiveness overall. Within this orientation, curriculum is generally standardized, workbooks prescribed, and learning is sequential, with all units being measured to ensure learning has occurred (Eisner, 1985). The roots of this orientation are grounded in behaviourism and defined by its focus on behavioural changes, as opposed to

changes in internal mental processes. Traditional trades and vocational education fit within this paradigm and are associated with competency-based curricula in which behavioural objectives specify particular outcomes (Merriam & Bierema, 2014). Based on my work experience, the current ITA governance model for trades in BC exemplifies this belief structure and is reflected in their use of standardized program outlines, prescribed competencies and assessments tools, along with the parameters set for program hours, duration, and competency weightings for all Red Seal trades within BC.

Summary of Eisner's Five Orientation Framework

To summarize, Eisner's (1985) defining of orientations organizes a multitude of curricula decisions and practices into categories that provide insight into the belief and value structures held within each grouping. Joseph's (2000) theoretical framework encompasses this belief, claiming that curricular orientations, therefore, offer "shared systems of meanings" (p. 16), making it possible to interpret rationally the epistemological, political, economic, and social belief and value structures that each curriculum aims to teach. Likewise, stressing the influence these philosophies have on everyday practice, Eisner (1985) claimed, "These orientations are permeated through and through with values that shape one's conception of major aspects of practice" (p. 83).

2.7.2. Eisner's Five Orientation Framework Compared with Schiro's Four Curriculum Ideologies

On a similar thread to Eisner's (1985) notion of five orientations, Schiro's (2008), author of *Curriculum Theory: Conflicting Visions and Enduring Concerns*, explored curriculum through the analysis of actions and beliefs held by North American educators. In doing so, he claimed four curriculum ideologies exist within North American educational institutions: scholar academic ideology, social efficiency ideology, learner-centred ideology, and social reconstruction ideology. When comparing Schiro's four curriculum ideologies alongside Eisner's (1985) five curriculum orientations, the fundamental tenets, beliefs, and actions embedded in scholar academic align with Eisner's academic rationalism, as do the learner-centred ideology with personal relevance orientation, and social reconstruction ideology with curriculum as technology. However,

while both Eisner (1985) and Schiro (2008) found commonalities in three areas of curriculum as noted, Eisner's development of cognitive processes orientation is not captured within Schiro's framework. This difference may be linked to the researchers' years of inquiry—Eisner's in 1985 compared to Schiro's in 2008—noting that Eisner followed the progression of curriculum development dating back to the mid 20th century. In doing so, Eisner (1985) captured a time when the popularity of cognitive approaches fuelled the restructuring of the American school system led by Bruner (1966), following the sputnik-shock in 1957.

My opinion is that Schiro's (2008) absence of a curriculum orientation grounded in cognitivism is a reflection of curricula's evolving nature. Young (2013) reminded researchers that there is no one answer regarding what a curriculum should address:

Societies change, so every generation has to ask those questions again...On the one hand, as educators we have the responsibility to hand on knowledge discovered by earlier generations... and on the other hand, the purpose of the curriculum, at least in modern societies, is not only to transmit past knowledge: it is to enable the next generation to build on that knowledge and create new knowledge, for that is how human societies progress and how individuals develop. (p. 102)

It is easy for me to accept Young's (2013) notion that curricula are of a dynamic nature, responding to the changing perspectives and demands of multiple stakeholders regarding their collective views on the purpose of schooling. This is because I have lived through many curricula reforms throughout my own education journey and spanning my professional career, but also the comparison of curricula frameworks such as Eisner (1985) and Schiro (2008) delineates the journey of evolution.

2.7.3. Curricula's Evolving Nature

The evolutionary nature of curricula is captured in Bruner's progression from cognitivist theories to the introduction of conceptualization in 1996. Bruner who, having led a restructuring of the American school system initiative in the late 1950s and early 1960s, grounded in cognitivism, then later introduced the concept of contextualization in his presentation entitled, *The Culture of Education* in 1996. The notion of

contextualization disrupted previous concepts of the mind as a computational device. Bruner (1996), in agreement with Piaget (1972) and Vygotsky (1978), argued the process of meaning making by the human mind was dependent on context and could not be understood purely as a computerization. Bruner (2010) stated, “How the mind works is itself dependent on the tools at its disposal” (p. 160), claiming that the mind’s functions vary “depending on whether it is equipped with a screwdriver, a pair of scissors, or a laser beam gun” (p. 160). Rose (2005), much later, elaborated on this notion, claiming that knowledge of the tool does not erase the need for thought. For example, Rose noted different kinds of wood respond differently to nail, saw, plane, and sandpaper. The point Rose was making referred to the harmony between mind and tool, in which meaning making occurs and requires “the mind’s best work” (p. 72), including attention, perception, judgment, knowledge, and value. These statements reflect the fundamental underpinnings of constructivism, in which emphasis is placed on the teacher, the learner, and the context, as joint makers of meaning. In other words, knowledge and understanding are dependent on, and mediated by, the context in which the learning is situated (Kridel, 2010).

Thus, the claims made by Bruner (1990) and Rose (2005) regarding the symbiotic relationship between tool, mind, and context, reject the notion that the human mind can be conceived purely as computational device because the process of meaning making relies heavily on context. In addition, most importantly for this research, the model of the human mind to which educators and administrators adhere, shapes both epistemological and pedagogical decisions and, ultimately, curriculum orientations (Bruner, 2010; Cuban, 1993; Dewey, 1916; Eisner, 1985; Joseph, 2000; Rose, 2005). In summary, Schiro’s (2008) absence of an ideology aligning with Eisner’s (1985) development of cognitive processes orientation suggests that conceptions about the nature of how the mind works have altered and evolved, and, in doing so, have brought forth the notion that definitions of intelligence are shaped over time (Rose, 2005).

2.7.4. The Concept of Multiple Curricula

Thus far I have discussed and compared the conceptual frameworks of Eisner (1985) and Schiro (2008), since they provide a means to interpret rationally the epistemological, political, economic, and social belief and value structures that each curriculum aims to teach. However, according to Eisner (1985), a further level of analysis is required because schools teach much more than what is made public and explicit. Embedded within curricula are elements that are unseen, unspoken, or hidden, which led Eisner (1985) to explore the notion of multiple curricula, claiming that all schools teach three curricula: the explicit, the implicit, and the null. Under a similar premise, Cuban (1993) suggested every time educators speak of curriculum, they should first ask, “Which curriculum?” (p. 183), because “the official curriculum is only one of four curricular in schools, and for students it may be the least influential” (p. 183).

Cuban’s (1993) framework for inquiry rests on the notion that discrepancies exist between the official, taught, learned, and tested curricula, asserting that despite some overlap between each four components incongruences exist due to the human element. It is at this point of inquiry that the prime unit of analysis used by Eisner (1985) and Cuban (1993) resides within what Aoki (1999) referred to as the curriculum-as-lived. Aoki (1999) claimed the standard way of thinking about curriculum is to perceive it as a master plan, one that mandates what must be taught and learned. However, he suggested an alternative view through the conceptualization of curriculum both as-lived and as-planned (Aoki, 1999). In doing so, Aoki (1999) drew attention to what exists daily within the dynamic setting of the classroom between student and teacher, during the “planned and the unplanned, [and] between the plannable and the unplannable” (p. 180). Aoki (1999) was not proposing the lived and planned curriculum exists as a binary, but rather he suggested the notion of a dwelling space in which both curricula come together.

Decisions made by outside groups of multiple stakeholders strongly influence both teachers and their pedagogies throughout their daily practice and classroom life. For example, many accepted practices are directly connected with the outside world, such as the use of space and time, discipline and control, and the use of textbooks, testing, and

grading (Nesbit, 2000). For Engeström (2001), this collective of familiar practices is a middle level of curriculum, which aligns with Aoki's (1999) notion of the place in which the lived-and-planned curriculums dwell. I am in agreement with these perspectives because they draw attention to the outside influences that shape instructors' curricula and pedagogical decisions. In doing so, I believe the line between curriculum and pedagogy is blurred, recognizing the two as one symbiotic entity.

Implicit Curriculum

Having briefly touched on the notion of curriculum as both planned and lived, I return now to Eisner's (1985) and Cuban's (1993) views related to multiple curricula. For both researchers, the official curriculum includes course outlines and outcomes that publicly address the main aims and visions of the school (Cuban, 1993; Eisner, 1985). The implicit curriculum differs from the official in the sense that its goals are not clearly stated, nor are they assessed or measured in an explicit way. The implicit curriculum for both Eisner (1985) and Cuban (1993) plays out within the classroom, like that of Aoki's (1999) curriculum-as-lived. Similarly, Kridel (2010) referred to the zone in which curriculum and teaching meet, claiming that the implicit curriculum is immersed in an area of subjectivity where minute-to-minute, face-to-face, decision making takes place between teacher and student.

Another example of the implicit curriculum from Eisner's (1985) perspective includes the fostering of competitiveness amongst students, as the most commonly used method to develop competitiveness amongst students is through the administering of grades (Billett, 1996; Dewey, 1916; Rose, 2005). Given that students receiving higher grades for superior academic performance also receive privileges such as access to more advanced academic curriculum (Eisner, 1985), while students receiving lower grades may be limited to a narrowly focused curriculum such as vocational training based on the understanding that the student is more practically minded (Billett, 2001a, 2001b; Dewey, 1916; Green, 2000; Rose, 2005), there is evidence of outside influences seen to be at play. Eisner (1985) captured the deliberate actions required on the teacher's behalf in order to develop a competitive frame of mind amongst students; yet, while these practices may reflect the values of the society, industry, and the school, they are not articulated

within the official curriculum. To summarize, in the context of grades the implicit curriculum fulfills the needs of outside stakeholder groups through a series of deliberate actions within the school system that reflect societal belief structures (Eisner, 1985; Engeström, 2001).

For Kridel (2010), Aoki (1999), Eisner (1985), and Cuban (1993), an aspect of the implicit curriculum occurs when it is filtered through the teacher's values and belief structures. The importance paid to the teacher's filtering of curriculum is a common theme found throughout the literature and is central to this study. This is because the questions that guided this study aimed to explore the perceptions that shape instructors' curriculum choices; this is grounded in Joseph's (2000) notion that successful change in the culture of education begins by gaining an understanding of the existing culture of curricula that is held within the beliefs and values of key stakeholders.

Modification of Learners' Behaviour

Embedded within the implicit curriculum are other practices that relate to the modification of the learners' behaviours. For example behaviour modifications include practices such as time management and punctuality skills, both of which are reinforced daily within TVET programs where consequences are given for lateness and absenteeism and yet the outcome of obedience is not articulated in the official curriculum (Worthen, 2012). This practice reflects the notion that students are being trained at school for good work habits and obedience (Green, 2000). The beliefs behind these practices remain hidden and absent from the official curriculum, raising questions about who this serves (Beyer & Apple, 1998; Billett, 2016; Nesbit, 2000).

Hidden Curriculum

Elements of the implicit curriculum such as competitiveness and behaviour modifications brought to the forefront by Eisner (1985) and Cuban (1993) are features of classroom life that Jackson (1968) considered components of the hidden curriculum. Jackson claimed specific skills taught and learned in schools such as "learning to wait quietly, exercising restraint, trying, completing work, keeping busy, cooperating, showing allegiance to both teachers and peers, being neat and punctual, and conducting

oneself courteously” (p. 5) brought about rewards to students in school, yet had little to do with educational goals.

These elements of schooling aimed towards the socialization of students into an existing social structure are one aspect of what many consider to be the hidden curriculum (Dewey, 1916; Green, 2000; Merriam, 2001; Worthen, 2012). This concern is shared by Rose (2005), who shed light on the fact that vocational education is taught without mention of social status, yet such consequences exist. Furthermore, as Margolis (2001) asserted, the reason such content remains hidden is because “many kinds of socialization will not work if made visible, specifically intentional forms such as subordination, discrimination, and hegemony that come at the expense of others” (p. 3). To summarize, the implicit curriculum is subject to the influences of outside stakeholders and the reinforcement of societal norms as well as being subject to instructors’ values and beliefs systems.

An example of the hidden curriculum can be seen today in 2019 where trades and academic faculties coexist at BC’s regional universities. On the face of things, all students and faculty are either enrolled or employed under the university title. However, behind the scenes a clear divide exists. Faculty members are divided into two separate unions, one for academic and one for vocational. Collective agreements differ between the two unions, resulting in longer direct teaching hours for those teaching in trades than those teaching in academics; less professional development funding for trades instructors than academic faculty, and differences in research opportunities and sabbatical release, again favouring the academic faculty.

For students this divide is worth discussing in more detail because it relates to the grading system. Grades granted in the trades faculties are coded with the letter T, meaning terminal grade. Unbeknownst to most trades students, and many faculty members too, this coding means that students’ grade-point averages do not transfer outside of trades. This practice has been generally accepted until recent years.

However, the introduction of regional universities in BC has brought forth new initiatives and opportunities, such as pathways for students to progress and transfer

between trades and academic programs, and vice versa, which has triggered student demand to pursue higher education following the completion of a trades credential. As a result, Thompson Rivers University (TRU) and VIU have initiated such pathways and advocated for T grades to transfer to academic programs. The upshot of this both TRU and VIU now award 60 transfer credits as an equivalency of the RSE, which provides trades students with 2 years of credit toward a general undergrad degree.

Null Curriculum

Unlike the explicit, implicit, and hidden curricula, the null curriculum refers to what is not taught. Eisner (1985) claimed, “What schools do not teach may be as important as what they do teach” (p. 97). Eisner (1985) further noted, when exploring what is missing, it is important to first consider which “intellectual process” (p. 98) are emphasized and which are neglected, and then to ask whether these decision were deliberate, or resulted from ignorance. It is at this point that an overlap between the hidden and the null curricula is exposed. If, as Eisner (1985) stated, these decisions to null the curriculum are found to be deliberate, then these decisions can be understood to reflect notions of both a hidden and a null curricula.

Decisions are made within each orientation of curriculum as to which capacities will be enhanced, and as a consequence of this choice others will be neglected (Eisner, 1985; Schiro, 2008). Take for example the emphasis on skills training within vocational programs, which has led to the use of C-BET curricula that deliberately focuses on skill performance, while minimizing and deconstructing theoretical knowledge into task specific units (Billett, 2016; Merriam, 2001). This emphasis on skill development within the structure of C-BET, although not hidden, does fall in to the category of what Margolis (2001) referred to as “hidden in plain sight” (p. 3). Yes, the lessening of theoretical content is there for all to see, but hidden within these decisions are beliefs and values relating to the status of disciplines, and the hierarchies of higher education that, in turn, continue to reinforce the notion that two systems of education are required, one for mind, and one for body (Billett, 2016; Rose, 2005).

Another example of null curricula that overlaps with Jackson's (1968) notion of a hidden curriculum is found in trades training when programs include an employability skills component within the official curriculum, but fail to explore a variety of business models, including the rights of workers and the role of the trade unions (Nesbit, 2005). Elaborating on this issue, Worthen (2012) presented statistics comparing the workplace fatality rate between the United States and the United Kingdom, claiming that in 2008 the United States rate was six times greater than the United Kingdom. Based on these statistics, Worthen (2012) drew up a list of questions a worker needs to know regarding health and safety issues and workers' legal rights. The point that Worthen (2012) strove to make is "the curriculum that could provide [workers] the answers to these questions is not something he can learn on demand, at the moment he needs it" (p. 194), claiming that such knowledge should have been part of preparation for work. These omissions from the curriculum are seen to reflect a specific view on employment that is biased towards the view of the employer leading to questions, once again, about who this serves (Beyer & Apple, 1998; Billett, 2016; Nesbit, 2000).

Taught and Learned Curricula

Cuban's (1993) view on multiple curricula differed somewhat from Eisner's (1985). For Cuban, the implicit curriculum is divided into two key areas: the taught and the learned curricula. This notion is grounded in the understanding that each teacher brings with them a unique set of personal belief and value structures that play out in the classroom (Cuban, 1993; Dewey, 1916; Eisner, 1985; Joseph, 2011). For Cuban (1993), the taught and learned curricula are shaped by individual perceptions regarding the purpose of schooling, the value of the subject being taught, opinions about the role of a teacher within a given context, and perceptions about students' abilities as learners. Similarly, Rose (2005) claimed these unique clusters of values, opinions, and perceptions, shape what is taught in the classroom and determine which topics gain the most attention and which gain the least, thereby shaping what and how instructors teach. Cuban's theory of a taught curriculum is extremely useful because, firstly, it sheds insight on the level of influence the teacher has on curriculum and, secondly, it addresses the discrepancies between the official and taught curricula despite the use of standardized

curricula and texts. The taught curriculum is clearly influenced strongly by instructors' values and beliefs, which made it central to this study.

Collateral Learning

It is easy to assume that what is taught is also learned, and vice versa, but for Cuban (1993), like others, this was not the case. This is because all students are vulnerable to what Dewey (1916) referred to as collateral learning, meaning that learning occurs through students' taking on mannerisms like their teachers such as humour and habits, both good and bad, enabling students to develop their relationship with learning. For some students, this inculcates a love of or fear of learning, as is illustrated by Ginott's (n.d.) following thoughts:

I've come to the frightening conclusion that I am the deciding element in the classroom. It's my personal approach that creates the climate. It's my daily mood that makes the weather. As a teacher, I possess a tremendous power to make a child's life miserable or joyous. I can be a tool of torture or an instrument of inspiration. I can humiliate or heal. In all situations it is my response that decides whether a crisis will be escalated or de-escalated and a child humanized or dehumanized. (para. 1)

Ginott's (n.d.) statement draws attention once again to the human element in the classroom and, in doing so, captures Eisner's (1985) argument that actions are sometimes more powerful than the concepts found in the texts.

Thus far I have discussed elements of the implicit, taught, and learned curriculum that are considered to be unintentional or hidden, but for many there are practices used deliberately in the classroom that rely on the learners' ability to acquire similar mannerisms to that of their teachers (Lave & Wenger, 2014; Rose, 2005). Take, for example, the demonstration of skills—a pedagogical approach that is used frequently within TVET classrooms such as carpentry, automotive, baking, culinary, and hairdressing (Rose, 2005). This pedagogical approach places the teacher in the role of master craftsman, which is reflective of the traditional apprenticeship model. Within this model the novice and master work side by side and rely heavily on the learner's ability to first mimic the movements of the expert and then progress toward mastering the complexity of the skill, both physically and mentally, in order to become fully competent.

For Rose (2005), competence referred to a “freeing the mind” (p. 81), as “brain, hand, tool, and wood become a cybernetic system” (p. 79) and intelligence is hidden in action. Participation in demonstration is a key part of this developmental process that is elaborated by Lave and Wenger (2014) in their expansion on the notion of collateral learning, referred to as legitimate peripheral participation, which captures the influence of mentorship and participation through observation within a community of practice. Therefore, for Rose (2005) and Lave and Wenger (2014), while more is learned than directly taught, the notion of collateral learning is an essential component of learning and knowing. However, for Cuban (1993) and Dewey (1916), the concern is that the taught and learned curricula offer a potential site for undesired collateral learning and for hidden agendas to mobilize.

The Tested Curriculum

Having discussed the discrepancies that exist between the official, taught, and learned curricula, it is noteworthy that for Cuban (1993) fewer discrepancies exist between the official and tested curriculum than the taught and learned. This is because there is direct correlation between the tested and the official curricula, noting that they both live in the public domain, as seen in the ITA’s (n.d.-d) program outlines, and the RSOS. Although the intention behind the practice of testing is to assess both what has been taught and learned and to determine the level that learning has occurred, Cuban (1993) is not alone in saying that the use of certain assessment tools such as multiple-choice and short-answer quizzes capture only a narrow view of what the official curriculum intended (Biemans et al., 2004; Billett, 2001a; Rose, 2005; Taylor & Freeman, 2011). This is because assessment measures are frequently driven by outside stakeholders and administration who are overly concerned with measurable outcomes (Billett, 2016), ultimately leading to decisions that may limit curriculum content into measurable units (Aoki, 1999).

To illustrate this point further, the final trades exam given to 4th-year trades students across Canada and in BC, known as the interprovincial exam, consists of 125 multiple-choice questions. Successful candidates achieving 70% and above are awarded the Journeyman RSE on the strength of this exam in conjunction with technical

training and work-based hours. It would be difficult to conceive how a multiple-choice exam might capture and assess the learner's acquisition of knowledge, both in practical and technical skills, gained over the span of 4 years of technical training, combined with 3,600–6,400 work-based hours (depending on trade). On one hand, this brings to light concerns related to Cuban's (1995) notion that far more is taught and learned within these programs than is tested, and on the other hand, according to Worthen (2012), exams that deconstruct skills into units for the purpose of measurement "assume that the whole is the sum of the parts" (p. 191).

To conclude this discussion, Eisner's (1985) five curricula orientation, Schiro's (2008) four curriculum ideology, and the notion of multiple curricula argued by both Eisner (1985) and Cuban (1993), collectively claimed that curricula are understood as complex, multifaceted, and laden with varying epistemological, political, and social belief structures. My view is that while these belief structures influence curriculum decisions made by instructors in a myriad of ways, instructors, likewise, influence curriculum through the decisions they take during the delivery of curriculum. As such, in order to fully understand curriculum, stakeholders must learn about instructors' perceptions that shape decisions at the point where curriculum-as-plan, in the dynamic zone of the classroom, becomes curriculum as-lived (Aoki, 1999).

2.7.5. Theoretical Framework Explored for this Study

The level of complexity rooted within curricula as discussed in this review of literature led Joseph (2000) to expand on the frameworks of J. J. Schwab (1983), Eisner (1985), and Cuban (1993) and to claim that curricula are like culture, containing deeply embedded shared meanings within its history, making teaching a process that is entrenched in social, political, and educational structures. Joseph (2000) was not the only one to draw a comparison between curriculum and culture. For example, Eisner (1985) proposed that through viewing the classroom as culture, shared patterns of beliefs, values, and behaviours are exposed, just like that of a small town. Similarly, Nesbit (2000) and Engeström (2001) both framed teaching through the concept of culture, calling for the

analysis of all aspects of classroom life, including teaching practices, the physical setting, and society at large.

Defining Culture in the Context of Curriculum

In order to define culture for the purposes of the study, I shall borrow from the field of anthropology, in which culture is defined as “the sum of attitudes, customs, and beliefs that distinguishes one group of people from another. Culture is transmitted, through language, material objects, ritual, institutions, and art, from one generation to the next” (“Culture,” n.d., Culture Definitions for Super-Culture section, para. 2). I also turn to educational psychology and draw on the definitions of culture as presented by Bruner (1996), who built on Vygotskian theories and claimed, “Culture is the toolkit for sense-making and communicating” (p. 3). As such, culture enhances and shapes people’s abilities in “action, perception, sense-making, and thought” (Bruner, 1966, p. 126). Bruner (2010), much later, elaborated further with his understanding by emphasizing “that culture is not a simple entity but a phenomenon that consists of various layers of cultures and subcultures—denotes an environment in which we live, and it embodies a set of values, skills, and ways of life” (p. 161). These definitions of culture were used to guide this study, as they did for Joseph (2000) and others.

Through this conceptualization of curricula as culture, Joseph (2000) provided the lens to further analyze curricula systematically by gathering data in the following areas: “visions, assumptions about learners, teachers, content, milieu, planning assessment, curriculum evaluation, dilemmas of practice, and critique of the orientation and aims” (p. 23), resulting in a framework of inquiry that encompasses variables embedded in Schwab’s (1983) four commonplaces, Eisner’s (1985) five curricula orientation, and Schiro’s (2008) four curricula ideology, together with the notions of both Eisner (1985) and Cuban (1993) multiple curricula. In doing so, Joseph (2011) claimed, curricula can then be understood as culture, in all their complexity, providing a clearer picture with a goal of saying “this is what education is about and how it is experienced here” (p. 20).

Joseph (2011) together with Bravmann (2011), Windschitl (2011), and Green (2000), present a framework of six existing cultures of curriculum: training for work and

survival, connecting to the canon, developing self and spirit, constructing understanding, deliberating democracy, and confronting the dominant order. In Table 2.2, I provide a graphic comparison of Joseph's (2000) six cultures of curriculum framework with Eisner's (1985) five curricula orientation, and Schiro's (2008) four curriculum ideologies. This comparison of conceptual frameworks is intended to provide an understanding of the commonalities across the three theorists' categories of curricula. In doing so, I aim to shed light on the use of terminology between curriculum theorists and to highlight the variation used in categorizing curricula orientations despite shared understandings and commonplaces within the orientations. Names of lead theorists and/or philosophers grounding each orientation have been included and supported by Schiro's (2008) view on which capacities are enhanced within each orientation.

Table 2.2. Comparisons of the Curriculum Frameworks: Joseph, Eisner, and Schiro

| Eisner (1985) 5 Basic Orientations to the Curriculum | Joseph et al. (2000) 6 Cultures of Curriculum | Schiro (2008) 4 Curriculum Ideologies | Educational Theorists | Schiro (2008) Learning viewed as changing primarily: | Schiro (2008) Desired result of learning is change in: |
|--|--|--|---|---|---|
| 1) Development of Cognitive Processes | | | Bruner | Mind | Mind |
| 2) Academic Rationalism | 1) Connecting to the canon | 1) Scholar Academic | Plato, Aristotle. Hirsch Gardner | Mind | Mind |
| 3) Personal Relevance | 2) Developing self and spirit | 2) Learner Centered | Rousseau Steiner Montessori | Mind | Mind |
| 4) Social Adaption | 3) Deliberating Democracy | | Friere Dewey Steiner Montessori | Mind | Behaviour |
| _____ | _____ | _____ | | Mind | Behaviour |
| and Social Reconstruction | 4) Confronting the dominant order | 3) Social reconstruction | | | |
| 5) Curriculum as Technology | 5) Training for work and survival | 4) Social Efficiency | Pavlov Skinner | Behaviour | Behaviour |
| | 6) Constructing Understanding | | Vygotsky Piaget Dewey Bruner | Mind | Mind |

Note. Adapted from Schiro (2008).

As previously noted in this dissertation, Schiro’s (2008) four curriculum ideologies and Eisner’s (1985) five curriculum orientation share fundamental tenets, beliefs, and actions, finding commonalities in three curricula orientations. Likewise, Joseph’s (2000) cultures of curriculum framework, when compared alongside both Eisner’s (1985) and Schiro’s (2008) framework, finds common ground in four curricula orientations. Noting that like Schiro (2008), Joseph’s (2000) culture of curriculum framework also neglects Eisner’s (1985) development of cognitive processes. However, Joseph’s six category framework brings forth a new dimension that neither Eisner (1985) nor Schiro (2008) included. The sixth category introduces constructing understanding, a

curricular culture that is grounded in the developmental theory of constructivism that I will discuss briefly in the following section.

Constructivism

According to constructivist principles, meaningful learning does not and cannot result from stimulus-response experiences as understood by behaviourists' theories. This is because the key tenets of behaviourism rest on the following notions: (a) changes in behaviour are evidence of learning, (b) learners are passive, and (c) knowledge exists independently of the learner, which are in complete contrast to the fundamental underpinnings of constructivism as presented here:

Constructivism identifies learning as an active process in which individuals construct new ideas or concepts based on their past knowledge and/or prior experiences. Constructivist theory recognizes learners as active creators of their own knowledge, and learners interpret and construct a reality based on their experiences and interactions with their environments. In other words, learners construct their own understanding and knowledge of the world through their interactions with the world around them, rather than existing in the world as independent objects of truth. According to constructivist principles, meaningful learning is based on the active participation of learners in problem solving and critical thinking given real and authentic problems. (Eryaman & Genc, 2010, p. 536)

This description of constructivism provided by Eryaman and Genc (2010) serves adequately to capture the key principles as intended by the forefathers of constructivism Dewey (1916), Piaget (1972), and Vygotsky (1978). However, this description does not capture the variations that exist between these three theorists' understandings and the distinctions they made in regard to each concept. Eryaman and Genc (2010) proposed constructivism could be identified in two general forms: (a) cognitive constructivism, which focuses on learning in terms of developmental stages related to human biology, and (b) social constructivism, which emphasizes how meanings and understandings result from social interactions mediated through language and culture.

Cognitive constructivism is most commonly associated with the Piagetian theories. For Piaget (1972) intellectual development and the development of cognitive structures and schemas occur in systematic stages associated with the child's biological

age. Piaget asserted self-discovery is crucial to learning, noting that the learner's desire to discover and to make sense of the unknown occurs in relation to the learner's biological and developmental stage. Teachers working within this paradigm provide learners with developmentally appropriate practices that follow a logical progression on the understanding that cognitive structures change, allowing people to construct meaning at more sophisticated levels as they mature (Piaget, 1972).

Piaget's (1972) theory of cognitive constructivism adheres to the basic tenets of constructivism, noting the learner is perceived as active in the construction of knowledge. Nonetheless, Piaget's theory has been criticized for its oversight of the critical role context and culture play in the learner's acquisition of knowledge and meaning making. Bruner (1996), for one, described Piaget's cognitive constructive theories as a culturally blind approach to child development. In doing so, Bruner (1996) offered Vygotsky's (1978) theory of social constructivism as a corrective. At the heart of the Vygotskian theory is the understanding that mental functions are socially, culturally, and historically constructed through a deliberate socially mediated activity, rather than genetically determined. Vygotsky recognized the process of internalization that takes place during socially mediated activities between the subject (stimulus) and object (response), disputing the dualistic stimulus—response theories associated with behaviourism, and in turn, contradicting traditional dichotomies (hand–brain) by offering a nondualistic approach to teaching and learning (Roth, Yew, & Hsu, 2009). Similarly, Dewey (1916) wrote,

The social environment consists of all the activities of fellow beings that are bound up in the carrying on of the activities of one of its members. It is truly educative in its effect in the degree in which an individual shares or participates in some conjoint activity. (p. 9)

Both Dewey (1916) and Vygotsky (1978) placed less emphasis on biological age and stages of cognitive development and more on the learner's social interactions with more knowledgeable others within the learner's sociocultural context, hence the term social constructivism.

In summary, variations exist within constructivist theories that are captured in two main pillars, cognitive constructivism and social constructivism, both of which represent different understandings as to how meaningful learning occurs, yet both adhere to the fundamental tenets of constructivism, as stated earlier by Eryaman and Genc (2010). Despite the commonalities and differences existing between these two pillars, both can be seen to stand in stark contrast to the key tenets associated with behaviourism.

My purpose for this discussion on constructivism was to draw attention back to Table 2.1 and to focus on Joseph's (2000) additional sixth category: constructing understanding. Noting that constructivism was not captured in the theoretical frameworks of Eisner (1985) and Schiro (2008). This discussion, once again, reflects the evolving nature of curriculum and supports the claims of both Rose (2005) and Young (2013), stating that curricula responds to the changing perspectives and demands of multiple stakeholders and their collective views regarding the purpose of schooling. Furthermore, embedded in this discussion is the notion that perceptions have altered and evolved regarding the nature of how the mind works, bringing forth the claim that definitions of intelligence are subjective (Rose, 2005).

I now shift the discussion to draw attention to the limitations of Table 2.1, claiming that although this table serves the purpose of providing a conceptual framework from which such discussions can flow from its categorization and classification structure, it may also lead to an oversimplified understanding of the complexities embedded within curricula. Most theorists agree that curricula orientations seldom function in isolation, and in most cases the lines between orientations are somewhat fluid and frequently blend and blur within the dynamic setting of the classroom, although isolated cultures of curriculum do exist and can be found in alternative schools such as the Montessori and Waldorf school systems (Grubb, 1996; Nesbit, 2000). Joseph (2000) stated, "In reality, within our programs, inconsistent and contradictory aims and beliefs coexist in the real and messy world" (p. 25). Schiro (2008) reinforced this notion and claimed, "Different beliefs [are used] for different settings" (p. 205), meaning educators' values change depending on their situation.

To illustrate this point further, Schiro (2008) provided an example of social efficiency curricula in developing countries that provide the first step toward social reconstruction, resting on the notion of Maslow's (1987) hierarchy of needs. Although, social efficiency has been linked with concerns with social stratification, class, gender, and race when implemented in areas of the developed world, Schiro (2008) emphasized, "People hold mutually inconsistent and incompatible beliefs that change, like the colours of a chameleon, depending on their environment" (p. 206), which enables them to adapt to the needs of the situation.

In conclusion, teachers and their practices are strongly influenced by situational, political, and social contexts, resulting in the repeated patterns that play out within classrooms representing a series of shared beliefs, norms, behaviours, morals and values that collectively represent cultures of practice (Joseph, 2000; Nesbit, 2000). Using Joseph's (2000) cultures of curriculum conceptual lens, I suggest that it is within this lived space that instructors merge the theoretical and practical curricula, the unique culture of the curriculum can be found.

2.7.6. Theoretical Framework that Informed and Guided this Study

Collectively the conceptual frameworks of Eisner (1985), Cuban (1993), Joseph (2000), and Schiro (2008), exposed a coexistence of multiple curriculum cultures. As a result of this multiplicity, the cadre of instructors is also eclectic. Consequentially, some instructors belong to one school of thought and some to another. The questions that guide this study aimed to gain a better understanding of the existing cultures of curricula that inhabit postsecondary TVET in BC.

I selected Joseph's (2000) cultures of curriculum theoretical framework to both inform and guide this study. Built on the theories of J. J. Schwab (1983), Eisner (1985), and Cuban (1993), Joseph's (2000) framework investigates curriculum through the lens of culture, examining the nuances existing in the following areas of curriculum: impressions, visions, history, assumptions about learners and teachers, content of subject matter, context of classroom, planning of curriculum and assessment, curriculum evaluation, dilemmas of practice, and critique of the orientation and aims (p. 23). In

doing so, Joseph (2000) categorizes curriculum in to six cultures: training for work and survival, connecting to the canon, developing self and spirit, constructing understanding, deliberating democracy, confronting the dominant order. Joseph (2000) claimed, “This framework allows us to scrutinize the assumptions, beliefs, and values we hold and to discern that matters the most to other people as we work within educational and political arenas to affect curriculum” (p. 10). Collectively, the range of variables included in Joseph’s (2000) framework provided me with a broad, yet focused lens, enabling me to systematically capture and interpret significant features and variations across a range of curriculum cultures found to exist within the current BC TVET system.

On the understanding that successful educational change begins through gaining an understanding of the existing culture of curricula and the beliefs and values held by stakeholders (Fullan, 2001; Joseph, 2000; Nesbit, 2000; Rose, 2005; Schwab, 1983), this study investigated BC TVET instructors’ perceptions that influence their curriculum choices, on the understanding that these value and belief structures may fundamentally overlap, contradict and/or conflict, leading to a confluence of curricula cultures within the classroom.

2.8. Chapter Summary

This literature review began with a brief overview of the historical underpinnings related to TVET. In doing so, particular attention was paid to the long-standing academic–vocational divide in order to gain an understanding of how this worldview has shaped current belief and value structures held within the TVET system. I then presented areas of changing demands associated with the 21st century Information Age and discussed how these changes may impact the future of TVET, claiming that current TVET practices conflict with the future goals of education due to changing life and workplace demands. In this chapter, I framed this study in the context of BC’s TVET system and situated my research in the field of curriculum studies.

In Chapter 3, I present the history of Q methodology and my rationale for selecting it as the optimal approach for this study. This is followed by a description of the

five unique intertwining steps of Q methodology and an overview of how I applied these steps to this study.

Chapter 3.

Methodology

The purpose of this study was to gain a better understanding of the existing cultures of curricula that inhabit postsecondary TVET in BC. This study investigated BC TVET instructors' perceptions that influence their curriculum choices, on the understanding that these value and belief structures may fundamentally overlap, contradict, and/or conflict, leading to a confluence of curricula cultures within the classroom.

This chapter begins by situating Q methodology in a mixed-methods paradigm for the purposes of providing a rationale for choosing this methodology for this study. I then continue with an overview of the origins of Q methodology, followed by a few brief examples of the methodology as used by other scholars. I then compare Q methodology with other qualitative and mixed methods designs, discuss the application of Q methodology to this study, and present the research purpose and questions. I provide a detailed view of the five intertwined stages of Q methodology—the concourse, Q sample, Q sort, factor analysis, and interpretation—along with my application of Q to this study. Lastly, I speak to the ethical considerations of this study, followed by a discussion regarding the limitations and delimitations.

3.1. Situating Q Methodology in a Mixed-Methods Paradigm

For the purposes of clarification, I begin by situating Q methodology within a mixed-methods paradigm. In order to do this, I have performed an extensive review of literature and drawn from the resources available at QMethod.org, which is the central resource for Q researchers from around the world. Ramlo (2015), claimed, “Q methodology blends qualitative and quantitative, yet was only recently identified as a mixed method” (p. 37). This is because Q methodology precedes the existence of mixed-methods research by approximately 50 years (Creswell, 2014), which may shed light on

why some leading Q methodologist today can be seen to differ in their categorization of Q. For example, S. R. Brown (as cited in Q Methodology, n.d., para. 3) claimed, “Fundamentally, Q Methodology provides for the systematic study of subjectivity, and it is this central feature which recommends it to persons interested in qualitative aspects of human behaviour” (para. 4). Given (2008), the editor of *The SAGE Encyclopedia of Qualitative Research Methods*, listed Q methodology as an accepted as a qualitative research method. Likewise, Watts and Stenner (2005) claimed Q methodology has more than demonstrated its “‘sense making’ capacity and ability to find ‘qualitative order’” (p. 5).

From my review of Q methodology literature, I concluded Q researchers have different opinions as to whether Q methodology is situated within a qualitative, or mixed-methods paradigm. I, however, did not make judgments on these definitions. For the purposes of this study, I relied on Ramlo’s (2015) definition, stating that Q methodology is situated within a mixed-method paradigm because it blends qualitative and quantitative approaches. Similarly, Moree (2017) situated Q methodology within this paradigm, claiming it combines a strong qualitative dimension with a powerful quantitative tool.

What is more important to recognize is that Q methodologist consider Q methodology an alternative to R methodology. In 1935, Stephenson wrote, “The technique [used in Q] is a complete inversion of all previous factor techniques” (Stephenson, 1935, p. 1). For example, while R method requires large numbers of participants to rate their agreement on individual variables using tests and surveys scores to find correlations between variables, such as height and age, Q methodology does not aim to correlate test and survey scores gathered from large populations of people. Alternatively, the aim of Q methodology is “to correlate persons in-stead of tests” (Stephenson, 1935, p. 1). This is achieved through the unique data collection methods of Q methodology, in which participants are required to rank order a series of Q sort statements as they relate to each other based on each participant’s individual perceptions (Moree, 2017). Participants’ subjectivity is operationalized during the ranking of Q statements, and their unique viewpoints are captured in the placing of statements in relation to other statements (Watts & Stenner, 2005). Q factor analysis then reduces the

many individual viewpoints down to a few factors, thereby grouping participants based on their shared ways of thinking. In the context of this research, had the individuals participating in this study held dissimilar preferences (likes and dislikes), their Q sorts would not have correlated (Moree, 2017). If, however, they had shared similarities in their thinking, and hence Q sorted in similar ways, significant clusters of correlations would exist and could be factorized and described as common viewpoints (Stephenson, 1935).

By correlating people rather than tests results, Q factor analysis provides insight into similarities and differences in viewpoints on a particular subject. In conclusion, then, “Q methodology can thus be used to reveal and describe populations of viewpoints rather than populations of people as in conventional factor analysis” (Moree, 2017, Q Methodology Approach section, para. 2).

I conducted this brief comparison between R and Q factor analyses to provide clarity regarding the fundamental differences that exist between the two. My aim was to provide a foundation for those unfamiliar with Q methodology in preparation for the subsequent discussions throughout this chapter.

3.2. Origins of Q Methodology

Stephenson (1953), both a psychologist and physicist, developed Q methodology in 1935 at a time when R methodology factor analysis was commonly used within the school of psychology. R methodology is a quantitative methodology that utilizes factor analysis to provide an objective measure of factors in relation to other factors (e.g., intelligence quotient scores in relation to hours of television watched). In other words, it is a “statistical method of data reduction that identifies and combines sets of dependent variables” (Haslam & McGarty, 2003, p. 387). Using data collection methods such as Likert-style questionnaires, attitude scales, and personality measures, the purpose of R method factor analysis is to “reduce and/or eliminate the qualitative and subjective” (Ramlo, 2015, p. 29). Its use is commonly associated with hypothetico-deductive methods and the quantitative logic of verification (Watts & Stenner, 2005).

In 1935, Stephenson, having identified certain limitations of R methodology factor analysis, claimed that R did not, and could not, provide information about individual participants, simply because the focus of R methodology is on the factors rather than the individuals within the factors (Stephenson, 1935). Stephenson (1935) also argued that the common practices used in psychology at that time sought to test reasoning rather than to make discoveries.

Thus, Stephenson (1953), claiming that a simple inversion of the factor analytic procedure “initiates a series of quite dramatic methodological departures from the psychological tradition” (p. 335), introduced Q methodology as an alternative to R methodology. The factor inversion, central to Q, is significant, as it shifts the unit of analysis from the variables of tests to the variables of persons (Ramlo, 2015). The inversion of factor analysis, in conjunction with Q methodology’s unique data collection methods, resulted in studies that actively explore correlations between people or whole aspects of people (Stephenson, 1953). In other words, Stephenson’s underlying premise of Q methodology is grounded in the notion that the participants “capture and reveal their subjectivity” (Ramlo, 2015, p. 30) during a unique and specific data collection method known as a Q sort.

The strength of Q methodology lies in the combination of two fundamental aspects: the Q sorting procedure, which is an original means of collecting data, and the uniqueness of the methodology’s inverted factor analysis technique. Together this unique intertwining of “scientific and subjective approaches” (Watts & Stenner, 2005, p. 5) provides a by-person factor analysis that identifies “groups of participants who make sense of (and who hence Q ‘sort’) a pool of items in comparable ways” (p. 68). According to Good (2000), Q methodology is essentially a gestalt procedure, meaning that the subject matter cannot be broken up into constituent themes. However, what it can do, as Watts and Stenner (2005) stated, is “show us the primary ways in which these themes are interconnected or otherwise related by a group of participants” (p. 70). These features unique to Q methodology make it “particularly suitable for researching the range and diversity of subjective experiences, perspectives, and beliefs” (Shrinebourne, 2009, p. 94) held by the participant sample. In agreement with Watts and Stenner (2005),

S. R. Brown (1993) stated, “Subjectivity is ubiquitous, Q methodology provides for its systematic measure” (p. 106).

The aims and procedures of Q methodology, including its data collection methods and its unique use of Q factor analysis have remained the same from when Stephenson first introduced the approach in 1935 (Stephenson, 1935). However, technology and the use of software programs specifically designed for Q factor analysis, such as PQMethod (Schmolck, 2014) have permitted users with a minimal grasp of statistics to convert with ease what was once required the mind of a statistician. S. R. Brown (1993) claimed the use of software has freed the researcher to focus on the phenomenon at hand, knowing that “there is little more reason to understand the mathematics involved than there is to understand mechanics in order to drive a car” (p. 111).

3.2.1. Examples of Q Methodology Research

Q methodology has been found to serve the needs of educational researchers and theorists and has informed numerous social science studies (see Qmethod.org, n.d.). Studies using Q methodology in the field of education include an inquiry performed by Madoc-Jones and Gajdamaschko (2005) entitled “Theoretical Incompatibilities in Teachers’ Self-understandings of Educational Practice: An Examination using Q Methodology.” Madoc-Jones and Gajdamaschko used Q methodology to investigate teachers’ theoretical perspectives concerning their educational practice and the possibility of theoretical incompatibilities. These authors administered Q sorts containing 36 statements to 49 educators from different levels of public education in BC (Jones & Gajdamaschko, 2005). The Q sorts were subjected to factor analysis using Schmolck’s (2014) PQMethod software with varimax rotation, which resulted in four extracted factors. The researchers focused on statements placed in +4/+3 and -4/-3 categories from which their analysis of the four factors emerged, concluding with four perspectives related to theoretical incompatibilities in teachers’ self understanding.

Likewise, in her dissertation entitled *What Works? Perceptions of Professional Development*, C. L. Brown (2013) used Q methodology to understand principals’ perceptions regarding their role in the facilitation of professional development and

growth of teachers to impact students learning. C. L. Brown's study included 34 public school principals from North Carolina, who sorted the Q set statements in a forced distribution, as per Q methodology. Once Q sorts were factor analyzed revealing statistical correlations amongst three factors, the researcher conducted a series of focus groups with participants from each factor (Brown, 2013). Three statistically significant factors were extracted that served to generate insights into professional development for teachers, thereby providing policymakers, researchers, and practitioners information about this topic (Brown, 2013).

Thackaberry's (2017) dissertation entitled *Competency-Based Education Models: An Emerging Taxonomy*, used Q methodology to determine what models of competency-based education programs emerge from an investigation of what experts perceive to be the most essential and least essential components of a high-quality program. Thackaberry drew 33 respondents from a variety of colleges and universities, ranging from nonprofit universities and colleges to private universities and colleges. Thackaberry's respondents participated in the study by performing an electronic Q sort, via web-based software. During the Q sort, each participant rank ordered 72 statements on a +5 to -5 continuum (Thackaberry, 2017). Fifteen of the participants provided follow-up interviews to add context to the resulting factors from all 33 Q sorts. Two factors resulted from the factor analysis and varimax rotation based on the factor loadings. The findings from this study revealed a central tension between the two schools of thought.

3.2.2. Comparing Q with Other Qualitative and Mixed-Method Approaches

While some Q methodologists situate Q within a qualitative paradigm such as S. R. Brown (2008) and Watts and Stenner (2005), it does not do the same job when compared to other qualitative approaches. This is because other textual methods such as narrative, phenomenology, and ethnography methodologies promote a more inductive style approach with an emphasis on individual experiences and differences that aim to form a more interpretive analysis (Creswell, 2014; Watts & Stenner, 2005). Alternatively, as stated by Watts and Stenner (2005), Q methodology aims to explore and make sense of "highly complex and socially contested concepts and subject matters from the point of

view of the *group* of participants involved” (p. 70), but it does not focus on the viewpoints and discourse of individuals nor does it act in a thematic fashion.

Despite Stephenson’s (1935) well-articulated presentation of Q methodology as means to generate an objective measure of subjectivity, the uniqueness of this approach, combined with its place in history and distinctive blend of qualitative and quantitative methodologies (Thackaberry, 2017), has led to misunderstandings and distortions in practice (Watts & Stenner, 2005). Q methodology has encountered challenges in gaining acceptance within research communities, both quantitative and qualitative, and has been faced with a number of theoretical misunderstandings and simplifications, which have collectively slowed its recognition as a valid and reliable methodology (Ramlo, 2015, p. 26). For example, Watts and Stenner (2005) claimed that in 1954 Carl Rogers used a rather unorthodox and somewhat problematic application of Q methodology that simply required participants to sort a set number of cards in to two piles relevant to personal characteristics, such as “‘not characteristic of me’ to ‘very characteristic of me’” (Haslam & McGarty, year, p. 389), but did not follow through with the next step when participants perform a forced ranking of Q-sort statements. The second error of Rogers, according to Watts and Stenner (2005), is that he failed to subject his version of Q sorts to a by-person factor analysis. Alternatively, Cyril Burt (as cited in Watts & Stenner, 2005) did perform a by-person factor analysis; however, he did so on alternate forms of data. In both circumstances Watts and Stenner (2005) argued neither Rogers nor Burt had performed Q methodology because both used only one aspect of Stephenson’s (as cited in Watts & Stenner, 2005) theory.

Furthermore, Q methodology is not directly comparable to other mixed-method approaches. Creswell (2014) described mixed methods as combining both quantitative and qualitative data collection methods, all of which integrate collections of both quantitative and qualitative data using a variety of procedures (Teddlie & Tashakkori, 2009). Unlike these approaches, Q does not collect, nor aim to correlate, quantitative data gathered in the form of tests and surveys.

In order to capture the hybridity of Q, Stenner and Rogers (2004) proposed the term *qualiquantology*, so as to differentiate Q from other mixed-methods in which a qualitative dimension to a quantitative study, or vice versa, has simply been added. Their use of the term *qualiquantology* aimed to express the notion that portraying Q methodology as a mixed-methods approach is not sufficient to describe the uniqueness of Q methodology and its five intertwined stages (Ramlo, 2015, p. 30).

The advantage of Q methodology over other mixed-methods approaches lies in its unique intertwining of “scientific and subjective approaches” (Watts & Stenner, 2005, p. 5), which is used to explore a variety of subjective viewpoints (Ramlo, 2015, p. 30). The five interwoven stages of Q methodology, consisting of the concourse, the Q sample, the Q sort, factor analysis, and interpretation, are better understood as a continuum between qualitative and quantitative paradigms rather than a dichotomy (Ramlo, 2015). In my opinion, it is within these five stages of Q methodology that the lines between scientific and subjective paradigms are blurred to form a symbiotic relationship making the approach significantly different from other mixed methods.

3.3. Application of Q Methodology to this Study

Given that Q methodology aims to generate an “objective measure of subjectivity” (Ramlo, 2015, p. 28) through a unique blend of qualitative and quantitative methodologies, this approach was well suited for this study’s investigation in which the unit of analysis was the perceptions held by TVET instructors. Perceptions, as described by Stephenson (1935), are a private internal frame that holds “our world of inner experience” (p. 219), which, in turn, shapes people’s opinions, beliefs, tastes, ideologies, and attitudes. The uniqueness of Q lies in its ability to capture what is held within participants’ internal frames and to “provide an interpretive study of subjective behaviours without imposing the usual biases of structured survey questionnaires” (Brown, 1993, p. 103). Concurring with this notion, Stephenson (1935) claimed Q methodology should be used when researchers want to better understand beliefs and attitudes of participants about a specific topic, because “Q-methodology is better suited to

the study of specifics—the viewpoints of specific people, specific groups, or the viewpoints at play within a specific institution” (p. 67).

I selected Q methodology because its unique intertwining of scientific and subjective approaches provided me a means to explore a variety of subjective viewpoints, while the statistical analysis of qualitative data enabled me to “bring a sense of coherence to research questions that have many potentially complex and socially contested answers” (Stainton-Rogers, 1995, p. 201). The explorative quality of Q is pronounced, which allowed me to investigate a range of diverse subjective experiences, perspectives, and beliefs held by TVET instructors in BC.

3.3.1. Research Purpose and Questions

This study investigated BC TVET instructors’ perceptions that influence their curriculum choices, on the understanding that these value and belief structures may fundamentally overlap, contradict and/or conflict, leading to a confluence of curricula cultures within the classroom.

I developed the following questions to guide this study:

1. What are the general perceptions of vocational instructors regarding their role as a teacher?
2. What are the general perceptions of vocational instructors regarding the intellectual capacities of their students?
3. What are the general perceptions of vocational instructors regarding the purpose of vocational education?
4. What are the general perceptions of vocational instructors regarding the future needs of vocational education?

3.4. Procedures

As Figure 3.1 demonstrates, Q consists of five intertwined steps: the concourse, Q sample, Q sort, factor analysis, and interpretation. Although these steps are intertwined, I describe them in turn, first, from their theoretical perspective and, second, as I applied them to my study.

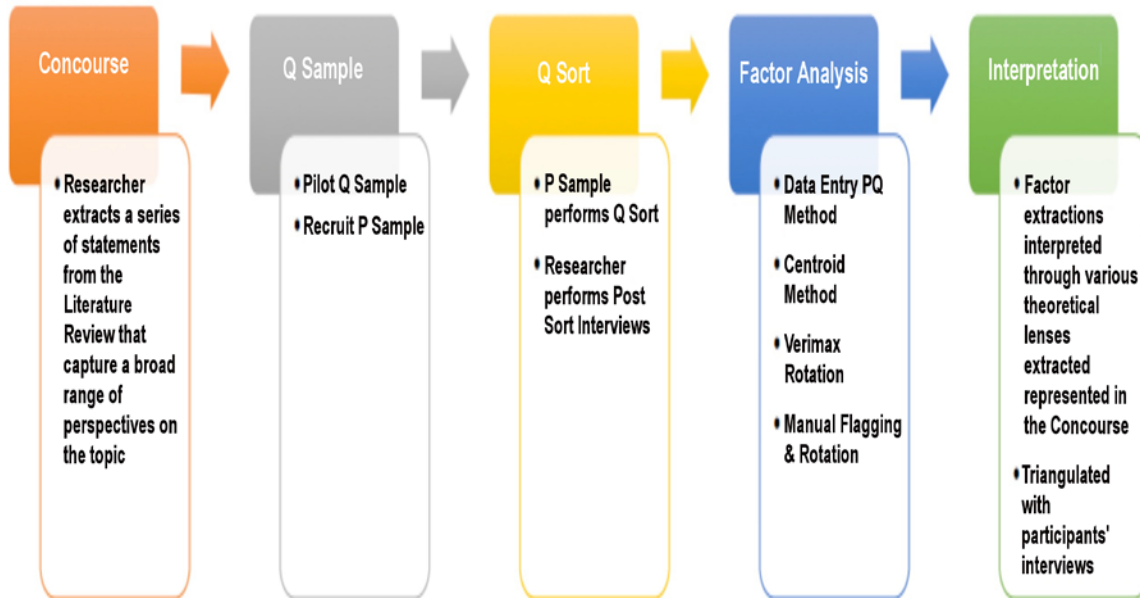


Figure 3.1 Flow chart of Q methodology methods to provide a graphic overview.

Note. Adapted from *Teaching and Learning Jazz Music Improvisation* (p. 58), by S. E. Rutherford & S. Rutherford, 2014, Vancouver, Canada: Simon Fraser University. Copyright 2014 by Rutherford & Rutherford. Adapted with permission.

3.4.1. Concourse

Q methodology begins with the development of a concourse “from the Latin *concursum*, meaning ‘a running together,’ as when ideas run together in thought” (Brown, 1993, p. 95). A concourse, then, is a range of statements assembled by the researcher to capture the full discourse surrounding the chosen topic. It is, according to S. R. Brown (1993), the “very stuff of life, from the playful banter of lovers or chums to the heady discussion of philosophers and scientists to the private thoughts found in dreams and diaries” (p. 95). The uniqueness of the concourse as used in Q methodology is that, when shown to and used by the participants, it provides them with a broad range of viewpoints,

which they are required to sort and rank into categories ranging from most to least agreement. This action alone requires participants to interact with viewpoints and vocabularies other than their own without first ascribing prior meaning (Stephenson, 1953).

Developing the Concourse

The development of the concourse is shaped primarily by the research questions and each statement should provide a possible answer to at least one of the questions posed. According to Madoc-Jones and Gajdamaschko (2005), a relevant concourse is one that captures “the array of ideas, attitudes, feelings, values, and perceptions that different individuals may associate with the core ideas of education’s purpose” (p. 65). To obtain a wide range of perceptions such as these requires the researcher to perform an extensive data collection through methods such as a literature review, or in some cases a gathering of historical artifacts such as photos and recording are used (Stephenson, 1935). It is important to understand that all statements in a concourse are matters of opinion only, deliberately representing the raw materials that reflect life as it is lived within the context of the study. S. R. Brown (1993) stated that the critical element of subjectivity is then brought in to the picture by the Q sorter, “who ranks the statements from his or her point of view, an action that is known as operant subjectivity” (p. 95).

Study’s Implementation of Concourse

The purpose of this study, its aims, and research questions, have been shaped by the literature review presented in Chapter 2. The literature review offered a wide range of values, beliefs, opinions, and topics, which enabled me to capture broadly the conversations that surround TVET, and then, in turn, it provided a discourse from which I generated the concourse for this study. I drew a total of 75 statements from the literature review to form the saturation point of the concourse. Although the 75 statements were selected purposefully to reflect a range of different belief structures and theories, it is necessary to understand that no prior meaning was affixed to statements (Brown, 1993). Similarly, no prior meaning was affixed on the understanding that “words or phrases can mean wholly different things to different people (Brown, 1993, p. 101), which

Stephenson (1953) elaborated on by saying, “It is a mistake to regard a [Q] sample as a standardized set or test of statements, any more than one can hope to regard a particular set of children as a standard sample” (p. 77).

Once the researcher deems the concourse to have reached saturation, meaning that a wide range of ideas, values, and beliefs are represented, and that no other meaningful ideas will add to its breadth, the concourse is then subjected to a pilot study (Baker, Thompson, & Mannion, 2006). The pilot study aims to reduce the number of statements to form a Q sample.

3.4.2. Q sample

In Q methodology, the term Q sample refers to the reviewed set of concourse statements, which differs from the more generally accepted use of the term sample related to the people or participant sample. There is no set number of statements required in a concourse because each concourse is reflective of the subject matter itself and the goal is for the concourse to be “broadly representative of the opinion domain at issue” (Watts & Stenner, 2005, p. 75). Once the concourse is complete it is subjected to a pilot study.

The process of a pilot study is performed with a small group of purposefully selected participants, knowledgeable in the subject matter, to reduce the number of concourse statements to that of a Q sample. “The main goal in selecting a Q sample is to provide a miniature [process] which, in major respects, contains the comprehensiveness of the larger process being modeled” (Brown, 1993, p. 99).

Study’s Implementation of Q Sample

Two participants were selected for the pilot study based on their familiarity with TVET, their voiced interest in the research topic, and their ability to provide a wide range of viewpoints, as recommended by other Q methodologists, such as Shrinebourne (2009). The two participants, both of whom teach within postsecondary education and represent both academic and vocational streams, worked collaboratively to ensure the appropriateness and clarity of language used in each statement and that the statements as a whole reflected a comprehensive coverage of the relevant topic.

In this study the piloting process reduced the number of statements from 75 to 62 to form the Q sample (see Appendix B). The 13 statements removed from the concourse were deemed redundant or dismissed due to three reasons: (a) lack of clarity within the written statement; (b) the statement closely reflected the same beliefs and values as another statement within the Q sample; and (c) the statement contained more than one value or belief making it difficult for participants to either agree or disagree.

I printed each remaining statement in the Q sample on a small card that included the statement number (see Appendix B). The 62 cards became the set of statement cards that each participant was asked to individually sort and rank in a process referred to as the Q sort.

Participant Recruitment and P Sample

In Q methodology, large numbers of participants are not required (Stephenson, 1935). This is because the aim of the data collection process and analysis is to explain the key opinions of a selected participant group (Watts & Stenner, 2005), as opposed to measuring how many participants choose to rank a particular statement in a particular way. More importantly than the number of participants is the diversity within the sample group, and, according to Baker (2011), it is essential to have participants who are “data rich and that feel strongly and differently on a given topic” (4:20). Stainton Rogers (1995) and Baker (2011) asserted participant numbers between 40 and 60 achieve the best breadth and diversity of viewpoints. However, others such as Watts and Stenner (2005) claimed relevant results can be obtained with far fewer participants. Similarly, S. R. Brown (1993) stated, “Single cases can be the focus of Q-method research” (p. 104) because Q’s unique focus is on key opinions, rather than the number of participants who express a belief.

Recruiting Participants for this Study

I invited 51 potential participants via email to take part in this study. I recruited participants from five postsecondary institutions in BC based on my ability to connect with instructors, all of which teach ITA trades programs. I did not prioritize any one institution over another. In total, 37 TVET instructors elected to take part in this study;

they varied in age, years of experience in trade, years of experience teaching, highest academic credential, and highest trades specific credential.

As the principal investigator and having been a trades instructor in BC for the past 20 years, I have many contacts throughout BC who teach ITA trades programs, which served positively in my approach used to recruit participants. I selected participants for this study on the understanding that they currently teach an ITA trades program at a postsecondary institution within BC or have previously taught in such a program within the past 2 years. I made contact with known potential participants via email through a Letter of Invitation (see Appendix A); additionally, I used a third-party snowballing approach, when appropriate, which enabled me to recruit further afield.

To enhance maximum variation sampling further, I purposefully drew the participant sample from five BC postsecondary institutions based on my assumptions that (a) multiple institutions would add to the diversity of the participant group and (b) a diverse group of participants would “express interesting, or pivotal viewpoints” (Watts & Stenner, 2005, p. 79). My assumption was that differences in institutional culture could exist, which would add to the richness of the data collected. Participants drawn from institution throughout BC were required to express their own views only, not to speak on the behalf of the institution. I specifically aimed the focus and questions that guided this study to explore the perceptions of individuals, which was evident in my choice of methodology and design, including data collection methods.

P Sample for this Study

Of the 51 potential participants invited to take part in this study, a total of 10 either declined or did not respond. Four participants who initially agreed to take part later chose to decline due to time constraints once the Q sorting process was explained in person. The total number of participants taking part in this study was 37, equating to a 74% response rate. No further recruitment took place.

This research project sought to uncover individuals’ perceptions on TVET, therefore, the purposeful person sample (P Sample) included TVET instructors from a diverse grouping of trades. Participants represented the following Red Seal trades:

Automotive Service Technician, Baker, Carpenter, Cook, Electrician, Hairstylist, Heavy Duty Equipment Technician, Horticulturist, Welder, and one non-Red Seal trade: Aircraft Maintenance Technician.

At the beginning of the study, I asked each participant to sign the consent form (see Appendix F) and return it to me, the principal investigator, before proceeding with arrangements for the Q sorting process. I then requested the participant complete a demographic survey (see Appendix E) that asked four questions pertaining to the participant's years of teaching an ITA trade, years working in industry prior to transitioning into an instructional role, highest trade specific credential earned, highest academic credential earned, plus one opened-ended question that asked for details related to the participant's professional development activities over the past 2 years. To protect participant confidentiality and anonymity, I applied the following participant alphanumerical codes to all documentation used throughout the study and to cite excerpts from the interviews: Participant 101A through to Participant 140A. In doing so, I removed any identifiers, such as names, emails, contact numbers, and associated institutions.

3.4.3. Performing the Q Sort

Watts and Stenner (2005) claimed that at the very heart of this sorting and ranking process lies the basic premise of Freud's (1949) pleasure–unpleasure principle,¹ which, at the time of development, provided Stephenson (1935) with the theoretical sustenance required to perform qualitative work in the field of psychology. To elaborate further, S. R. Brown (1993) captured this unique procedure and underlying purpose for the rank and sort process by stating, “Q methodology involves the artificial categorizing of statements, but ultimately this artificiality is replaced by categories that are *operant*, i.e., that represent functional as opposed to merely logical distinctions” (p. 97). This action alone requires participants to interact with viewpoints and vocabularies other than their own without first ascribing prior meaning.

¹ It is called the pleasure–pain (lust–unlust) principle, or more shortly the pleasure principle (Freud, 1949, p. 14).

Study’s Application of Q Sort

In total, 37 TVET instructors in BC performed 37 Q sorts consisting of 62 Q-sort statements. Participants (P Sample) were invited to take part in a Q sort activity that involved the sorting and ranking of 62 statements (see Appendix B) using the Q-sort matrix (see Appendix C) as represented in Figure 3.2.

P sample Code:

Q-Sort Matrix

| Strongly Disagree | Disagree | Moderately Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Moderately Agree | Agree | Strongly Agree |
|-------------------|----------|---------------------|-------------------|---------|----------------|------------------|-------|----------------|
| -4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 | +4 |
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Version: 2017 October, 27

Figure 3.2 Q-sort matrix.

Note. Adapted from qmethod.org *Adaptive Q-Sort Matrix Generation: A Simplified Approach* (p. 3), by Calisto, Borbinha, Oliveira, & Gomes, 2015. Copyright 2015 by Calisto et al. Adapted with permission.

Participant Instructions for this Study

The instructions given to the P Sample provided a series of step-by-step instructions to be followed during the Q sort (see Appendix B). I asked participants to begin the sorting process by reading all 62 statements in order to familiarize themselves with the content. As the participants read through the statements, I asked them to

organize the cards into three piles, placing cards they tend to agree with to the right, cards they tend to disagree with to the left, and those that trigger neither thoughts of agreement or disagreement were placed in the middle. I then asked participants to return their attention to the agree pile and select five statements with which they most strongly agreed and place them on the Q-sort matrix in the column labelled + 4, with five spaces were available. Next, I asked participants to turn to the left pile and again select five cards, this time capturing those they felt most disagreement with to be placed in the column labelled – 4. This rank-order process continued with the participants going back and forth between levels of agreement and disagreement until all statement cards were placed in the columns.

The Q-sort matrix forces the participants to select a limited number of statements under each of the following column headings -4, -3, -2, -1, 0, +1, +2, +3, +4, noting that five statements can be placed under the -4 +4 columns increasing to six statements under -3 +3, and progressing by increments of one until the neutral column 0 is reached, where 10 spaces exist. It is this curved, quasi-normal structure of the grid that limits participants' choices by forcing them to first consider whether they agree, or disagree, and then second to consider their view in relation to other statements (Watts & Stenner, 2005). This process is referred to as *forced* distribution, because it forces the participants to stay within the fixed quasi-normal distribution as shown in the Q sort matrix in Figure 3.2. In Figure 3.3 a participant can be seen placing the statement cards on to the quasi-normal grid.



Figure 3.3. Participant performing a Q sort.

Note. Copyright free image created by Wikimedia editor Jb3ddd.2009

At this stage, I will reiterate that the Q sample statements are matters of opinion only, and it is the Q sorters (P Sample) who “is ranking the statements from their own point of view ... [that] brings subjectivity in to the picture” (Brown, 1993, p. 95). It is also important to recognize that the participant is ranking statements in relation to other statements and, therefore, making judgements as to the value of each statement (Moree, 2017). The participants were free to change their minds during the sorting process and could switch items around as long as the total number of requested items was placed according to the response grid.

Interview debrief of the Q sort data and process in this study

Once participants had completed the Q sort, I took a series of digital photos using iPhone 7 technology. This digital record captured the placement of each numbered statement card sorted and ranked by each participant. Post-sort interviews were carried out individually with the 31 participants following their Q sorts. S. R. Brown (1993) noted that it is important for an interview to follow each completed Q sort, when possible, claiming, “Meanings are not found solely in the categorical cogitation of the observer, but as well (and even more importantly) in the reflections of the individual as he sorts the statements in the context of a singular situation” (p. 101). This understanding is gained with the intention to later describe, understand, and interpret the extracted resulting factors from the perceptions held by the participants. The interviews were guided by a structured list of questions (see Appendix D), and questions focused

particularly on the participant's rationale for placing statements under columns labelled -4 and +4, most disagree and most agree. However, many participants chose to stray from the questions and to reflect on their Q-sort experience. With participant permission gained, I recorded and transcribed all interviews, capturing information digitally on my iPhone 7. Recording of interviews ranged from the shortest being 13 minutes 22 seconds, to the longest at 54 minutes 12 seconds. Six participants chose not to perform post-sort interviews due to time constraints in their work schedules. Four participants provided second interviews during the data analysis phase. These interviews were carried out at my request because data were lacking in regards to these participants' rationales for placing statements in high-ranking slots.

3.4.4. Factor Analysis

After collecting data from the Q sort procedures, researchers enter the information into the PQMethod software (Schmolck, 2014), or a similar program, which is specifically designed to factor analyze Q sorts. The researcher enters the data gathered from each participant as a matrix with preassigned value ranging from -4 to +4 for each statement. The PQMethod software then factor analyzes the data, thereby reducing and correlating the data to extract the minimal amount of factors. The extracted factors in Q methodology represent correlations between participants' Q sorts. It is at this point of data analysis it becomes clear the statements are observations, having captured participants' beliefs and values during the Q-sort procedure, and the sorters the variables (Stephenson, 1953).

Q factor analysis statistically produces a correlation matrix that determines how many different Q sorts are evident in the study and identifies those Q sorts found to be highly correlated with one another. Highly correlated Q sorts "may be considered to have a family resemblance but [notably] uncorrelated with members of other families" (Brown, 1993, p. 110). By thinking of factors as families, each representing shared values and beliefs distinctly different from other families, factor analysis can be understood as a means to show how many different families (viewpoints) exist within the study. Each of the emergent factors in a Q methodology study, therefore, represent perceptions held by

groupings of participants based on the placing of concourse statements throughout their Q sorts.

During the factor analysis process, “the most powerful statistical mechanics are in the background, but sufficiently so as to go relatively unnoticed by those users of Q who are disinterested in its mathematical substructure” (Brown, 1993, p. 95). Schmolck’s (2014) PQMethod produces a correlation matrix and factor array tables that include both factor Q-sort values and z scores, making it possible for nonstatistician researchers to interpret the perceptions comprising each factor grouping. PQMethod converts factor scores (z scores) into whole numbers (Q-sort values) ranging from -4 to +4 that fit back into the Q-sort distribution tables and enable easy comparison between factor arrays for nonstatisticians (McKeown & Thomas, 1988).

Factor Analysis for this Study

In this study, I used the PQMethod software (Schmolck, 2014) to perform Q factor analysis, Varimax and Centroid rotation, as per S. R. Brown’s (1993) recommendations, in order to analyze the Q sorts and extract resultant factors. In Q methodology, resultant factors are comprised by participants with similar views and attitudes as reflected in their ranking of statements throughout the Q sort. Using the factor Q-sort values that are whole numbers converted from Q factor analysis z scores, a by-factor range of rankings between disagreement and agreement for each statement surfaced. Statements with Q-sort values ranging from -4 and +4 across the factor groupings represented high levels of variance between disagreement and agreement.

For example, as presented in the Table 3.2, Statement #42 in this study had the least amount of variance in factor loadings as represented by Q-sort value (Q-sv), which were placed directly underneath the factor headings. In this circumstance the range in agreement across the groupings were limited, spanning only 1 point between -2 to -3. In Q methodology, this statement is deemed insignificant and labelled as a consensus statement, meaning that it does not distinguish between any of the groupings.

Table 3.1. Example of By-Factor Q-Sort Values

| Factor 1 | Factor 2 | Factor 3 | Factor 4 |
|----------|----------|----------|----------|
| -2 | -3 | -2 | -2 |
| (Q-sv) | (Q-sv) | (Q-sv) | (Q-sv) |

Note. Statement #42: Drills are often the only method for teaching basic psychomotor skills.

Alternatively, in the Table 3.3, Statement #6 represents the highest level of variance across Q-sv, ranging from -4 to +4, reflecting a high level of disagreement between the groupings, particularly between Factors 2 and 3. In Q methodology, this statement is, therefore, identified as a distinguishing statement.

Table 3.2. Example of By Factor Q-Sort Values

| Factor 1 | Factor 2 | Factor 3 | Factor 4 |
|----------|----------|----------|----------|
| +2 | -4 | +4 | +2 |
| (Q-sv) | (Q-sv) | (Q-sv) | (Q-sv) |

Note. Statement #6: Vocational Education is often viewed as something for students who have not performed well in school.

As previously described, I used Schmolck’s (2014) PQMethod to analyze the raw data and determine the statistically distinct clusters of statements that represent distinct perceptions in relation to the research questions. However, the articulation of the emergent perspectives was my responsibility as the researcher. “The factor analysis merely determines the number of statistically distinct views that exist—it is up to the researchers to describe, understand, and interpret them” (Madoc-Jones & Gajdamaschko, 2005, p. 6).

3.4.5. Interpretation

Interpretation of data took place in two phases. Firstly, PQ Method software (Schmolck, 2014) produces a study files package following Q factor analysis rotation and extraction. This package includes an extensive arrangement of statistical data in the form of correlation matrixes and factor array tables that provides the researcher the foundation for their interpretation (Watts & Stenner, 2005). Both the correlation tables and factor

array tables provide by-factor and a by-person analysis of participants' Q sorts. These results are presented both in Q-sort values (Q-sv whole numbers) and z scores. The data package includes intercorrelation tables that compare loadings between each extracted factor, thereby providing insight to the relationship between all factor groupings. In addition to the comparison tables, significant loadings are noted and marked with an asterisk, which aims to inform the researcher of the significance of these loadings during the interpretation process. I am in agreement with Watts and Stenner (2005), who stated the factor arrays (comparison tables) are the most important aspect of this statistical package to the researcher during the interpretation phase. The factor array, presented in Chapter 4 of this study, reveals the comparative ranking of all Q sort statements on a factor-by-factor analysis.

The second phase of interpretation required a triangulation approach between the statistical data produced by PQMethod software (Schmolck, 2014) and the qualitative data gathered during the post-sort interviews. Although I had previously transcribed all interviews within a few days of recording, at this point in the analysis I reviewed the transcripts as a means to interpret the extracted factor groupings from the perceptions held by the participant sample. Stenner, Dancey, and Watts (2000) described this stage of interpretation as an hermeneutic process that engages the interpretative perspective of the researcher. Although I agree with this view, it is important to notice how the interpretive process in Q differs. The researcher's interpretation of the extracted factor groupings, when using Q, is constrained by the subjective input as expressed by participants during the Q sorting process and the post-sort interviews (Shrinebourne, 2009), making the interpretation of Q unique from other hermeneutic methodologies.

The value of the post-sort interviews became apparent during the interpretation phase of this study because, although participants may sort and rank the same statements equally, they do so for very different reasons. For example, when participants ranked Statement #29 (the best vocational education is something which involves feedback, questioning, application and reflection and, when required, theoretical models and explanations) in high agreement (+ 4) by two factor groupings, as in the case of this study, I sought to understand from the perceptions held by both groupings as to why this

statement was ranked high. At this stage of interpretation, I reviewed the transcriptions belonging to participants that clustered together in both groupings. In doing so, I extracted excerpts directly from participants' interviews to gain insight into participants' inner thoughts that, in turn, provided their rationale for the associated rankings. In Chapter 5, I present participants' interview excerpts as they relate to high agreement (+4) and high disagreement (-4) statements.

I viewed the high-ranking statements from each extracted factor through Joseph's (2000) *Cultures of Curriculum* theoretical framework, which provided an analytical lens to both frame and interpret the distinct perceptions held by participants. For example, when participants group together in Factor 3, in which they were asked about their rationale for the strong agreement (+4) of Q-sort Statement #9 (my students find hands-on work more rewarding than academic work), Participant 136A responded by saying the following: "Again, it goes back to they are not big on reading – and the theory side. They want to get in there and get dirty." I conceptualized this statement through the lens of Joseph's (2000) cultures of curriculum theoretical framework, and in doing so, I situated it within Joseph's training for work and survival culture of curriculum. This is because Factor 3's rationale for the high ranking of Statement #9 clearly identified learners as hands-on or book learners, thereby reinforcing the philosophical underpinnings that ground the academic–vocational divide, which aligns with the principles underpinning the training for work and survival culture of curriculum. Factor 3 participants advocated epistemologies supporting mind–body/head–hand dichotomies that are reflective of old vocational thinking. This belief is evident in their high ranking of Statement #9, which was clarified and reinforced by their response stated above.

At this point in the interpretation process, it is important to consider the close connection between the study's literature review and the 62 Q-sort statements that participants sorted during the Q sort. The 62 statements were drawn from the literature review, and the extracted groupings, therefore, represent clusters of theoretical viewpoints as sorted by participants. As such, the various values, beliefs, and opinions presented in Chapter 2 literature review also provided further perspectives for interpretation.

In Chapter 5 of this dissertation, I analyze and interpret the high agreement (-4 and +4) statements in all four groupings (meaning those representing high levels of variance between the factors as reflected by Q-sort values and z scores) through the triangulation of participant interview with the results stemming from Schmolck's (2014) PQMethod factor analysis. I used Joseph's (2000) cultures of curriculum theoretical framework as an analytical lens to interpret the extracted factor groupings from the perceptions held by the participants' grouped together in each factor.

3.5. Ethical Considerations

As a faculty member at VIU and a doctoral candidate at SFU, my research was considered multijurisdictional; therefore, once I had received approval from the SFU REB, I submitted the SFU Letter of Approval to the REB at VIU in order to gain organizational permissions and approvals prior to commencement of the study. The application for ethical review was approved and deemed minimal risk to participants.

I requested all study participants drawn from institutions within BC speak only on their own behalf, not on the behalf of the institution. I designed the focus and the questions used to guide this study specifically to explore the perceptions of individuals, which was reflected in my choice of methodology, research design, and data collection methods. Q methodology is concerned with individual viewpoints of participants (Shrinebourne, 2009) as opposed to an institutional perspective. Given the research focus, organizational permission was not required from the institutions of potential participants.

Participant confidentiality

I took the following measures to ensure participant confidentiality throughout the study and the dissemination of findings: all participants are identified only by a unique alphanumeric code in all documents and reports of the completed study and kept in a locked filing cabinet. Only the primary researcher and supervisory committee have access to the key of identifiers. Digital photographs of Q-sort placements, using an iPhone 7, were downloaded to a flash memory drive and removed from iPhone storage within a 24-hour period following participation. As the principal investigator, I transcribed all digital

recordings of interviews and downloaded to a flash memory drive before destroying the digital recordings. All data records have been stored on a flash memory drive and kept in a locked filing cabinet.

Of the study participants, 29 performed the Q-sort procedure and post-sort interviews within a private setting. Private settings were typically classrooms or offices chosen by the participant at his or her campus location. The private setting ensured strict confidentiality was maintained at all times throughout the Q-sort and interview processes for these study participants. Two participants chose to perform their Q sorts in the same space at the same time. These participants also chose to collaborate during their post-sort interviews. The remaining six participants chose to perform the Q-sort procedure within a group setting; therefore, strict confidentiality was not maintained, because it was not possible to control what participants did with information through discussion during and after their participation, as stated within the Consent Form (see Appendix F). The six study participants who performed the Q sort in a group setting chose not to perform a post-sort interview due to the time constraints of their teaching schedules.

Prior to participation, I asked all participants to sign the consent form (see Appendix F) and return it to me, the principal investigator. I assigned a unique alphanumeric code to each participant and attached these codes all documentation used throughout the study, thereby removing any identifiers, such as names, emails, contact numbers, and addresses. Participants were asked to perform the Q-sorting procedure that involved sorting and ranking 62 statements (see Appendix G) using the Q-sort response grid (see Appendix C). Participants sorted statements on a scale ranging from +4 (agree with most strongly) to -4 (disagree with most strongly), as per the Q-sorting procedure handout. I ensured participants were given the opportunity to ask questions both before, during, and following the Q-sort procedure. While the Q sorts were being photographed, I took care to ensure participants were not included in the photos.

Following the Q sort, I invited participants to take part in a short, 5-minute, interview with me to answer questions about the placement of their statements on the response grid. Although questions I used the Post-sort Interview Questions handout (see

Appendix F) to guide the participant interviews, many participants chose to stray from this script and all 31 participants extended their interviews beyond the suggested time of 5 minutes. Recording of interviews ranged from the shortest being 13 minutes 22 seconds to the longest at 54 minutes 12 seconds. All participants were reassured at the time of the interview that no right or wrong answers existed. As the principal investigator, I gave participants the choice to be audiotaped during their interview. All 31 participants providing post-sort interviews agreed to the recording and were offered a transcription of the audiotape. None of the participants requested a copy.

All participants were asked if they would be willing to be contacted following the initial participation, should I require more information during the data analysis process. Participants stated whether they wish to be contacted, or not, by circling either “Yes” or “No” on the consent form. I contacted four participants following the initial participation for follow-up interviews. The time duration of second interviews ranged from 23 minutes 41 seconds to 34 minutes 17 seconds.

It is possible that the research data collected in this preliminary study may be used in future research studies. Open-access initiatives allow researchers from different universities to share their data upon completion of their studies, in an effort to stimulate further use and exploration of existing data sets. As per current best practices in research, once I complete my degree with SFU, I will strip stored data of any information that could directly identify participants (e.g., names, email address), or indirectly identify participants to ensure confidentiality, and then transfer that information to SFU’s research data repository to be preserved for future use in open-access initiatives.

3.6. Limitations and Delimitations for the Study

All research methods have limitations. According to Militello and Benham (2010), one limitation of the Q methodology is “the pre-determination of the statements may limit the number of accounts available to respondents” (p. 630). Therefore, it is possible that the concourse statements were not representative of participants’ views. A further limitation to consider in regards to the concourse of statements and the Q-sort

procedure is that participants are required to interact with viewpoints and vocabularies other than their own without first ascribing prior meaning. This requirement may intimidate some participants who perceive that the level of vocabulary used establishes a power differential between them and the task assigned, and/or with the researcher.

As a doctoral candidate, VIU employee, and principal investigator of this study, my limitations performing research were mitigated through the guidance and expertise of my supervisory team: Dr. Michelle Pidgeon, Dr. Natalia Gadjamaschko, and Dr. Allan MacKinnon. Collectively, my committee provided ongoing expertise in a variety of areas, along with guidance, recommendations, and encouragement that has supported me throughout this study and has led to a broadening of my understandings.

Another element of limitation is the researcher sensitivity, which is shaped by my life experiences, including my personal educational journey and years of teaching experience within the BC postsecondary TVET system. My sensitivity has influenced this dissertation on many levels, ranging from the purpose and aim of the study, the questions guiding the study, and to the content of the literature review, including the theoretical frame from which this study is viewed. With an acute awareness of the limitations associated with researcher bias, the chosen methodology used within this study, and its associated blend of qualitative and quantitative methods (namely the statistical analysis of qualitative data), was selected deliberately to moderate the influence of researcher bias during the data analysis procedures.

Additional limitations relate to the method itself and become evident during the data analysis and findings stage when each factor has been extracted statistically but is then subjected to the researcher's interpretation and naming. Factor names and descriptions may not be representative of all participants' views that loaded significantly on the factor groupings. It is possible that participants may have interacted differently with the statements had prior meaning and context been established beforehand.

Lastly, every study is limited by the participant sample, which, in turn, places limitations on the findings. The nature of qualitative research findings, even when used within a mixed-methods design, limit the possibility of generalization, because the

strength of this approach lies in the particularity developed context of specific individuals, sites, or places (Creswell, 2014).

3.7. Chapter Summary

This chapter began with an overview of the history and the philosophy behind Q methodology, and continued with a description of Q methodology methods along with my rationale for choosing this approach. The process of performing Q methodology was reflected in the flow diagram in Figure 3.1. I then elaborated on this with a step-by-step description of the processes undertaken to do this research utilizing Q methodology's five intertwined stages: the concourse, Q sample, Q sort, factor analysis, and interpretation.

In Chapter 4: Analysis, I provide the results stemming from Q factor analysis that I performed using PQMethod software (Schmolck, 2014), and in Chapter 5: Analysis, Interpretation, and Findings, I interpret these results using excerpts from participants interviews in correlation to the extracted factor groupings.

Chapter 4. Q Factor Analysis

This study investigated BC TVET instructors' perceptions that influence their curriculum choices, on the understanding that these value and belief structures may fundamentally overlap, contradict, and/or conflict, leading to a confluence of curricula cultures within the classroom. My intent in conducting this study was to gain a better understanding of the existing cultures of curricula that inhabit postsecondary TVET in BC.

This study was guided by the following questions:

1. What are the general perceptions of vocational instructors regarding their role as a teacher?
2. What are the general perceptions of vocational instructors regarding the intellectual capacities of their students?
3. What are the general perceptions of vocational instructors regarding the purpose of vocational education?
4. What are the general perceptions of vocational instructors regarding the future needs of vocational education?

A four-factor solution resulted from Q-factor analysis, capturing the correlations of shared curricula beliefs and values as expressed during participants' Q sorts. In this chapter, I present the results stemming from Q factor analysis having performed varimax rotation, centroid rotation, and manual flagging. The results are displayed in the form of correlation tables. First, Table 4.1 presents factor-by-factor correlations in the form of z scores. Second, in Table 4.2, the factor matrix presents a by-person factor analysis also in the form of z scores, and, third, Table 4.3 the factors array matrix shows factor-by-factor loadings in relation to Q-sort statements using whole number Q-sort values.

I present a further level of interpretation in Chapter 5: Analysis, Interpretation, and Findings, in which I triangulate the results stemming from Q-factor analysis with excerpts from participant interviews. In doing so, I interpret the four extracted factor

groupings to reflect the shared perceptions held by participants clustering together in each factor. These perceptions are shared in the form of factor sketches. I have named the four factor groupings to reflect the distinct perspectives they represent:

- Factor 1: the Constructivist Crew,
- Factor 2: the Canonical Cluster,
- Factor 3: the Experiential Team, and
- Factor 4: the 21st Century Progressives.

4.1. Q-Factor Analysis: Results

In total, 37 TVET instructors in BC performed 37 Q sorts, each sort consisting of 62 Q-sort statements. I entered the data gathered from the 37 participants' Q sorts, along with the 62 Q sample statements, into the PQMethod software (Schmolck, 2014). I inputted the participant data as a matrix with preassigned values ranging from -4 to +4, reflecting each participant's placement of Q statements resulting from the Q sort. The 62 Q-sort statements were entered according to the numbering system I assigned to record participants Q-sort placements.

Once all the data were entered, I performed varimax rotation factor analysis. I had initially extracted seven factors, producing five factors with significant loadings, and two factors with no significant loadings. Varimax rotation factor analysis extracts the minimum number of factors that explain the most variance (Brown, 1997), which is represented by a decrease in eigenvalues. According to Watts and Stenner (2005), the researcher must decide which factors should be selected for interpretation, with "a standard requirement ... to select only those factors with an eigenvalue in excess of 1.00" (p. 81).

The variance between the initial seven extracted factors as explained through statistic eigenvalues presented Factors 3 and 6 with eigenvalues of 0.1206 and 0.1070 with 0% variance, which is below the recommended standard of 1.0. Therefore, I retained Factors 1, 2, 4, which had eigenvalues in excess of 1.00, and factors 5 and 7 because both

had eigenvalues close to 1.00 (Factor 5: 0.9357; Factor 7: 0.9965) and showed significant variance of 3%.

I subjected the retained five factors to a second varimax rotation. This time the results showed the least variance between the newly rotated Factors 1 and 4, demonstrating an overlap in participant viewpoints between the two factors. To resolve this issue, I performed a centroid rotation of Factor 4 by 3% anticlockwise into Factor 1, which reduced the loading of Factor 4 to 0, resulting in a four-factor solution as shown in Table 4.1.

The results from the second execution of varimax and centroid rotation are presented in the form of correlation scores as displayed in Table 4.1: Correlation scores reflect factor-by-factor loadings. Factors with a minimum of two significant Q-sort loading are referred to as “factor exemplars” (Watts & Stenner, 2012, p. 81) because they exemplify the shared patterns of viewpoints that are characterized by that factor.

Four distinct factors emerged from the Q-factor analysis procedure performed in this study. Table 4.1 presents the correlated factor-by-factor scores, the percentage of explained variance between the factors, and the number of participants loading on each extracted factor. The connection between the four factors depends on the strength of the correlation between the scores—values closer to 1.0 are more strongly correlated.

Having extracted four factors to reflect the most variance, I then performed a manual flagging procedure in order to capture all high factor loadings. Table 4.2 shows the resulting representation in which 26 of the 37 participants’ Q sorts loaded significantly on one of the four factors. A total of 11 Q sorts were confounded, meaning that their individual Q sorts showed no statistically significant loadings. In many cases this can mean participants loaded significantly on two or more factors and were, therefore, excluded from the weighted averages (Watts & Stenner, 2005).

Table 4.1. Correlations Between Final Factors Scores

| | Factor 1 Constructivist Crew | Factor 2 Canonical Cluster | Factor 3 Experiential Team | Factor 4 21st Century Progressives |
|---------------------------------------|------------------------------------|----------------------------------|----------------------------------|--|
| Factor 1 Constructivist Crew | 1.0000 | 0.4536 | 0.5925 | 0.2804 |
| Factor 2 Canonical Cluster | 0.4536 | 1.0000 | 0.3339 | 0.0774 |
| Factor 3 Experiential Team | 0.5925 | 0.3339 | 1.0000 | 0.3114 |
| Factor 4 21st Century Progressives | 0.2804 | 0.0774 | 0.3114 | 1.0000 |
| % Explained Variance | 26% | 5% | 8% | 5% |
| Number of sorts | 17 | 3 | 4 | 2 |

Note. Correlations between factor loading are presented using z scores and explained variance.

Table 4.2 presents the study participants on the vertical axis (with all identifiers removed). Participants' loadings are presented in the form of z scores on the horizontal axis, reflecting their connection factor by factor. Participants are statistically grouped into factors based on correlations found between Q sorts through the application of Q factor analysis.

In Table 4.2, participants' z scores are presented on a factor-by-factor basis. For example, participant 102A has loaded significantly on Factor 1, which is represented though a z score of 0.7911, and noted as significant by the X attached to the z score. The higher the score is to 1.0 the higher the level of agreement is expressed, whereas the lower the score, the lesser agreement is reflected. Furthermore, participant 102A can be seen to load at a lesser level across Factors 2 (0.0124), 3 (0.0766), and 4 (-0.0329), which is represented by z scores placed in the rows under factor loading columns for Factors 2, 3, and 4.

Table 4.2. Factor Loadings (P Sample)

| Participant Alpha-numerical codes | Factor 1 Loadings | Factor 2 Loadings | Factor 3 Loadings | Factor 4 Loadings |
|--------------------------------------|-------------------|-------------------|-------------------|-------------------|
| THE CONSTRUCTIVIST CREW | | | | |
| 102A | 0.7911X | 0.0124 | 0.0766 | -0.0329 |
| 105A | 0.6655X | 0.1205 | 0.3143 | 0.2493 |
| 106A | 0.5851X | 0.1754 | -0.0377 | 0.4371 |
| 107A | 0.5937X | 0.1974 | -0.331 | 0.3263 |
| 110A | 0.6202X | 0.2040 | 0.4002 | -0.0517 |
| 111A | 0.7124X | 0.2243 | 0.0259 | 0.1403 |
| 112A/B | 0.6189X | 0.4298 | 0.1665 | 0.0083 |
| 114A | 0.6579X | 0.0473 | 0.2868 | 0.3019 |
| 115A | 0.4939X | 0.1968 | 0.3597 | 0.2628 |
| 116A | 0.7056X | 0.0641 | 0.2250 | 0.1840 |
| 120A | 0.5807X | -0.0025 | 0.3315 | 0.2302 |
| 121A | 0.6131X | 0.0765 | 0.2092 | 0.0772 |
| 122A | 0.7038X | -0.0582 | 0.2608 | -0.0656 |
| 124A | 0.5737 | 0.0485 | 0.0172 | 0.1996 |
| 129A | 0.6205X | 0.2397 | 0.1963 | -0.0753 |
| 130A | 0.6137X | 0.1023 | 0.2289 | 0.0901 |
| 132A | 0.5774X | 0.0967 | 0.1927 | 0.1142 |
| THE CANONICAL CLUSTER | | | | |
| 117A | 0.3535 | 0.5139X | 0.1388 | 0.2852 |
| 133A | 0.3246 | 0.6118X | -0.0753 | 0.1467 |
| 141A | 0.0126 | 0.5539X | 0.2820 | 0.0598 |
| THE EXPERIENTIAL TEAM | | | | |
| 101A/B | 0.4071 | 0.1100 | 0.4947X | 0.1950 |
| 108A | 0.2855 | 0.0345 | 0.3835X | -0.0803 |
| 113A/B | 0.4465 | 0.0202 | 0.5472X | 0.1906 |
| 136A | 0.0193 | 0.1347 | 0.5414X | -0.0549 |
| THE 21ST CENTURY PROGRESSIVES | | | | |
| 109A | 0.2116 | -0.1092 | 0.3112 | 0.4441X |
| 123A/B | 0.0066 | 0.1086 | -0.0379 | 0.4819X |
| CONFOUNDED RESULTS | | | | |
| 103A | 0.3683 | -0.3267 | 0.2385 | 0.1586 |
| 104A | 0.4864 | -0.0133 | 0.2146 | 0.2473 |
| 118A | 0.3899 | 0.1370 | 0.4469 | 0.3352 |
| 119A | 0.4805 | -0.0043 | 0.1423 | 0.1725 |
| 131A | 0.4465 | -0.0869 | 0.2988 | 0.0218 |
| 134A | 0.5306 | 0.3703 | 0.0135 | 0.0845 |
| 135A | 0.1736 | 0.2200 | 0.2451 | 0.1174 |
| 137A | 0.4475 | 0.3148 | 0.1952 | 0.3611 |
| 138A | 0.2565 | 0.1269 | 0.0722 | 0.3440 |
| 139A | 0.5075 | 0.0780 | 0.3732 | 0.0635 |
| 140A | 0.0126 | 0.0976 | 0.2690 | 0.1932 |

Note. The letter X following z scores represents participants' high-factor loadings. Adapted from *Teaching and Learning Jazz Music Improvisation* (p. 73), by S. E. Rutherford & S. Rutherford, 2014, Vancouver, Canada: Simon Fraser University. Copyright 2014 by Rutherford & Rutherford. Adapted with permission.

As previously discussed in Chapter 3, Schmolck's (2014) PQMethod also converts factor scores (z scores) into whole numbers (Q-sort values) ranging from -4 to +4 that fit in to the Q-sort distribution tables and enable easy comparison between factor arrays for nonstatisticians (McKeown & Thomas, 1988). While Figure 4.1 reflects each individual participant's (by-person) loadings on each of the factors using z scores, Table 4.2 presents by-factor loadings using whole numbers (Factor Q-sort values: Q-sv), ranging from -4 to +4, to reflect levels of agreement. For example, Factor Q-sort values (Q-sv) range from strong disagreement (-4) to strong agreement (+4) and are placed in relation to each Q-sort statement.

In Table 4.3, Q-sort Statement #1 (vocational education should be integrated with academics) received a loading of 0 from the participants grouping together in Factor 1, compared to a loading of +3 from those participants grouping together in Factor 2, and 0 from Factor 3, and +3 from Factor 4. In this example, Factors 2 and 4 can be seen to reflect a higher level of agreement with Statement #1 than those grouping in Factors 1 and 3 who ranked this statement 0.

Table 4.3. Factor Arrays: Factor Q-sort Values (Q-sv) for each Statement

| Factor Q-Sort Values (Q-sv) for each Statement | | Factors | | | |
|--|---|---------|----|----|----|
| | Factor Arrays | 1 | 2 | 3 | 4 |
| 1 | Vocational education should be integrated with academics. | 0 | +3 | 0 | +3 |
| 2 | Vocational education should expose students to all aspects of an industry rather than focusing on a limited range of skills. | +1 | +3 | +3 | -1 |
| 3 | The purpose of vocational education is to transform a person's mind and character. | -2 | -1 | -1 | -4 |
| 4 | Within vocational education, the needs of industry are privileged over students' needs and aspirations. | -1 | -1 | -1 | -2 |
| 5 | The aim of vocational education should be to develop students' ability to respond to the changing nature of work. | +2 | +3 | -1 | -1 |
| 6 | Vocational education is often viewed as something for students who have not performed well in school. | +2 | -4 | +4 | +2 |
| 7 | Any system of education that streams students into vocational fields without providing them first with a rich intellectual education has negative consequences for both the learners and for society. | -1 | 0 | -2 | +2 |

| Factor Q-Sort Values (Q-sv) for each Statement | | Factors | | | |
|--|---|---------|----|----|----|
| | | 1 | 2 | 3 | 4 |
| 8 | The role of industry and government agencies in the development of core standards and assessments for trades, raises concerns of whose best interests are being served. | 0 | -3 | +1 | +4 |
| 9 | My students find hands-on work more rewarding than academic work. | +1 | -1 | +4 | 0 |
| 10 | Curricula focused primarily on skill development deprives students of the opportunity to develop an understanding of scientific theories that underpin practice | +2 | -3 | -3 | 0 |
| 11 | Students need to learn the work ethic, and gain a wider view of their role as workers. | +1 | +2 | 0 | 0 |
| 12 | All students learn best by doing, not just manually minded students. | -1 | -1 | +2 | +3 |
| 13 | Students learn academic material best through a traditional teacher-centered approach. | -4 | -4 | -3 | 0 |
| 14 | Students are capable of developing and solving problems within work related contexts. | +1 | 2+ | +2 | -2 |
| 15 | All students are capable of learning and growing from the powerful ideas within a humanities curriculum. | 0 | +4 | -2 | -3 |
| 16 | Students need to be led, stimulated, and coached because learning, the development of intellect, is arduous work. | -1 | +4 | +1 | -1 |
| 17 | The shop is where students see theory in practice and that is where the trades students are different -- they come alive on the shop floor. | 0 | 0 | +4 | +2 |
| 18 | My students have an innate affinity with information technology, and it would be a shame not to utilize that effectively in the classroom | 0 | +1 | +1 | +2 |
| 19 | Students mentally organize information and are able to apply it to future problems or situations. | -1 | +4 | -1 | 0 |
| 20 | Learners are recognized as capable agents of knowledge production, rather than passive consumers of information. | 0 | +2 | -2 | +2 |
| 21 | Parents may be concerned with the stigma associated with vocational education and may worry about their child's chances of an academic education in the future | 0 | -3 | +1 | -2 |
| 22 | All trades work is thought-enabled work and it requires mental processes involving perception, attention, memory, knowledge, and judgment. | +4 | +3 | 0 | -2 |

| Factor Q-Sort Values (Q-sv) for each Statement | | Factors | | | |
|--|---|---------|----|----|----|
| | | 1 | 2 | 3 | 4 |
| 23 | Teaching vocational education is about transmitting my skills to a new generation of worker. | -3 | -2 | 0 | 0 |
| 24 | Instructors are given the provincial ITA standard curriculum, and follow it rigidly. | -2 | -2 | -1 | -4 |
| 25 | Good work, such as thoroughness, promptness, neatness, reliability, and punctuality are to be taught and valued. | +3 | +3 | +3 | -4 |
| 26 | Collaboration with other instructors from either vocational education or academics has helped me to adopt new teaching methods. | +3 | 0 | +3 | +1 |
| 27 | I know my trade and I mold my teaching on how I learn and how I was taught. | -4 | +1 | +2 | -3 |
| 28 | We all know our trade but teacher training is helpful because it covers the theory behind the practice in adult education. | +3 | 0 | +2 | 0 |
| 29 | The best vocational educational learning is something which involves feedback, questioning, application and reflection and, when required, theoretical models and explanations. | +4 | +2 | +4 | +2 |
| 30 | The goal of teaching should be to spark each student's imagination, to find a hook in their heart and mind so that they feel a need to learn the material. | +4 | +3 | +4 | +4 |
| 31 | The instructor's role in translating competence-oriented goals into actual learning activities is crucial in the implementation of vocational education. | +3 | 0 | +2 | 0 |
| 32 | Vocational education needs to be taught in the context of practical problem solving | +2 | +1 | +2 | +3 |
| 33 | In my classroom, I talk most of the time, students sit, listen, do bookwork, and take tests. | -4 | -3 | -3 | +1 |
| 34 | The teaching day severely limits the amount of time available to instructors to meet with colleagues for curriculum planning, brainstorming, and meaningful discussion. | +2 | -2 | -2 | 0 |
| 35 | Trades' Instructors should determine standards, design the curriculum for students work, and create the structure of classroom activity. | -1 | 0 | +1 | +4 |
| 36 | Classroom management builds good industrial habits. | -2 | +1 | -3 | -2 |
| 37 | Teaching and learning strategies, such as problem based group work, and case-studies, take up too much classroom time. | -4 | -4 | -4 | -1 |

| Factor Q-Sort Values (Q-sv) for each Statement | | Factors | | | |
|--|---|---------|----|----|----|
| | | 1 | 2 | 3 | 4 |
| 38 | Learning in the trades should be assessed through authentic assessment practices that include: demonstrations, products and services sold to the public, and student contribution to the community. | +1 | -3 | -3 | +1 |
| 39 | Learning should be assessed through individual writing of essays and papers. | -4 | -2 | -4 | -4 |
| 40 | The focus on tests dictates what I cover in class each day. | -3 | -4 | -3 | -3 |
| 41 | I like students to hand write their assignments because I think they understand better compared to using a computer. | -3 | -2 | -4 | -4 |
| 42 | Drills are often the only method for teaching basic psychomotor skills. | -2 | -3 | -2 | -2 |
| 43 | The students learn to pass the multiple-choice exam but they don't have the experience or the knowledge to perform the skills. | -2 | -1 | 0 | +1 |
| 44 | Trades instructors should evaluate students' knowledge through questioning and engaging students in debate. | +1 | +4 | -1 | -3 |
| 45 | What may be deemed competent performance in one setting may be quite inappropriate in another. | -1 | +1 | -1 | +1 |
| 46 | Standardized competencies promote a mechanical and procedural approach to teaching and learning. | -2 | -2 | 0 | +3 |
| 47 | Standardized competencies describe jobs from the past. | -2 | +1 | +1 | 0 |
| 48 | Effective learning activities do not result from specifying levels of competence, they require specific attention in planning and designing. | +2 | 0 | 0 | +4 |
| 49 | Teachers need a clear understanding of the variety of learning methods that lead to different learning outcomes before they can make informed and effective pedagogical decisions. | +4 | +2 | +1 | +2 |
| 50 | Measuring observable changes in behavior is evidence of learning. | 0 | 0 | -2 | -2 |
| 51 | Open-ended questions are a more valuable learning tool than questions requiring only one right answer. | +3 | +1 | +3 | -1 |
| 52 | When a teacher stands in front of the class and presents conceptual information directly without student involvement, it results in students regurgitating content without any evidence of understanding. | +4 | -1 | +3 | -1 |
| 53 | Teaching and learning activities and assessment methods should be designed according to Bloom's Taxonomy and demonstrate an understanding of the domains of learning. | +2 | -1 | -2 | +1 |

| Factor Q-Sort Values (Q-sv) for each Statement | | Factors | | | |
|--|--|---------|----|----|----|
| | | 1 | 2 | 3 | 4 |
| 54 | Identifying a learner as having a certain learning style or preference is detrimental to their learning. | -3 | 0 | -1 | -3 |
| 55 | Lecturing to students is an efficient instructional technique. | -3 | -1 | -4 | +1 |
| 56 | All my students are going to need communication skills beyond what I had ever imagined when they enter today's workplaces. | -1 | +1 | +3 | 0 |
| 57 | The 21st-century skills agenda can lead to the temptation to keep adding things to the curriculum, resulting in a curriculum which is a mile-wide but an inch-deep. | +1 | -2 | +1 | -1 |
| 58 | Wifi is a distraction in the classroom. | +1 | -4 | -4 | -2 |
| 59 | Advances in information technology (IT) are changing the way we teach. | +1 | +2 | 0 | +3 |
| 60 | When information is available at the touch of a button, teaching is arguably less about filling students' heads with knowledge and more about teaching them how to become effective, lifelong learners capable of responding to a fast-paced world of relentless change. | +3 | 0 | 0 | +3 |
| 61 | The real answer to improving outcomes from vocational education is through gaining an understanding of the many decisions instructors take as they interact with students. | 0 | +2 | +2 | +1 |
| 62 | Academic freedom is essential for me to be effective in my instructional role. | 0 | +4 | 0 | +3 |

Factor array tables were produced by PQMethod software in two formats: (a) z scores (as shown in the Factor Loadings in Figure 4.1) and (b) Q-sort values using whole numbers. The Q-sort values using whole numbers are presented in Chapter 5 of this study to support the interpretation of the distinct perceptions held by participants grouping together in each of the extracted factors.

4.2. Chapter Summary

I began this chapter with a detailed description of the data analysis process used in this study, including the procedures of Q-factor analysis, varimax and centroid rotation, and manual flagging. I employed S. R. Brown's (1993) varimax rotation method to extract the minimum amount of factors. I extracted seven factors in the initial rotation.

Ultimately, I retained only five factors based on resulting eigenvalues and percentage of variance reflected between the factors. I subjected the retained five factors to a second varimax rotation and centroid rotation. A four-factor solution resulted and manual flagging was performed to identify significant participant loadings. A total of 26 participants loaded significantly on to one factor. A total of 11 participants' Q sorts were confounded, meaning that these 11 Q sorts showed no statistically significant loadings.

I displayed the results stemming from Q-factor analysis in the form of correlation tables that provided factor-by-factor correlations as z scores as well as a by-person analysis also in the form of z scores. I presented a factor array matrix to show factor-by-factor loadings using whole number Q-sort values.

I present a further level of interpretation in Chapter 5: Analysis, Interpretation, and Findings. In that chapter, I triangulate the results stemming from Q-factor analysis with excerpts from participant interviews. In doing so, I interpret the four extracted factor groupings to reflect the shared beliefs and perceptions held by participants clustering together in each grouping. I present these views in the form of factor sketches and have named the four groupings to reflect the distinct perspectives they represent: Factor 1: the Constructivist Crew, Factor 2: the Canonical Cluster, Factor 3: the Experiential Team, and Factor 4: the 21st Century Progressives.

Chapter 5.

Analysis, Interpretation, and Results

Q factor analysis produced a four-factor solution, as presented in the factor array tables and the correlation matrix in Chapter 4, both of which captured the shared rankings of Q statements resulting from participants' Q sorts. For the next phase of analysis, I interpreted the extracted factors, that I shall refer to as groupings, from the perceptions held by the participants that clustered together.

I achieved this second phase of analysis through the triangulation of raw data gathered during post-sort interviews, with the factor array tables produced by Q factor analysis. In other words, the Q factor analysis enabled me to capture the correlations between shared curricula beliefs and values of individual participants as presented in their Q sorts and to group participants together accordingly. However, Q factor analysis did not help me to interpret why participants placed the statements in a particular order. As the researcher, it was my aim to interpret the perceptions held by the groups of participants.

In an effort to gain further insight, I reviewed post-sort interview transcripts on a factor-by-factor basis and extracted excerpts directly as they related to high agreement statements. Participants' interviews provided valuable insight into their subjective viewpoints. This is not surprising, since the questions asked during post Q-sort interviews (see Appendix D) focused specifically on the participant's rationale for placing statements in columns labelled most agreement +4, and least agreement -4.

High-agreement statements (exemplars) and correlating interview excerpts in the form of block quotes are presented factor-by-factor in the factor sketches that follow in this chapter. All identifiers have been removed. Interview excerpts are organized and presented using alphanumerical codes assigned to each participant. All participant codes begin with a randomly assigned three-digit number such as 101. The three digit number is

followed by the letter A, representing the primary post-sort interview, or B, representing a secondary post-sort interview.

I developed the factor sketches with the aim to systematically capture and interpret the perceptions held by participants who Q-sort in similar ways and hence cluster together into one of the four extracted groupings. In addition, I include a section on distinguishing statements to highlight significantly different loadings between groupings.

Throughout the interpretation phase, I performed an ongoing by-factor summary as a means to openly interpret and filter the perceptions as expressed by participants Q-sorts and their correlating interview statements. Joseph's (2000) cultures of curriculum theoretical framework provided an analytical lens for me to both frame and interpret the distinct perceptions held by participants. My utilization of Joseph's (2000) theoretical framework becomes more apparent in Chapter 6: The Discussion.

In closing, I present factor summaries that represent my findings, grounded in results stemming from Q factor analysis as filtered through my interpretation of participants' interview excerpts. My aim was to present the four distinct perspectives held by participants grouping together in each factor. In doing so, I have named the factor groupings as follows to represent their associated perspectives: Factor 1: the constructivist crew, Factor 2: the canonical cluster, Factor 3: the experiential team, and Factor 4: the 21st century progressives.

5.1. Factor 1 Sketch: The Constructivist Crew

Participants in this grouping collectively held a range of academic credentials: seven Master of Education degrees, two bachelors degrees, two 2-year diplomas, seven Provincial Instructor Diploma Program certifications, and two Grade-12 completions. In addition, eight participants reported having attended professional development courses and workshops at their relevant institutional teaching and learning (T&L) centres during the past 12 months. Trade-specific credentials were reported collectively as 15 RSEs specific to trade and two provincial trade certificates. Within this grouping, three

instructors taught in postsecondary institutions for more than 15 years, six instructors taught between 10 and 14 years, three instructors between 5 and 9 years, and five instructors were within Years 1 to 4 of their teaching careers.

The constructivist crew indicated the best vocational education is learner centred, which is evident in the high agreement rankings +4 of Statement #29, “The best vocational education is something which involves feedback, questioning, application and reflection and, when required, theoretical models and explanations,” and +3 of Statement #51, “Open-ended questions are a more valuable learning tool than questions requiring one right answer.” The high level of agreement with these statements suggested the constructivist crew perceived their teaching role as one of a facilitator. The teacher as facilitator aims to create a learning environment in which both student and teacher coconstruct meaning. This constructivist facilitation model is grounded in the understanding that the learner is an active participant in knowledge construction, as opposed to a passive approach in which the learner is perceived as an empty slate.

When asked about their thinking on Statements #29 and #51, participants such as 106A, 107A, and 132A shared examples of their mediated actions in the learning environment between subject and object.

[For me, my role is] to make connections that maybe aren't in the curriculum—connections to what the students are asking about. Especially when they're lost because they don't see the connection yet. (106A)

It's just because I don't think that students learn very well if you just tell them things and to go home and remember that. There has to be back and forth ... a two-way street and when required a theoretical model is an explanation, so when they say *why*—that would be the time to pull out the theory. (107A)

So if you think learning is about asking questions and trying to think outside of the box and trying to see things in more than one way, to me, that's what's going to take the students forward into the future. (132A)

These three interview excerpts carry a common thread that speaks about the cocreation of knowledge between student and instructor. This can be heard in the language participants used such as “back and forth” (107A), “seeing things in more than

one way” (132A), and “making connections” (106A). The following interview excerpt reflects a slight shift in the instructor’s role by providing guiding questions that lead students towards curiosity, reflection, and application in the acquisition of knowledge.

I’ll give you an example. We’re often referring to elements or gasses in the welding process, and I could just dryly go through and mention a gas and talk about why it works well within a certain welding process. However it would probably be helpful if the students understood how the periodic table works and about different densities of gas and how they conduct electricity—this makes a huge difference. So it’s not part of our curriculum but we’ll roll through it—[The student’s reaction is,] “Hey, this is kind of interesting, and did you know this? Did you know that?” Some [students] know and are happy to share that with the other students, and the ones that don’t [know], you can see some of them they light up and go, “I never got that before.” (124A)

The constructivist crew assert that cognitive processes not only precede the performance of psychomotor skills but also occur during and following the physical action, which is evident in the high agreement ranking +4 of Statement #22, “All trades work is thought-enabled work, and it requires mental processes involving perception, attention, memory, knowledge, and judgment.” In doing so, they reject the hand–mind binary; alternatively, they see learners’ holding the intellectual capacity to perform the following mental processes.

My three elder brothers are all in business and they think trades is for people that can’t do anything else—for some people, sure, but I’ve always been a really capable student. We worked on a renovation together, and I sort of led the way—I have another brother that is a carpenter and we had the other three brothers help us. When they saw the math involved, they learned a whole new level of respect for it. A lot of people don’t recognize intelligence when it wears gloves and overalls and [is] covered in dirt. They kinda changed their tune on the whole thing—they still value academics—old-fashioned levels of smart. (105A)

In agreement with Statement #22, participants spoke about the complexity of building a house, noting the skills required involve higher order logic and complex math in action.

I think that people don’t realize that about the trades. They think it is an easy out, but there is actually more to it than people think. (122A)

You know, trades needs smart people too. And if you think of building a house, you can't just slap some wood together and call it house [laughter], there is planning that has to happen, and now with BC building code there is a 1,064 pages of book that you need to be able to use and access at any time. You have to be able to perform real complex calculations beyond the theory alone. I think there is a lot of projects that we do that strong math students from up the hill [referring to the academic programs located at the top of the campus] struggle with—just because we are linking it to real things—and really holding ideas in your hand and being able to manipulate it and move it around in a three-dimensional way. That's not a skill that just anybody can have. (105A)

Participants spoke of misunderstandings associated with the performance of trades and spoke about the tradesperson's ability to manipulate theory in action. In doing so, they drew attention to the difference between book learning and real-world experience.

I think in all trades, and particularly our trade, students are going to be facing problems that they'll never see in that curriculum material and so if we don't help them learn to go past the problems that are presented and the information that they're presented in order to create their own cognitive structures of thinking about problems, we're doing a disservice. (115A)

In the four interview excerpts above, participants expressed agreement, claiming the current dualistic education system seldom pays attention to the cognitive dimensions of practical work. As a result, assumptions are made about the knowledge required to perform manual work, leaving many to believe that it easily learnt.

The constructivist crew ground their pedagogical decisions in theory-based evidence, which relates to both the learner and the instructor in the coconstruction of knowledge. The following high-ranked statements shifts focus and provides insight to the constructivist crew views about learning to teach. These beliefs are reflected in the high-agreement ranking +4 of Statement #49, "Teachers need a clear understanding of the variety of learning methods that lead to different learning outcomes before they can make informed and effective pedagogical decisions," and +3 of Statement #28, "We all know our trade but teaching training is helpful because it covers the theory behind the practice in adult education," and they are reaffirmed by the rejection and high-disagreement

ranking -4 of Statement #27, “I know my trade and I mould my teaching on how I learn and how I was taught,” and -3 of Statement #23 “Teaching vocational education is about transmitting my skills to a new generation worker.”

The following three participant interview excerpts capture the factor of learning to teach. A clear message is evident: the constructivist crew reject the notion that their success in industry as masters of their trade will translate to successful pedagogy in the classroom. This is because the teaching of vocational skills is far more complex than simply transmitting skills. Participants agreed that good teaching is not intrinsic; it requires formal education and a dedication to improve before evidence-based teaching practices can be aligned with student learning outcomes.

I don't think that knowing our trade means knowing how to teach it. Adults learn based on their previous experiences and they have prior knowledge that they bring into the classroom that affects how they learn. This isn't something that necessarily comes naturally to me—I had to learn it. (122A)

I feel pretty darn strongly about that [Statement #27, ranked - 4]. Right, so it can be done, and people can learn from those they're learning beside, and stuff like that. But, you don't know what you don't know. And because you come in as a competent technician, you'd be fooling yourself if you think you are competent as an instructor without formal education around teaching and learning. (132A)

Well, the transition from industry to teaching is not easy. You get hired because you are well respected in your trade and nobody is looking much at your level of education, but then it's sink or swim! You're on your own. In trades in general we are groomed through mentorship, but there are no mentors in the classroom. Without the [Provincial Instructor Diploma Program] PIDP and the Teaching and Learning Centre [T&L], it would have taken a month of Sundays to develop the instructional skillset that I have now. (112A)

While pedagogical decisions for the constructivist crew are grounded in teaching and learning theory, requiring instructors to seek formal education outside of their practice, they are faced with another aspect of teaching and learning that requires further education. The constructivist crew referred to trade-specific knowledge and skills that require continual updating. Participants claimed instructors are required to learn new, or

revised, subject matter and skillsets related to their discipline as well as determining appropriate pedagogical approaches.

So I find that I am having to learn new skills all the time myself because the game is constantly being upped and the ante is getting higher and so that's why we need to go and do professional development, so that I – I mean, if I'm only translating my skills that I learnt you know, when I was 25, 30, or 40 years old, a long time ago, I would be hopelessly out of date. (107A)

Subject matter and associated skill sets are continually changing in many of the trades. This places TVET instructors in a unique situation in which their own subject matter expertise and their experience in industry becomes steadily less relevant as they progress in their teaching careers. On one hand they improve as teachers, but on the other hand they no longer feel a sense of mastery in their trade.

Expanding now further on Statement #49 regarding the understanding of various learning methods in relation to pedagogical decisions, the constructivist crew reject the notion that theory can be learned through methods of rote memorization, as seen in the high rank +4 of Statement #52, “When a teacher stands in front of the class and presents conceptual information directly without students involvement, it results in students regurgitating content without any evidence of understanding,” and reaffirmed by their rejection shown in the high-disagreement ranking -4 of Statement #33, “In my classroom, I talk most of the time, students sit, listen, do book work, and take tests.”

The following interview excerpts reflect the constructivist crew's experiences as both students and instructors and their views toward the use of rote memorization. They claimed rote memorization is an ineffective approach to learning, and, in doing so, they rejected behaviouristic teacher-centred approaches in which learners are recipients of knowledge, as opposed to engaged participants.

I took over from a previous instructor who taught how I was taught, which didn't really work all that well. Lecturing, right. Just using lecturing and PowerPoint and having students sitting and listening—maybe taking notes. So, I just don't find that a very effective way of teaching. Students get bored—they're not engaged. (115A)

Some people lecture really well, but it's more of a show than a lesson. I've never learnt that way very well, and I haven't heard a lot of feedback supporting teacher lecturing that is really good. (105A)

The following two interview excerpts reflect the thinking behind the high-agreement ranking +4 of Statement #52; they discussed the limitations of training students to recall facts, claiming that rote memorization serves no purpose for the majority of students, not even to pass an exam.

Regurgitating knowledge without evidence of understanding is a problem—to the point that when I become desperate for them to get an answer on a test that I think I may have missed, and I directly tell them, “If you see a question like this, put this answer,” and you know, 40% of them get it wrong. You realize that talking to them about the answers is not good enough. You've got to get the understanding. (132A)

Well, basically, I can force you, or tell you, or threaten you, that you must know this for the test and you can remember this information for a period of time and then you've lost it and you're not going to be able to apply it down the line because, basically, you never did understand it. (124A)

These four participants expressed a high level of concern regarding the failings of rote memorization as a teaching and learning method. Participants in this grouping willingly reflected on their own practices, including ones that proved to be ineffective, such as telling students what is on the test and giving them the answers to remember.

On a similar thread, the constructivist crew demonstrated their understanding regarding the limitations of competency-based education, recognizing that the direct teaching of competencies decontextualizes skill sets from the situational level. This belief is evident in the high-statistical ranking +3 of Statement #31, “The instructor's role in translating competence-oriented goals into actual learning activities is crucial in the implementation of vocational education.”

During the post-sort interviews, participants grouped in this factor related Statement #31 to the context of their own teaching, and in doing so they spoke directly to the limitation of the ITA program outlines. Collectively, they claimed there is a need to go above and beyond the scope of ITA program outlines in order to prepare learners with the capacity to solve unfamiliar problems.

Well, I've investigated the concept of how do people fix things that they're not familiar with? Specifically, how is it that I can fix—I left the trade in 2002—how is it that I can fix technology that came since 2002? How is it that I can fix my dishwasher? How is it that I can fix things that I've never received training in? We need to give them fundamentals and powerful concepts. If I could tear open the entire apprenticeship system and rebuild it, I would do it around fundamentals, rather than silos based on chapters in a textbook. An example, Millwrights don't know what they're going to work on—it might be a chicken de-boner, or they may work on a chairlift at Whistler, so when you look at their curriculum it's about hydraulics, about gears, it's about levers, and then they put it together into whatever technology they're working on. Yet in other trades, like automotive, it's all about individual competencies—brakes, steering, suspension, engines—but it's up to the instructor to show how the overall concept, the fundamentals, apply throughout. (132A)

When asked about the placement of Statement #31, participants expressed frustration with the structure of competency-based education, in this case the ITA program outline. They claimed that a full conceptual understanding—the knowledge of interdependent systems—is lost when competencies are deconstructed in to measureable chunks and removed from practice.

I know that this is a problem, and I'm trying to introduce things, but it's slow. I've been working with the T&L department and they've been giving me ideas—they've been working with the whole department actually. So the things I've been playing around with is to connect the individual competencies theoretically. I take the individual competencies out of the ITA Line Book, and I've been learning to build classroom activities and techniques and experimenting with them a bit. They've been mostly positive. (121A)

Yep, they say that the guys need to know about power seats, power antennas, and power this and power that. But they miss the fact that power windows and power antennas, and power mowers are just a motor running in two different directions—what I would call bidirectional motor control. The thing is if you have students practice applying it to different systems, a power sliding door on a van, they'll go, "Oh, that's bidirectional motor control. I know what that is, and I can diagnose it through this strategy." (132A)

Yep, hitting the content that is in the ITA Standards to help them gain information, but we have a responsibility to go way beyond helping them pass the test. (115A)

Another concern that is expressed in the following interview excerpt draws attention to the outdated content found in program outlines. This concern speaks about the current ITA system in which program outlines are created and revised, claiming that this issue is twofold: (a) content is outdated and not removed or revised and (b) content reflects the needs of specific industries over the needs of student interests and, possibly, knowledge of the broader industry.

There is a set outline of competencies that we need to cover—set by industry and government. But that takes a long time to change, from what I have seen. The content is still what I was learning about in school 25 years ago—it’s still there! There are a lot of newer ways of doing things. Our students’ interests aren’t necessarily what the industry interests are. (111A)

Collectively, the Factor 1 participants agreed that predetermined competencies limit learners’ levels of understanding and their ability to transfer knowledge to solve future problems. The constructivist crew reported going above and beyond the predetermined competencies presented in the ITA program outlines in order to enhance learners’ development of conceptual and theoretical understandings, which, they claimed, will serve the students in the future as they face new situations and problems.

The constructivist crew also recognized that learners in the 21st century are capable of accessing information at the touch of a button, which is evident in their high agreement ranking +3 of Statement #60: “When information is available at the touch of a button, teaching is arguably less about filling students heads with knowledge and more about teaching them to become effective, life-long learners capable of responding to a fast-paced world of relentless change.” Instructors grouped together in this factor also recognized that skill sets required to access information via technology and to transform information into knowledge in order to respond accordingly to fast-paced societal, economic, and work-based changes, require different cognitive competencies than those traditionally fostered within the TVET paradigm.

For the constructivist crew there are three issues at play here: (a) critical thinking, (b) access to technology, and (c) the teaching of soft skills. In agreement with Statement #60, the following two interview excerpts exemplify how participants in this group

asserted critical thinking is not a stand-alone skill, nor can it be taught in such away. For the constructivist crew, critical thinking is fundamental to all learning.

I'm not overly familiar with 21st century skills, but for example critical thinking is seen as its own skill, and I strongly disagree with that because I think that critical thinking is fundamental to any learning all the time. (114A)

To me, learning is about asking questions and trying to think outside the box and trying to see things in more than one way—that's what's going to take students forward in the future and help them to be successful in a rapidly changing society for work. You know, half the cooking jobs probably won't be available 10 years from now, It will be robots in a factory somewhere putting it all in vac-pacs and sending it off!... Feeding people is [a] very expensive business, so I can see all those jobs being prime candidates for robotics and automation. So, if they [students] are able to start to think outside the box and take these skills forward, then they have a better chance of being able to adapt to something like this. (107A)

When asked about their thinking relating to Statement #60, participants in this grouping claimed trades education does not provide instructors or learners with appropriate access to technology. As a result, learners are not gaining the necessary technical literacy skills. This limited access to technology has led to comparisons of resources between academics and trades, claiming that the inequitable distribution of technology and equipment is visible across campuses.

In our classroom we have no IT. We have [the] minimum. Our computer systems are antiquated. You know, I'm just saying—it's life. You know if trades was viewed the same as academics, wouldn't it *be* the same? [emphasis added to match participant's speech]. If you go into our classrooms compared to the classrooms that are up the hill, the classroom we went into were fully equipped with IT, comfortable seats, all of the equipment an instructor would need to deliver a good delivery using technology. (112B)

A lot of institutions don't have the funding to use the technology in the robust way that they are capable of. We use it as distance education, but the trades are too small that we don't see the investment to develop the learning objectives to help these people actually use the online tools to learn, and nor do we actually believe it's a literacy lesson that people need in the 21st century. I don't think we're developing that—there's too much

information out there, and they need to be able to actually discern between that information rather than match the information. (115A)

Other participants claimed that despite the increase in technology, soft skills are the most desired, yet they are not embedded throughout the program outlines. The teaching and learning of soft skills are, therefore, left up to the instructor.

Every time I go to a trade show or job fair there are people there from industry looking for employees. Invariably, they will say something like, “It doesn’t matter what they know about cooking or baking, we’ll teach them. Can they work? Do they have a good attitude? Are they willing to learn? Can they learn, can they...?” It just blows my mind—it’s all about the soft skills. (107A)

So, there is no soft skill, or time allotment given by ITA for this soft skill. No online communication and no networking. So I added that into the classroom to increase the networking skills between students and their comfort levels when working with customers. (110A)

Participants in this grouping spoke about the missing content in the ITA program outlines. Participants stressed that they add in content as they see fit.

5.1.1. Distinguishing Statement for Factor 1

Data analysis revealed participants responses to Statement #34 to be statistically significant, which is evident in the array of z-scores and associated Q-sort values between Factors 1, 2, 3, and 4. Those of the constructivist crew valued the practice of continuous curriculum development and asserted that collaborations with colleagues will be beneficial to both the learners and the instructors. They expressed concern that the current structure of TVET does not place value on this practice, which was evident in their significantly high-agreement ranking +2 on Statement #34 compared to the significantly lower loadings made by Factors 2, 3, and 4. Evidence of factor loadings is shown in Table 5.1.

Table 5.1. Distinguishing Statement: Factor 1

| Statement Number | Statement | | | | | | | | Rank |
|------------------|--|-----------------|-------|-----------------|-------|-----------------|-------|--|------|
| 34 | The traditional organization of the teaching day severely limits the amount of time available to instructors to meet with colleagues for curriculum planning, brainstorming, and meaningful discussion | | | | | | | | +2 |
| Factor 1* | | Factor 2 | | Factor 3 | | Factor 4 | | | |
| Rank | Z-SCR | Rank | Z-SCR | Rank | Z-SCR | Rank | Z-SCR | | |
| 2 | 0.88* | -2 | 0.77 | -2 | 0.90 | 0 | 0.00 | | |

Note. PQMethod factor array tables use an asterisk (*) to identify distinguishing statements.

5.1.2. Interview Excerpts for Distinguishing Statements

At the end of the day I'm totally burnt out, and maybe I could sit around the lunch table with colleagues to discuss these topic, but we hardly ever get lunch—when would that happen! There's not a lot of time. It would be nice to have more [time]. (107A)

Participants drew attention to the long teaching hours in trades programs that offer services to the public, which limit availability for lunch breaks, as per the nature of the trade. On one hand, this concern reflects positively to the authenticity of these learning environments, in which students learning takes place in a real-life setting. However, on the other hand, educators who are required to run businesses are torn between two conflicting ideals, business versus education. From the interview excerpt above, a learning environment that operates as a business ends up prioritizing the use of time to meet the demands of the business, which, ultimately limits instructors' time to focus on curriculum.

When asked about their thinking of Statement #34, Participants promoted a more collaborative approach to professional development. They also suggested professional development opportunities are lacking or not valued in the trades. This can be seen to differ from K–12 teachers and from academic collective agreements in which professional development is resourced and mandated annually.

In a professional environment, professional development should be encouraged and funded so that instructors have time to meet and grow,

and reflect, and try new things with our students. After all, we're asking them [students] to be good learners, but we are stuck with what we know. I don't think you can be a good instructor if you're not a learner. If you're not on the edge somewhere learning, how can you relate to your students? (106A)

It takes a lot of effort. You'll go and learn something somewhere—I think there should be some kind of mechanism in place, maybe there's supposed to be, where you come back and go, "Okay guys here's the debriefing. This is what I learned. This is what I found effective. This is what I found to be ineffective." You know, distribute to everyone in our department. (124A)

Well, it's almost like some [instructors] would have their little tickle trunk of tricks that they would hide that, like protectionist, almost. But even then, they would probably be more happy and fulfilled if they were wide open and we all helped each other and discussed it [teaching practices] and talked about what's effective and what's not. (124A)

Participants also suggested the identity of trades instructors has been shaped by the general misunderstanding and perceptions that surround trades, meaning that trades are easily learnt and easily taught. It is possible that these perceptions have clouded all aspects of teacher development, including the valuing of trades instructors as curriculum developers, as well as the resourcing that supports it.

I just want to reiterate that teaching is a craft or a vocation. When I think about the profession of teaching, or the work of a teacher, of course there's the interaction, the paid interaction part, as an employee, but I really do see it as kind of a lifestyle in a way—and it's really hard to turn it on and off based on your workday. I think that a lot of the work around curriculum, what we were speaking about previously, these teaching and learning centres, they effectively disempower the subject matter experts by overlooking their skill, or developing skill as teachers. As in, teaching is a craft, but I don't see it being valued in that way. (114A)

This view sheds light on the value of formal knowledge held by those researching teaching, compared to the value of practical knowledge gained by those situated in the experience of teaching.

5.2. Factor 2 Sketch: The Canonical Cluster

Collectively, participants in this grouping hold a range of academic credentials: one Master of Education degree, one baccalaureate degree, and one PIDP certificate. Regarding trade-specific credentials, two instructors hold RSEs in their relevant trade and one instructor holds a provincial trade certificate. Within this grouping, one instructor has taught in a postsecondary institution between 10–14 years, one instructor has taught between 5–9 years, and one instructor is currently 1–4 years into her or his teaching career.

The canonical cluster reported their role as educators spanned beyond the restraints of competency-based curriculum and standardized program outlines, claiming that academic freedom is an essential element of effective teaching. This claim is evident in the statistical high ranking + 4 of Statement #62, “Academic freedom is essential for me to be effective in my instructional role.”

When asked about their thinking of Statement #62, participants shared views reflecting how they perceive their instructional roles, noting that their curriculum choices exceed the limitations of the ITA program outlines. To these participants, their role is to educate learners to their full capacity, that is, to shape their hearts and their minds as well as their practical skills.

I think that academic freedom is essential for me to be effective in my role. What I’ve done is really unorthodox. I had to basically support my revised curriculum with research, and I had to try and convince them [the college and employers] that there was something in it for them. They exist to make money—they are a business, and to lose 20% of production from the apprentices, they had to really understand where I was going and how there was a benefit to both apprentices and employers. I was really successful and there was not even any argument. (133A)

Absolutely, because there is a bigger picture. Not only should I be talking about pruning trees and climbing trees, I should be talking about the urban Forestry. (117A)

I really felt that what we were doing didn’t match the theory and there was a big piece missing, and that’s why, on my own, I went back to do my master’s and from this I’ve revised the curriculum. The past 2 years, it’s

been like an intentional journey to look for this missing piece in vocational educational. (133A)

The canonical cluster holds values that are in keeping with Du Bois (2014) in saying that all people are worthy of a full education, which is evident in the statistical high-agreement ranking +4 of Statement #15, “All students are capable of learning and growing from the powerful ideas within a humanities curriculum.” The ranking of this statement is a reflection of the canonical instructors’ thinking, which, in turn, disrupts the academic–vocational dichotomy. This thinking was further articulated by the canonical clusters who claimed trades are more than the performance of tasks and that a full education, the development of higher order thinking skills, serves all of humanity including those performing a trade. This belief is reaffirmed by the rejection shown in the high disagreement -4 ranking of Statement #6, “Vocational education is often viewed as something for students who have not performed well in school.”

When asked about their thinking of Statement #15, participants shared views advocating a full education, even for those pursuing a career in trades.

Trades can be intensely academic themselves. Look at where we have come in our careers. I went from humanities and learning how to think, learning how to digest information and come up with my own opinions about it to a quest into forestry and now into horticulture! So, in one sense, I went down the scale in a 70s sense, but I went up the scale in a way that this has allowed me a lot of success, but it’s kind of like, did I progress, or did I regress? I think I progressed by choosing a trade and approaching it from an academic perspective. (117A)

I don’t want them to successfully perform a task, I want them to succeed as human beings. I want to see a flourishing—if we have to spend the majority of our adult working lives in the workplace, then why not make it a place where we encourage curiosity, we encourage imagination, encourage community building! Without that it’s very easy for someone to enter into a trade and be excited about that trade and then, as the reality of the demands of the business part become real, they become discouraged. So I want to build people that can be successful humans. (133A)

I’ve got a background in humanities. I studied humanities in university so that’s why this statement is first and foremost—education is not only about giving the information, it’s trying to give people tools to deconstruct that information, to own it so that it belongs to them. (117A)

In their interviews, participants reflected on their own career trajectories, advocating the benefits associated with providing a full academic or vocational education.

The canonical cluster aims for students to develop a level of understanding affording them the ability to approach future problems systematically, which is evident in the high-agreement ranking +4 on Statement #19. “Students mentally organize information and are able to apply it to future problems.” Those of the canonical cluster asserted that through the analysis, evaluation, and synthesis of information learners can apply appropriate solutions to future problems.

When asked about the high ranking of Statement #19, participants spoke specifically about the value of critical thinking, including reflection, judgement, and awareness of environment, etcetera. In doing so, they rejected the fundamental principles of competency-based education.

I think the centrepiece here is the idea of reflective practice. That’s not something that’s new in the field of education—that’s something that’s been drilled in the heads of educators for decades, but I think there is value in high-risk industries for people to be aware of their own thought process and to develop that curiosity and to be able to ask questions like, “Why does this happen? Why am I doing this? Who does this affect down stream? Who is affecting me upstream? To be able to ask themselves, what is actually going on, not just with my task but in the environment around me –how can I affect positive change?” (133A)

Mental processes, even that which is monotonous, even that which is manual requires mental processes and it requires problem solving—finding adjustments to things—I find. I think that even people that work in my industry are very mentally engaged and are very switched on because of what they do, you know, the very physical nature of what they do. It doesn’t necessary mean because the hands are doing it, that the mind is not. The mind is very active. (117A)

Participants’ comments related to the symbiotic relationship between mind and body, which is seen at its best during the performance of manual work. Perceiving manual work through this epistemological lens shapes how the canonical cluster perceive the intellectual capacity of the learners, as is evident in the following interview excerpt:

I think a lot about the agency of knowledge, the agency of thought, right? So learners are recognized as capable agents of knowledge. They're not passive, everybody's their own agent in and of themselves. (117A)

In keeping with the notion of a full education for all, the canonical cluster asserted evaluation of student knowledge should span beyond the limitations of multiple-choice testing, which is reflected in the high-agreement ranking +4 of Statement #44, "Trades instructors should evaluate students knowledge through questioning and engaging in debate." The canonical cluster aims for learners to develop a full conceptual understanding, requiring a higher level of knowledge acquisition than is typically reflected in multiple choice testing throughout the trades.

When asked about their thinking behind the high ranking of Statement #44, participants were quick to speak about the limitations of multiple-choice testing, claiming this method of assessment cannot measure what they understand to be valuable, such as critical thinking demonstrated in reflective practice.

[Evaluation through questioning and engaging debate]—it would be better than multiple-choice. Learning *should* be assessed through multiple different ways. (141A)

The focus needs to be on the practice of reflectivity—we want them to be reflective practitioners living Donald Schön's idea of reflection in action, and reflection on action. (133A)

We want them to understand that the work that is performed is part of a social technical system. Develop relationship and understand the culture and the work that we do from a systems based perspective, so over the 18 months as an apprentice I want them to learn how to be critical thinkers, how to be aware of what is happening subconsciously in their own thought process. That's not going to happen through a series of multiple-choice tests. (133A)

The aim of the canonical cluster is to foster students' ability to think deeply and critically from various perspectives in preparation for the life they wish to lead, which is evident in the statistical high ranking +4 of Statement #16, "Students need to be led, stimulated, and coached because learning, the development of the intellect, is arduous work." The canonical cluster claim students need to be led, stimulated, and coached because learning and the development of the intellect is arduous work, not because the

mind is conceived as a muscle. Alternatively, the canonical instructor perceives her or his instructional role as one that guides the learner's cognitive development, the acquisition of knowledge, through methods such as Socratic reasoning and debate in which the learner is required to be both intellectually active and reflective as a means to foster higher order thinking.

When asked about the high ranking of Statement #16, participants spoke about how learners have been shaped by their previous educational experiences, leaving them to act in ways that are passive. With this in mind, participants stated how they insist on active mental engagement, including emotion and reflection.

I think a lot of the time they [students] see themselves as passive consumers of information. They're often very reluctant for me or another teacher to prod them or get them to do something outside of their normal. It may be what they've been exposed to for a long time and that's what they expect—it's what they see learning as being. (117A)

My apprentices, I force them to do reflective journaling, and then they turn their journals in to me once a month. I read it and then discuss it with them. It's very interesting to see the huge range of emotion associated with learning and trades. Trades have ignored emotion as a critical part of learning for maybe the entire history of trades—if you understand adult learning theory, emotion is an essential part of any learning theory, so why do we ignore as trades people, let's talk about it, right? (133A)

It's not only giving the information it's trying to give people tools to deconstruct that information, to own it so that it belongs to them. It's not only distributing, it's creating different avenues that they can access that information and apply it in different areas. (117A)

For the canonical cluster, the high-agreement rankings +3 of Statement #5, “The aim of vocational education should be to develop students’ ability to respond to the changing nature of work,” Statement #1, “Vocational education should be integrated with academics,” and Statement #2, “Vocational education should expose students to all aspects of an industry rather than focusing on a limited range of skills” are grounded in the following beliefs: the divide between academic and vocational education lessens and students’ ability to respond to the changing nature of work. This is because traditional task-based curriculum, in which technical competency is prime, restricts the learner’s cognitive ability to access knowledge. Narrow curricula such as these aim to achieve

specific technical competencies, which, according to the canonical crew, limit students' ability to respond to future challenges.

Participants in this factor showed high agreement with these statements claiming the current TVET system, including its utilization of CBET, limits students access to knowledge. Their collective concern is two-fold, not only is the current system literally limiting students' access knowledge, it is also limiting the students' cognitive ability to access knowledge.

Yeah, absolutely, especially now at a time when information is abundant and there is – academia should be integrated with vocational learning – it's about access to knowledge, we can't restrict people, we should be opening doors to allow people to pursue these different avenues. (117A)

Yes, I disagree with a lot of the ways of the ITA – it seems to be almost all task based – to be an effective machinist you have to do this, and this, and this, and you have to demonstrate technical competency in all these different steps. I went completely the opposite direction with my curriculum. One of the key components of my revised curriculum is the idea that holistic competency is preferred over technical competency. (133A)

5.2.1. Distinguishing Statement for Factor 2: The Canonical Cluster

I found Statement #6 to be statistically significant, which became evident through the array of z-scores and Q-sort values between Factors 1, 2, 3, and 4. The canonical cluster strongly disagreed with Statement #6, ranking it at -4 and claiming that those making the decisions in higher education have overlooked the intelligence of workers. These long-standing perceptions grounded in Plato's (2000) philosophical ideologies continue to be visible within today's educational structures, and, according to the canonical cluster, positive change requires a fundamental shift in this thinking.

Table 5.2. Distinguishing Statement: Factor 2

| Statement Number | Statement | | | | | | Rank |
|------------------|--|-----------------|------|-----------------|------|-----------------|------|
| 6 | Vocational education is often viewed as something for students who have not performed well in school | | | | | | -4 |
| Factor 1 | | Factor 2 | | Factor 3 | | Factor 4 | |
| Rank | Q-SV | Rank | Q-SV | Rank | Q-SV | Rank | Q-SV |
| 2 | 0.76 | -4 | 2.16 | 4 | 1.85 | 2 | 0.78 |

5.2.2. Interview Excerpts for Distinguishing Statements

Participants’ shared thinking led to the high-disagreement ranking -4 of Statement #6. The canonical cluster spoke about their own educational experiences as well as the experiences of students in their programs. Their examples spoke to limitations of the hand-mind binary view of education and its associated labelling of students as manually minded.

First you have to recognize the intelligence of the workers, and unless you actually value and involve them – I don’t think you are going to be able to affect positive change in any industry. (133A)

I was a straight-A student in university, but then I chose a diploma program in trades. I was encouraged all the way by my parents. They said, “You do what you need to do to be successful.” I was an active guy—always outside, so it never surprised anyone when I chose a trade. (117A)

I think that is how it is viewed by the public institutions K–12. I think when counsellors are involved in sending students to trades they are generally looking at those that haven’t performed well. I disagree ... today trades are probably more equal.... I’ve had numerous students that have done well up the hill in [a] bachelor’s degree and have come into my program and struggled. So that’s my personal view is that I disagree—I don’t believe that this should be viewed as something, but I do think that the system does view it like that. (117A)

5.3. Factor 3 Sketch: Experiential Team

Participants in this grouping hold a range of academic credentials: one Master of Education degree, two PIDP certificates, and one Grade-12 completion. All instructors

hold RSEs in their relevant trade. Within this grouping, two instructors have taught in a postsecondary institution for 15 years or more, one instructor has taught between 5–9 years, and one instructor is currently between Year 1 and 4 of her or his teaching career.

The experiential team explained the best learning for trades students is achieved through hands-on activities that take place during shop time, which is evident in the high-agreement ranking +4 of Statement #17, “The shop is where students see theory in practice and that is where the trades students are different—they come alive on the shop floor.” For the experiential team, learning is achieved through doing, and the learning is tasked-based and deliberate. This belief differs from Dewey’s (1916) constructivist approach that claims the value of learning through doing is not for doing, because, unlike Dewey’s notion, learning through doing for the experiential team is aimed specifically at gaining mastery of specific skillsets in preparation to perform the same task again in the future. The aim of the experiential team aligns with the principles of behaviourism and the fundamental underpinnings of competency-based education.

When asked about their thinking behind the high-agreement ranking +4 of Statement #17, “The shop is where students see theory in practice and that is where the trades students are different—they come alive on the shop floor,” participants spoke about their preference for hands-on and shop work learning, drawing a sharp contrast between that and classroom learning (theoretical learning). In doing so, participants’ interview excerpts represented the strengths in binary thinking as demonstrated in agreement with the worldview that reinforces the hand–head/body–mind binary of education.

Getting the students doing the hands-on work and getting them translating the theoretical side of it through the hands-on side of it. This is why it’s important to have them [in the shop]. I strongly agree with it—in our trades you can’t learn by theory alone. You can read and read, but until you do it—I use this analogy all the time, as a carpenter until you hit your thumb with a hammer a few times, you really don’t know what it feels like. You can read about it, but you have to do it. (136A)

Generally, if you say, “Do you guys want to be in the shop or the class all day?” It’s a no brainer. They are going to want shop. But having said that, the things they are learning in the shop, especially if they aren’t aware of

it, or haven't done it before, they really, really like to learn how the systems work and how the injector works. They don't want to just pull it out and put a new one in. They get excited about it when they see how it works. "Oh, that's how it works!" (113B)

If I were to say, "Here are the gears and here are all the numbers," they wouldn't really see the reason for it. But I actually have 'em on the shop floor, so they count all the teeth, do the theoretical, and then confirm it, the ratios. And it's a motivator for them. I think that many of our students come without a lot of confidence in their ability, but when they can actually do it on the shop floor and see how it works it allows them to strive and to grapple with the theory concepts. It gives them, this is where their comfort level is, it gives them the theory side. And the theory side, there is always a bit of a nervous edge for them. When you take the things that are happening on the shop floor and they will see how it relates to their competencies and realize that this isn't magic. It's just not. It is very doable. (101B)

The experiential team identify learners as hands-on or book learners, thereby reinforcing the philosophical underpinnings that ground the academic-vocational divide, which is evident in the high ranking of Statement #9, "My students find hands-on work more rewarding than academic work."

When asked about their thinking for the high-agreement ranking +4 of Statement #9, the responses from the experiential team advocate epistemologies supporting mind-body/head-hand dichotomies, reflective of old vocational thinking. One participant stated, "Again, it goes back to they are not big on reading – and the theory side. They want to get in there and get dirty" (136A). Similarly, another participant noted, "I told these guys this today, 'You use all your senses. You see, you smell, you feel.' It's not just plugging in your computer and going, "Oh yeah, it looks like that. You use everything" (113A).

Even when I was in the oil patch, let me get somewhere and make me wait, tick me off ... but, in my brain just to make it really brief, I think if you want to go skiing, or ride a jet ski, you can talk about it all day long, you can watch videos all day long, talking ain't doing it. Yeah, and that's the way these guys are. They understand there are steps, but it's like, "Let's quit talking and do it." (113B)

Recognizing that vocational students learn best through hands-on activities that take place on the shop floor, the experiential team uses these opportunities to apply

theory to practice, which is evident in the statistical high ranking +4 of Statement #29, “The best vocational education is something which involves feedback, questioning, application and reflection and, when required, theoretical models and explanations.” The experiential team asserted trades students learn theory through practice and will, therefore, make opportunities to ask questions, garner feedback, and reinforce learning through theoretical explanations during shop class. However, their rationales differ significantly from those stated in Factor-1 sketches, who also ranked this statement in high agreement +4. Factor 1 spoke to the cocreation of knowledge and understanding between student and instructor. Whereas, the participants’ interview excerpts from Factor 3 can be seen to reflect the underlying utility of learning, connecting decision making and motivation to economic drivers. From the comparison between the equally high rankings +4 of Statement #29 by Factor 1 and Factor 3, instructors’ perceptions expressed during post Q-sort interviews provide insight into the significantly different perceptions (participants’ internal frames) that led to their placement of this statement.

When asked about their thinking for the high ranking of Statement #29, participants in Factor 3 grounded their decisions in the labelling of students by their learning styles.

I really think that most of our students are psychomotor learners. I mean, I am putting less and less emphasis on the theoretical stuff and I’m actually trying to do more and more of the theoretical stuff on the shop floor, but it’s difficult because it is so noisy in there. I used to spend more time—I’d actually do theory sessions, whatever, on the shop floor, but today with the number of students we have the noise level is just too high. I quit doing it. So anything to do with theory is done in the classroom, and then in the shop it is all practical, but then theoretical models and explanations, I really like using the actual equipment and the projects they are working on to do that because I think they learn better than that than in a classroom. (101B)

When asked about their thinking that led to the high ranking of Statement #29, participants spoke about the economic consequences of getting it wrong, stressing that questions and feedback are for checks and balances, as a way of verifying that you know the right way to get the job done.

So there is a lot of time to reflect and ask questions and to reciprocate their own feedback to you—to you to approve or disapprove. Remembering in our trade, ours has a physical value. We've got them working on \$60,000 dollar engines. We work on machines everyday. When I work on hydraulic machines, the equipment I was on was over a million dollars a piece. So when you are working on something like that, an error could cost you thousands of dollars, and I think they want that reassurance. Hey, there is a lot of money on the line. (136A)

Yeah it is, but even on the job you don't need to discuss the potential different way of thinking about how, there are certain things you don't need answers for. (108A)

I do ask some questions. Like today, we were pulling all these starters apart, testing them. Then the student will say, "This is a failure," and I'll ask, "How do you know?" Student response: "Well, I did this, and this, and this." It's not like I'm fobbing them off, you know like, "Good job. You got it right." The result is that they got it running, and I tell them, "Was that hard? Well there you go. Because it's electrical and nobody builds starters anymore." ... And I tell em when they've got it right. It's not over the top, like hugs and kisses. (113B)

While the experiential team value a problem-solving frame of mind and agree that there is often more than one way to approach and solve problems, which is evident in the statistical high agreement ranking +3 of Statement #51, "Open-ended questions are a more valuable learning tool than questions requiring one right answer," they also argued that time spent discussing various options could distract from the purpose of vocational education. After all, time is money within this paradigm, and the primary goal is to get the job done right.

The purpose of trades education is expressed by participants in the next two interview excerpts, claiming that the goal of vocational education is to get the job done right. First, one participant stated, "I agree and disagree with that—it depends on what you are talking about. If I am teaching trades, I don't necessarily need to have a mind-blowing discussion about certain things, right?" (108A). Similarly, another participant noted,

Ah, open-ended questions are more... Ah, I see some of that, however where I have concerns is that we would lose focus on what we are really there to do—and that's to teach the vocational side of it. I wouldn't want

them out there doing essays on everything, and ah, that's just my own opinion. (136A)

Getting it right, however, also calls for a certain amount of resourcefulness on behalf of the tradesperson, as expressed by the following participant interview excerpts. A problem-solving frame of mind is to be encouraged, yet, at the same time, participants claimed set procedures do not require or permit such creativity.

I'm looking at it like maybe from a different angle—and maybe incorrectly, but requiring one answer makes my brain go hmm, hmm, - multiple-choice. These guys could all have a correct answer, but no, this is the correct answer that I was looking for. So all those people that had an idea now go, “Oh, okay. That's the only way you can do it.” But there is more than one way to do it, right? When I went to school, I'd already done over 500 brake jobs. I put the shoes on backwards in the steps according to the book. And the instructors said, “Oh, so you think you know more than the book?” Okay, you do it your way. I was done in 40 seconds, but not like the book said. (113B)

A troubleshooter that was looking for one right answer would not be that successful. It's not going to work! One of the things mechanics have to be good at is that they have to, you know ... [figure out what is wrong]. So when we do our troubleshooting exercises in the classroom, I am never looking for this. I'm looking for how many different things you think it might be. (101B)

One participant noted, “You know, if something goes wrong, you end up driving home thinking about it. Then you start worrying. By the end of the evening you start to worry if you will lose your job” (113B).

The experiential team expressed an overall preference toward the performance of practical work, which also exposed their understanding of which intellectual capacities are required to perform good manual work. These understandings may have led to the high-agreement ranking +4 of Statement #6, “Vocational education is often viewed as something for students who have not performed well in school,” as their beliefs related to the type of student that is suited to trades are reflected. While the experiential team ranked this statement in high agreement +4, the canonical cluster, however, chose the complete opposite view, resulting in a high-disagreement -4 ranking.

When asked about their views regarding this statement, participants' agreement came from their experience gained from years of teaching and working with students who identified as not having done well in school. One participant stated, "I would say that this probably fits with 75% of students" (101B).

This has been the traditional view. The schools— I see some changes starting, but if a student can't go anywhere else, we'll just put him in the trades. One of the challenges we have with our students is in school academia hasn't been their forte, so they've been psychomotor learners and they've been the people who that have spent time in the trades and now come into our courses. (113B)

Similarly, another participant stated, "Student, say, who have been very good at math and physics and chemistry wouldn't consider it!" (108A).

While the experiential team are in many ways supportive of traditional vocational academic divide and competency-based education, their high-agreement +3 ranking of Statement #56, "All my students are going to need communication skills beyond what I had ever imagined when they enter today's workplaces," suggests they are aware of changing demands in the workplace and the influence this may have on the education system.

When asked about the expectations for student learning outcomes in relation to today's workplaces, participants related the changing demands to the advances in technology, claiming that they are facing challenges on two fronts: (a) rapid changes in industry has left instructors teaching obsolete elements of a trade and (b) instructors' need to screen what students are viewing on the Internet because students do not have the ability to think critically about their subject in order to filter the accuracy of content available through accessible sources.

Yep, what I'm finding is that as our students are being challenged more and more as the technology is changed and their level of comprehension has to rise in order for them to be successful. It's one of the reasons I'm thinking of retiring. The world has gone by, and part of it is that we don't have it, we don't have access to some of the technology that some of the students are working on in the field. I'm talking about instructors, like you and I that have been here 15 years—that's 15 years since we worked in the trade. The trade that we worked in no longer exists. (101B)

At the end of the day, we still teach what we need to get across to the student. I mean, how we teach it, sure we are using technology today that was once a blackboard and today we are using a computer to project it. In some ways it's hindrance because it can create more problems, right? Think about it, the carpenter is going to learn how to put something together based on the textbook, based on instruction, then they go home and watch a YouTube video, and they've got someone in the backyard doing it and taking shortcuts, got someone making mistakes. It can actually be a problem as far as I'm concerned ... as long as you have gone through it and screened it first and made sure it is accurate. (136A)

5.3.1. Distinguishing Statement for Factor 3: The Experiential Team

I found Statement #20 to be statistically significant, which is evident in the array of z-scores and Q-sort values between Factors 1, 2, 3, and 4. The experiential team disagree with Statement #20, ranking it at -2, claiming learners in the trades are not recognized as capable agents of knowledge production. This speaks to how the experiential team perceive the intellectual capability of their learners, which aligns with mind-body/head-hand dichotomies stated earlier within this factor sketch, that are reflective of old vocational thinking.

Table 5.3. Distinguishing Statement: Factor 3

| Statement Number | Statement | | | | | | | | Rank |
|------------------|---|-----------------|------|------------------|-------|-----------------|------|--|------|
| 20 | Learners are recognized as capable agents of knowledge production | | | | | | | | -2 |
| Factor 1 | | Factor 2 | | Factor 3* | | Factor 4 | | | |
| Rank | Q-SV | Rank | Q-SV | Rank | Q-SV | Rank | Q-SV | | |
| 0 | 0.17 | 2 | 0.94 | -2 | 0.71* | 2 | 0.81 | | |

Note. PQMethod factor array tables use an asterisk (*) to identify distinguishing statements.

5.3.2. Interview Excerpts for Distinguishing Statements

When asked about their thinking that led to the high-disagreement ranking of this statement, interview participants reflected the notion that intelligence is innate—it's something people either have, or they don't.

We're not allowed to group them anymore, whereas before we would be like, "This side of the room is the keeners and this side is the time wasters." And now we're trying to intermingle them and let them feed off each other. These group activities help light a fire under the procrastinators because they're responsible for their team. (101A)

I'm not thinking of a certified tradesperson. I'm thinking of a slug out there. If I am a tradesperson, highly skilled and trained, and pays attention to detail, then yes everything I do is thought enabled and I'm a capable agent. That's kind of how I look at what our trades should be.... As opposed to creating a bunch of, ... you know, hammer swinging slugs out there. (108A)

Participants' views represent the idea that there are two types of students, and they differentiate between the skill level associated with tradespeople compared to that of a layperson.

5.4. Factor 4 Sketch: The 21st Century Progressives

Collectively, participants in this grouping hold a range of academic credentials: one bachelor's degree and one PIDP certificate, which were listed as the highest academic credential. Regarding trade-specific credentials, one instructor holds a RSE in a relevant trade and the other instructor holds a provincial trade certificate. Within this grouping, years of teaching were reported at 15 years or more.

The 21st century progressive perceive themselves as empowered professionals, aiming to play a key role in all areas of the curricular process including determining standards, designing the curriculum for students, and creating the structure of classroom activity. This perspective and value structure was reflected in participants' high-agreement ranking +4 of Statement #35, "Trades instructors should shape the curricular process, determine standards, design the curriculum for students work, and create the structure of classroom activity." As a result of this perception, they rejected the notion of the instructor as the deliverer of curriculum and the use of prepackaged texts, lesson plans, and assessments tools that then require the instructor's time to be spent organizing and supervising learners to work through a series of progressive objectives that lead toward mastery of predetermined competence (Schiro, 2008). This model is commonly

used within competency-based curricula, which strips autonomy away from the instructor.

When asked about their thinking behind the high-agreement ranking of this statement, participants spoke about the consequences of the industry's influence on curriculum development. They claimed that decisions made by the industry are self-serving and job specific, thereby narrowing the curriculum to meet individual needs. Participants' views on curriculum development are seen to conflict with the industry's, particularly because instructors are aiming to prepare well-rounded students set for an unknown future, compared to the industry's aims of filling current job openings.

Yes, but I find that trades in my opinion doesn't really encourage it, neither does industry. I was not really surprised, but when I was at certain meetings, they were more interested in what the future employee could perform in relationship to functions that were needed in their job. They weren't too concerned about a well-rounded individual, so I'm not sure if that is just indicative of the trades that I was working with, or if that's a general consensus of the industries that are involved with trades. (123A)

Yes, that's what I think—that's what I'd like to see happen in the future, and I think a good way of doing that is interdisciplinary subjects. For example, we're trying this year informally to integrate a cross-disciplinary focus into our program, and I've talked to professors outside of my faculty and they've agreed to give lectures on how to manage ... systems from other perspectives, other sciences. (123A)

These statements reflect a hierarchy within the curriculum development process in which the voice of industry carries significantly more weight than that of the educators.

Additionally, the 21st century progressives identified elements of the hidden and null curricula embedded within the current practices surrounding the development of TVET curricula. In doing so, they claimed that the economic needs of external stakeholder, such as industry and government agencies, may in fact override the needs of the learners when determining which learner capacities are to be emphasized and which are to be neglected. This is reflected in their high-agreement ranking +4 of Statement #8, "The role of industry and government agencies in the development of core standards and assessment for trades raises concerns of whose best interests are being served."

Participants indicated the needs of industry are somewhat self-serving at the cost of the learners' education. The views shared by this factor highlight two areas of concern: (a) the lack of instructors' involvement in curriculum development and (b) the lack of concern for the learners' overall education.

Yep, it raises concerns of whose best interests are being served—I would agree with that. And depending on what lobby group is behind the training they may want to dumb it down to cough out students, whereas others [industry representatives] will want to make sure they have no competition in the future. (109A)

Well, I found that changes they're proposing were taking out what I would consider the educated person in [name of trade omitted] and really focusing on what is absolutely the minimum required knowledge to the task. So they are taking out the science, say pest management, and focusing on skills. Apparently somebody else is going to make the decisions about how to cope with pest issues ... with the use of integrated pest management. They would know that they could plan a certain grouping of flowers together which would help attract specific insects, which could be use for biological control. (123A)

The apprenticeship system might say that you must know these sauces in Level 2 and you must know the names that go with these sauces, and know what those ingredients are in those sauces.... And they have absolutely no context with today's day and age—and 40 years ago when I was taking the program it was exactly the same. (109A)

Furthermore, these participants reported that curriculum decisions made by industry and government agencies influence many aspects of program delivery, such as time allocation, resources, and assessment methods. Noting that assessment methods such as multiple-choice tests require deconstructed competencies to be taught for the purpose of measurement.

Well, the tests are part of the course that I have no control over—the ITA mandates them and they are tabulated in the spreadsheet that is approved by the ITA and represent the college mark. The college mark is 80%. ITA are basically demanding tests at each level. We spend 25 hours teaching and 2 of those hours are spent testing and that seems way too high—waste of time. They could be doing way more interesting, investigative, active learning, and we could be assessing those activities. (123B)

Learning should be assessed through multiple different ways. Well, multiple-choice as we currently use it is a bit of blunt tool because you

can't gage students' understanding. Some times when a student has a really broad understanding of a subject they can find that there are two or three right answers – um, so multiple choice aren't all that accurate for assessment. Um – and it's not much of a learning tool either. (123B)

Continuing now on the same thread, the beliefs of the 21st century progressives suggest that competence in one setting may be considered inappropriate in another. Participants within this factor argue that competencies disembedded from context may in fact narrow the curriculum through a privileging of external standards over learners' needs. These shared beliefs are reflected in the high-agreement ranking +4 of Statement #48, "Effective learning activities do not result from specifying levels of competence, they require specific attention in planning and designing," and reaffirmed by the +3 ranking of Statement #62, "Academic freedom is essential for me to be effective in my instructional role."

When asked about their thinking behind the high ranking of these statements, participants spoke about the negative influence competency-based education has on instructor autonomy. In doing so, they suggested CBET remove instructor autonomy and the opportunities to create authentic and meaningful learning environments. This practice has devalued the standings of instructors' by overlooking their knowledge as educators and SMEs as well as their experiences in the trade and the classroom.

They have to memorize this crap [competencies] for the test, but this is actually what we are doing – we're making it this way, and that way...We can create Canadian cuisine, so getting back to the classroom – can I modify, yeah! We're going to create these flavours, and we're going to call it BC Clam Chowder. (109A)

Well the idea of having standardized competencies are wrapped up with the idea of apprenticeship because industry identifies areas that need to be taught and present some standardized competencies. So as instructors we have to take notice of that. However, the procedural approach to teaching and learning just takes away from the autonomy of the teacher to design effective teaching strategies that can be tailored to different students and different learning situations and dependent on what material, or opportunities you have at hand. (123B)

In keeping with previous statements, the 21st century progressives acknowledged the hidden intelligence of the vocational workers claiming that a merging of curricula

would lead to a deeper theoretical understanding of both practical skill and theoretical knowledge, which is evident in the high ranking +3 of Statement #12, “All students learn best by doing, not just manually minded students.” In doing so, collectively the 21st century progressives have turned their epistemological lens away from the traditional academic–vocational binary.

Interview participants rejected notions of hand–head/mind–body binaries and instead supported a holistic view of the learner.

Again, if I’m an academic student, I get better at reading and comprehension by doing more of it. So, I would say yes, all students whether it’s manual or not. I don’t see a difference between trades and academia; I see it as the same. You have thinkers and doers, and you need doers and thinkers. And often the doers and the thinkers are the same people. (109A)

I don’t know, manually minded? I don’t know if that’s an authentic way to divide up students – all students learn best by doing. (123B)

The 21st century progressives recognize that when it comes to teaching and learning practices the whole is clearly not the sum of its parts, arguing that when practice is deconstructed and placed into measurable units for the purpose of assessment the sociocultural aspects are overlooked. This is evident from the high-agreement ranking +3 of Statement #32, “Vocational education needs to be taught in the context of practical problem solving.”

I think we have to keep pushing our students to think for themselves, and they’re not very good at it. I guess part of that “not good at it” is that they are not good at risks, and taking risks, especially for younger students who are worried about failure and getting something wrong, because they haven’t failed at anything yet. [In many trades] If they take a risk and they do it wrong, it could hurt someone, and I don’t know that the students recognize that at first. But I think, that in the trades, we are often dealing with life and death situations that require some critical thinking.... It can be allergies, improper use of equipment that you could lose an arm in a mixer, it could be that you did not store things properly and that it had grown bacteria that creates food-borne illness.... Or chemicals that get mixed in food [that were intended for] cleaning an oven. (109A)

This participant expressed the view that situational learning carries with it authentic risks and realities, that, when taught out of context get lost, forcing students to rely on rote memorization in place of experience.

The 21st century progressives looked beyond current industry needs and skillsets and aimed to prepare learners adequately to adapt and respond to their future lives, believing that graduates in the 21st century will be faced with a future of unknowns. In order for learners to adapt to these changes, they must possess the intellectual capacities that enable them to become effective independent learners, which involves the ability to filter information. The 21st century progressives perceive their role to go beyond the delivery of predetermined competencies, as demonstrated by their statistical high-agreement ranking +3 of Statement #60: “When information is available at the touch of a button, teaching is arguably less about filling students heads with knowledge and more about teaching them to become effective, life-long learners capable of responding to a fast-paced world of relentless change.” This is reaffirmed by the equally high rank +3 of Statement #59, “Advances in information technology (IT) are changing the way we teach.”

Participants shared their views on how technology is changing pedagogy, and also how pedagogy and curricula must change in order to prepare learners for their future lives.

Well that’s not directly about how we teach, but it is in a way because it’s calling for us to teach critical thinking, problem solving, which is obviously going to be more important than specific skill sets with the changing nature of work. (109A)

I find it very useful when students jump on their cell phones and come up with answers. Well, I think it’s useful to work through it every time it comes up because when they are on site they are going to be using Google as a source for information. And you wouldn’t want to turn them lose on site with the idea that they can, or cannot get information by searching for it online. Obviously, they need to learn to filter what they find online, and so it’s really good when they bring up an answer in class and we can discuss it. And find out the theory behind it—they are eager to get information wherever they can find it—but they don’t always know if they person who is sounding like they are giving an authoritative answer

actually knows what he is talking about. Has ever even done it? So, for that reason I think it is really good to work through those search engines answers. (123A)

Yeah, the incorrect answers are as valuable as the correct ones. If students can learn how to filter search engine information through experiential and academic understanding of what they are doing, the search engine is really useful. I'd say, at the foundation level, the search engine is highly dangerous, but obviously it's going to be a huge tool for all workers on site. Yeah, we have to embrace it, not avoid it. We haven't got any choice. So yeah, if you went back 40 years, you have can have this thing in your pocket that's going to give you all of this information but you are going to have to filter it properly, would you like one of those? Everybody is going to say yep. (123B)

At the core of these three statements, lies the concept of critical thinking.

Participants advocate that students need to learn how to think critically, both with and without technology. To them, the technology part of this might be new, but critical thinking is not. TVET instructors in this grouping want to take responsibility for this student learning, which means shifting their curriculum and pedagogy to embed these practices throughout their programs.

5.4.1. Distinguishing Statement for Factor 4: The 21st Century Progressives

I found Statement #46 to be statistically significant, which is evident in the array of Z-scores and Q-sort values between Factors 1, 2, 3, and 4. The 21st century progressives strongly agreed with Statement #46, ranking it at +3, which stands significantly different from the others as shown in the grid below. The 21st century progressives claimed standardized competencies do shape instructional practices, noting that when skills are taught in isolation from the situational level of practice, they are separated from the scientific principles that underpin them. The consequence of deconstructing theory from practice may also lead to mechanical and procedural approaches to both teaching and learning.

Table 5.4. Distinguishing Statement: Factor 4

| Statement Number | Statement | | | | | | | | Rank |
|------------------|---|-----------------|-------|------------------|------|------------------|-------|--|------|
| 46 | Standardized competencies promote mechanical and procedural approach to teaching and learning | | | | | | | | +3 |
| Factor 1 | | Factor 2 | | Factor 3* | | Factor 4* | | | |
| Rank | Q-SV | Rank | Q-SV | Rank | Q-SV | Rank | Q-SV | | |
| -2 | 0.10 | -2 | -0.81 | 0 | 0.05 | 3 | 1.34* | | |

Note. PQMethod factor array tables use an asterisk (*) to identify distinguishing statements.

5.4.2. Interview Excerpts for Distinguishing Statements

When asked to share their thinking behind the placement of this statement, participants used terms such as antithesis to draw attention to the contradiction between the objectives of standardized competencies compared the goals of 21st century learning outcomes.

Standardized competencies—agreed, they create a mechanical and procedural approach to learning. What consequences would this have in industry? Well, it doesn't exactly tie with the idea of problem solving and critical thinking. It's sort of the antithesis of that, and you know, standardized competencies, if they are everything the instructor agrees, they should be that's one thing, but they are usually not. There is usually a 20- to 25-year lag in between the competencies that are in the standard writings and the competencies that are used on site. So obviously, if you are sticking with the book it doesn't give you much flexibility to keep current for the students either. But then again, lastly, if the instructor is trained and conditioned to use mechanical standardized competencies that doesn't really look good for the instructor's personal autonomy either. Most instructors are probably going to want a lot of autonomy and be able to have some direction about what and how they teach. (123B)

Standardized competencies are definitely shaping how some teachers teach, definitely. Yeah, if you are going let yourself be guided by them to an extreme extent that does take away your decision making and your ability to shape the course for the students, and shape it to the current practices. Without a doubt, standardized textbooks and competencies do promote mechanical and procedural approaches to teaching and learning. Procedural isn't too bad but mechanical can be a problem. (109A)

These participants claim standardized competencies lead to standardized outdated practices for both the teacher and the learner. Alternatively, developing a problem-solving frame of mind and the ability to think critically do not result from learning predetermined competencies. To sum it up, these practices, standardized competencies versus critical thinking, represent conflicting ideals.

5.5. Consensus Statements

Consensus statements are those that do not distinguish between any of the factor groupings. Therefore, the following statements can be considered shared values held by all four extracted groupings or to be insignificant and meaningless to participants. Therefore, consensus statements are not typically considered during the interpretation of the factor groupings. However, for the purpose of gaining a deeper understanding into the beliefs and values held by TVET instructors in BC, I feel it is valuable to acknowledge shared understandings that exist across the groupings, as they may represent fundamental beliefs for TVET instructors. As with all factor interpretation, statements with low rankings (rankings +1, +2, -1, -2) represented areas of less interest and will not be discussed.

The high-agreement rankings (+4, +3, +2, +3) of Statement #30 demonstrated all groupings agreed the goal of teaching is to spark students' imagination and trigger their passion for learning. Nonetheless, triggering passion and sparking imagination means different things to different people. As such, this high ranking across groupings, although it represents agreement, must be filtered through the lens that has been shaped by each factor. For example Factor 1, the constructivist crew, may spark students' imagination by using pedagogical approaches that are interactive and problem based, whereas Factor 3, the experiential team, spark students' imagination through hands-on activities that take place on the shop floor.

The unanimous high-disagreement ranking (-3, -4, -4, -2) of Statement #58 revealed a consistent disagreement across the groupings in regard to wi-fi being a distraction in the classroom. Many participants spoke about this statement during their

post-sort interview claiming that for some students wi-fi is a distraction, which they related to the **younger** aged students. However, generally speaking, the benefits of having wi-fi available in the classroom outweigh the disadvantages for most instructors. The benefits include Googling in-class topics and the luxury of being able to put something up on the projector right away.

Table 5.5. Consensus Statements

| Statement Number | Statement | Factor 1 Rank | Factor 2 Rank | Factor 3 Rank | Factor 4 Rank |
|------------------|---|---------------|---------------|---------------|---------------|
| 4 | Within Vocational education, the needs of industry are privileged over students' needs and aspirations | -1 | -1 | -1 | -2 |
| 30 | The goal of teaching should be to spark each student's imagination, to find a hook in their heart and mind so that they feel a need to learn | +4 | +3 | +2 | +3 |
| 42 | Drills are often the only method for teaching basic psychomotor skills | -2 | -3 | -2 | -2 |
| 58 | Wi-fi is a distraction in the classroom | -3 | -4 | -4 | -2 |
| 59 | Advances in information technology (IT) are changing the way we teach | +1 | +2 | +2 | +1 |
| 61 | The real answer to improving outcomes from vocational education is through gaining an understanding of the many decisions instructors take as they interact with students | 0 | +2 | +2 | +1 |

Note. Consensus statements represent agreement across groupings, as presented by participants' loadings ranging from -4 to +4.

5.6. Factor Summaries

The following four summaries represent my interpretation of the factor loadings resulting from Q-factor analysis, triangulated with participants' post-sort interviews. In order to create these summaries, I applied Joseph's (2002) theoretical framework for understanding curricula as culture to the TVET system in BC. This enabled me to interpret participants' beliefs and values regarding the role of the instructor, the capacity of the learner, the purpose of vocational education, and the future aims of vocational education, in order to reflect the distinct world views held by each factor.

5.6.1. Factor 1: The Constructivist Crew

A lot of people don't recognize intelligence when it wears gloves and overalls. (105A)

Instructors grouping together in Factor 1: The Constructivist Crew, share a worldview that aligns with the theories of constructivism associated with the works of Dewey (1916), Piaget (1952), and Vygotsky (1978). Within this worldview, the constructivist crew perceives the learner as an active agent in the construction of knowledge. Instructors create learning environments in which students actively coconstruct meaning and understanding through guided activity and interactions. These interactions are deliberately facilitated or mediated by the instructor, using pedagogical approaches that are interactive and problem based. Facilitation for the constructivist crew is deliberately structured to support the learners' understanding of new concepts through methods such as questioning, discussion, reflection, and feedback. The development of higher cognitive function through practical activity in the social environment is central to this worldview.

The constructivist crew prioritizes pedagogy and has a desire to improve their own teaching practice through formal education to expand beyond their trade-specific knowledge and skills. They accept that students bring with them a variety of life experiences and levels of understanding that will influence and shape the learning environment. Furthermore, Factor 1 participants aim to develop the learner's intellect

through both mental and physical activity, which reflects Dewey's (1916) notion of learning through doing, but not for doing. In keeping with constructivist views, this factor rejects the basic principles of behaviourism, claiming that rote memorization and the regurgitation of facts serve little purpose in developing understanding. The constructivist view cognitive processes not only precede the performance of psychomotor skills but also occur during and following the physical action. In this belief, they reject the hand–mind binary and see learners holding the intellectual capacity to perform higher order logic.

5.6.2. Factor 2: The Canonical Cluster

I don't want them to successfully perform a task. I want them to succeed as human beings. (133A)

The canonical cluster ground their belief and value structures in the fundamental principles of canonical education, claiming that the humanities curriculum is valuable to all learners including those choosing to enter trades. The canonical cluster claim students need to be led, stimulated, and coached because learning (the development of the intellect) is arduous work. The canonical cluster understand their instructional role to be one that guides the learner's acquisition of knowledge. Instructors, as master pedagogues, use methods such as Socratic reasoning and debate where the learner is required to be both intellectually active and reflective as a means to further cognitive development.

Within the context of trades, the canonical cluster's worldview asserts that all students possess the intellectual capacity to be worthy of a holistic education. In keeping with this worldview, individuals aligning with this factor view trades education through an epistemological lens that rejects the hand–mind binary and its associated labelling of students as manually minded. In doing so, they propose the academic–vocational divide deliberately neglects the intellectual development of the vocational student by focusing primarily on skill development, and in doing so denies learners the opportunity to reach their full intellectual capacity. Therefore, they perceive their role as educators to span beyond the restraints of competency-based curriculum and standardized program outlines, claiming that academic freedom is an essential element of effective teaching and

noting that their curriculum choices exceed the limitations of the ITA program outlines. Instructors holding this worldview recognize that trades work is thought-enabled work and aim to foster students' ability to think deeply and critically from various perspectives; their aims go above and beyond developing specific skillsets. The bigger purpose of education, according to the canonical cluster, is to prepare students for the lives they wish to lead.

5.6.3. Factor 3: Experiential Team

They are not big on reading and the theory side. They want to get in there and get dirty. (136A)

To the experiential team, the goal of TVET is about getting the job done, and getting it done right. There are serious financial consequences to getting it wrong in industry, including the loss of one's job. Pedagogical approaches including questioning and providing feedback are for checks and balances (evaluation) to ensure students know the right way to get the job done. The worldview of the experiential team aligns with the fundamental principles of behaviourist approaches to teaching and learning. This culture of curriculum is described by Joseph (2000) as training for work and survival. Individuals who align with Factor 3 believe the focus of TVET rest primarily on the development of specific skill sets to meet the current needs of industry. As masters of their trade, instructors sharing this worldview rely on their knowledge and skills gained through experience and expertise within industry to provide the foundation for their pedagogical decisions.

The experiential team advocates two streams of education, one for mind and one for body, grounded in the notion that there are two types of learners, manually minded and theoretically minded. These beliefs support the continuation of the academic–vocational divide and reflect the notion that students in trades are lower academic achievers, leading to the assumption that both students and instructors value hands-on forms of learning over more theoretical modes. The aim of the experiential team is to change the learner's behaviour through pedagogical approaches that include demonstration, observation, and the repetition of practical skills. These pedagogical

practices are in keeping with the traditional apprenticeship model that aligns with the principles of behaviourism and the fundamental underpinnings of competency-based education. Instructors holding this worldview are recognized for their ability to prioritize work relevance over academic goals (Kemmis & Green, 2013).

5.6.4. Factor 4: The 21st Century Progressives

It's calling for us to teach critical thinking [and] problem solving, which is obviously going to be more important than specific skill sets with the changing nature of work. (109A)

The 21st century progressives identify as empowered professionals; they aim to play a key role in all areas of the curriculum development process, including the determining of standards, designing the curriculum for students work, and creating the structure of classroom activity. According to the thinking of the 21st century progressives, the current TVET system reflects old vocational ideals. They claim economically driven decisions led by industries and government currently shape the curricula, limiting the student experience to specific skillsets based on the current and predicted requirements for industry. As critics of the current ITA system, 21st century progressives expose a hierarchy within the curriculum development process, claiming the voice of industry carries significantly more weight than that of the educators, maintaining that this practice has devalued the standings of instructors by overlooking their knowledge as both educators and SMEs, and their experiences both in the trade and in the classroom.

The 21st century progressives believe that students need to learn how to think critically and conceptually on the basis that scientific principles and concepts can be applied across the existing borders between different trades and disciplines. Information is freely available, but trade workers of the future will need to know how to utilize that knowledge in new unforeseen contexts. The 21st century progressives propose that teaching and learning take place in a cross-curricula context in which practical problem solving deliberately provides learners with the opportunity to simultaneously learn and apply concepts to unfamiliar problems. In keeping with Billett (2016), they claimed situational learning carries with it authentic risks and realities that are lost when taught

out of context. Out of context practices force students to rely on rote memorization in order to remember decontextualized and deconstructed facts.

5.7. Chapter Summary

In this chapter I provided factor sketches as a means to systematically interpret the perceptions held by participants who Q-sort in similar ways and hence cluster together into one of the four extracted factor groupings. To do this, I reviewed post-sort interview transcriptions on a factor-by-factor basis and extracted excerpts directly as they related to high-agreement statements. High-agreement statements (exemplars) and correlating interview excerpts in the form of block quotes were presented factor by factor, focusing specifically on the participant's rationale for placing statements in columns labelled most agreement +4, and least agreement -4.

Each factor sketch included demographic information to provide a brief view into participants' years of teaching, educational credentials, years in trade, and recent professional development in relation to their groupings. This chapter ended with factor summaries as a means to summarize my interpretation of the distinct values and beliefs held by each extracted factor.

In Chapter 6, I further my discussion to answer the research questions in this study. In doing so, I claim that the four factor representation found in this study suggests instructors teaching in the BC TVET system hold four distinct perspectives in regard to their curriculum choices. Amongst these four perspectives similarities and differences exist that will also be discussed in Chapter 6.

In Chapter 7, I present my conclusions and make recommendations for future research. In addition, I present the limitations and delimitations of this study, before reflecting on my own personal doctoral journey.

Chapter 6.

Discussion

I began this study claiming BC's 21st century TVET curriculum is currently in a complicated crossroads situation. On one hand, its transition from within is moving away from its industrial roots toward informational modes due to rapid advances in technology and influences of global economies that are changing the nature of work and reshaping job descriptions. On the other hand, where TVET resides within the broader context of curriculum, it competes with other cultures such as academic as well as social efficiency and their influences on the curriculum from the outside. Both transitions are happening simultaneously and have a potential impact on forming instructors' curriculum choices in different ways.

Since TVET is situated within a broader context in which other curriculum ideas exist, I elected to explore the coexistence of multiple curriculum discourses that may influence instructors' viewpoints (Cuban, 1993; Eisner, 1985; Joseph, 2011). I chose Q methodology as the optimum research design to investigate BC TVET instructors' perceptions that influence their curriculum choices, on the understanding that these value and belief structures may fundamentally overlap, contradict, or conflict, leading to a confluence of curriculum cultures within the classroom.

This study sought to understand instructors' perceptions in four specific areas and was guided by the following questions:

1. What are the general perceptions of vocational instructors regarding their role as a teacher?
2. What are the general perceptions of vocational instructors regarding the intellectual capacities of their students?
3. What are the general perceptions of vocational instructors regarding the purpose of vocational education?

4. What are the general perceptions of vocational instructors regarding the future needs of vocational education?

Of those invited to take part, 37 TVET instructors in BC elected to perform a total of 37 Q sorts: 31 of the participants provided post Q-sort interviews that were used in part to interpret the extracted groupings that resulted from Q factor analysis. Participants varied in age, years of experience in trade, years of experience teaching, highest academic credential, and highest trades specific credential. To enhance maximum variation sampling further, I purposefully drew participants (P Set) from five BC postsecondary institutions. I required that all participants only on their own behalf, not on the behalf of their institutions. I specifically developed the questions that guided this study to explore the perceptions held by individuals, which was evident in my choice of methodology and design, including data collection methods. While this study explored the perceptions held by individuals, I chose the methodology for its strength to group participants who think similarly and share similar values and perspectives, representing a gestalt understanding.

6.1. Discussion of Findings

A four-factor solution resulted from Q-factor analysis, reflecting participants' curricular beliefs and values as expressed during their Q sorts. Although I used PQMethod (Schmolck, 2014) to analyze the raw data resulting in four statistically distinct clusters, the interpretation of these emergent views was my responsibility as the researcher. I analyzed the resulting factor arrays and high-ranking loadings of each factor, before triangulating the data with participants' post-sort interviews in order to interpret, describe, and better understand the views held by participants in these groupings. I named each factor to reflect the dominant shared perceptions held by their participants: Factor 1: The constructivist crew, Factor 2: The canonical cluster, Factor 3: The experiential team, and Factor 4: The 21st century progressives.

This four-factor solution suggests that instructors teaching in the BC TVET system hold four distinct perspectives in regard to their curriculum choices that, in turn, answer the research questions in this study. Amongst these four perspectives similarities

and differences exist that will be discussed in the following four sections. The four sections are organized under the headings of the research questions. In each of these sections the perceptions held by each grouping are presented as they relate to the research questions and the similarities and differences across groupings are discussed. Given that this discussion focuses on capturing the distinct views of each factor, the factor views are presented as they relate to each other, rather than in a numerical order.

Although participants were not asked to speak directly to the research questions that guide this study, their high ranking of Q-sort statements represented either agreement or disagreement in areas of TVET related to this study. While not all groupings ranked statements related to all four research questions; they did, however, express their values and beliefs during post-sort interviews that relate to the following four questions.

6.2. Research Question 1: What are the General Perceptions of Vocational Instructors Regarding Their Role as a Teacher?

The primary defining statements for Factor 1, the constructivist crew, focused particularly on pedagogy and represented an overwhelming prioritization toward constructivist theories. Within this worldview, the instructor's role includes taking responsibility to ground teaching practices in educational theory so as to provide students with pedagogically appropriate learning environments, which aligns with Lucas's (2014) notions of vocational pedagogy. This view is based on the understanding that competencies alone do not equate to learning activities (Billett, 2016; Dewey, 1916; Lave, 1991; Lave & Wenger, 2014); therefore, the constructivist instructor aims to create learning environments that are primarily learner centred, authentic, interactive, and problem based, in which students learn through doing. Collectively, these views align with Joseph's (2000) Constructing Understanding culture of curriculum. Furthermore, participants of Factor 1 aim to develop the learner's intellect through both mental and physical activity, which reflects Dewey's (1916) notion of Learning through doing, but not for doing. In keeping with constructivist views, this factor rejects the basic principles of behaviourism, claiming that rote memorization and the regurgitation of facts serve little purpose in developing understanding (Billett, 2001a). This factor indicates cognitive

processes not only precede the performance of psychomotor skills but also occur during and following the physical action, which Rose (2005) also found during his research to explore the activities of the mind during the performance of manual work. Based on this view, Factor-1 participants reject notions of a hand–mind binary, which is reflected in their pedagogical choices in which instructors aim to both facilitate and mediate learning opportunities that fuse both the cognitive and physical dimension of technical skills.

Factor 3, the experiential team, also advocated for a learning environment that is hands-on and interactive, as represented by the majority of their defining statements. However, the pedagogical focus for Factor 3 rests primarily on the performance and development of technical skills. As such, learning by doing, as presented in this worldview, reflects the beliefs and values associated with traditional apprenticeship model that align with Joseph’s (2000) “Training for Work and Survival” culture of curriculum. This worldview held by Factor-3 participants reflect pedagogies associated with behaviourist approaches (Merriam, 2001), in which teaching includes demonstrations and mentoring, requiring learners to perform a series of predetermined competencies.

Factor 3 participants high ranking of statements expressing a preference for hands-on work and shop time over theoretical understandings is in keeping with the traditional apprenticeship model, as stated by Grubb (1996). Therefore, these participants agreed that their knowledge and skills gained through years of experience in industry provides the foundation for their pedagogical decisions, which is a practice that Lucas et al. (2012) found common to TVET during their exploration on *How to Teach Vocational Pedagogy*. In keeping with these views, the role of the instructor in this worldview is to meet industry’s needs by prioritizing the development of students’ technical skills over theoretical knowledge (Worthen, 2012). Therefore, while the learning environments for students in the classrooms of Factor-1 and Factor-3 instructors may appear similar from a fly-on-the-wall perspective, instructors in these two groupings hold differing epistemological views and perceive their roles and aims quite differently.

Since the focus for Factor 3 rests on the development of technical skills, the learners' cognitive development gains less attention. In contrast to this understanding, Factor-2 participants, the canonical cluster, overwhelmingly advocated for academic freedom, which is reinforced by their desire to prioritize learners' cognitive development over that of skill development through the integration of vocational and academic curricula. Factor-2 participants perceived the role of the instructor is to strengthen the capabilities of the learner's mind; they see themselves as master pedagogues, using methods such as Socratic reasoning and debate. In these learning environments, the learner is required to be both intellectually active and reflective as a means to further cognitive development. This is because they claimed there is a bigger picture and view trades through an epistemological lens that disputes the hand-mind binary view of education. Factor-2 participants' worldview strongly disagrees with the academic–vocational divide and with labelling of students as manually minded. In doing so, they criticize vocational education for deliberately neglecting the intellectual development of students by focusing primarily on skill development, claiming these views and practices deny learners the opportunity to reach their full intellectual capacity. These beliefs situate Factor-2 participants in Joseph's (2000) connecting to the canon culture of curriculum, in which the aim of the canonical instructor is to foster students' ability to think deeply and critically from various perspectives in preparation for the life they wish to lead, which concurs with the notions of Du Bois (2014), who claimed all students are worthy of a full education. As a result, Factor-2 instructors aim for students to acquire a higher level of academic knowledge than is typically associated with competency-based curriculum, and the trades in general. The comparison of Factor-3 participants' curriculum choices alongside those of Factor 2 drew close attention to the power of curriculum and its ability to either provide or deny opportunities, as Eisner (1985) had noted.

Comparably, Factor-4 participants, 21st century progressives, advocated for academic freedom and disagreed with the current academic–vocational divide, claiming that academic and vocational knowledge is one body of knowledge that students require in order to succeed beyond predetermined competencies. However, Factor-4 participants' views and values differed from those of Factor 2, as they made no reference to the humanities curriculum. Alternatively, Factor-4 participants' worldview rests in the

abilities of instructors, claiming the way forward is for instructors to determine standards, design the curriculum, and shape the learning activities. Their worldview is in keeping with Fenstermacher's (1994) notion of *teacher knowledge*; Factor-4 participants overwhelmingly value the practical knowledge acquired and held by teachers through their years of experience. These participants expressed their objection toward the industry's role in shaping the curriculum consistently throughout their Q-sorts and interviews. In keeping with J. Schwab's (1983) notion of commonplaces, Factor-4 participants intended to disrupt the current curriculum development practices by putting teachers at the heart of the process. Collectively, the view of Factor-4 participants aligned with the notions of a new vocational paradigm, which several researchers discussed (Grubb, 1996; Lucas et al., 2012; Schwab, 2016).

6.2.1. Section Summary

Factor-1 participants perceived their instructional role as one of a facilitator, in which instructors mediate learners in the coconstruction of knowledge, aiming to develop both cognitive and technical skills through engaging, problem-based learning activities. Alternatively, Factor-2 participants' worldview advocated for a humanities curriculum for all, prioritizing curriculum content that aims to strengthen the capacities of the mind over that of technical skills. Factor-3 participants' worldview differs from those held by Factor-1 and Factor-2 participants, perceiving their instructional role to be one of a mentor, replicating pedagogical practices associated with the traditional apprenticeship model in which students perform predetermined competencies that aim primarily to meet industry's needs. Factor-4 participants' worldview differs again from the previous three; instructors aligned with this factor perceived their role to require autonomy. They viewed themselves as empowered individuals, knowledgeable and active in the development of curriculum and pedagogy, going above and beyond the current needs of industry.

Despite these explained differences in the range of perceptions held by participants affiliated with each factor regarding the role of the teacher, some common ground exists. For example, participants of all four groupings ranked high agreement in claiming their role is to spark each student's imagination and to hook their hearts and

minds to inspire learning, showing agreement across all groupings. However, it is clear, when interpreting the meaning of this statement alongside the ranking of each factor's other high-ranking statements, that this claim means different things to participants of different groupings. Other similarities across groupings include Factor 1 with Factor 4, regarding participants' pedagogical views, claiming competencies should be contextualized and taught within a practical problem-solving context. Similarly, participants affiliated with Factors 2 and 4 rejected the current academic–vocational divide. Lastly, participants affiliated with Factors 1, 2, and 4 aimed to teach beyond the limitations of the ITA program outlines.

The rejection toward the vocational–academic divide, as expressed and shared by participants of Factors 1, 2, and 4 requires further examination. As such, I discuss these topics in the sections that follow.

6.3. Research Question 2: What are the General Perceptions of Vocational Instructors Regarding the Intellectual Capacities of their Students?

The worldview held by participants grouping together in Factor 1 aligned with the theories of constructivism associated with the works of Dewey (1916), Piaget (1972), and Vygotsky (1978). In keeping with this developmental theory, Factor-1 participants accept that students bring with them a variety of life experiences and levels of understanding that will influence and shape the learning environment. Ultimately, participants affiliated with Factor 1 recognized that learners are active agents in the construction of knowledge, holding the intellectual capacity to perform higher order logic within the context of trades.

Similarly, Factor-2 participants perceived learners to be mentally active. However, the difference in understandings between Factor-1 and Factor-2 participants is found in Factor 2's high ranking of statements that claim no divide between academic and vocational students, asserting that all students possess the intellectual capacity to be worthy of a full education, which is a view that has been expressed throughout history by Du Bois (2014), Dewey (1916), Gardner (1985, 2000), and Young (2013). Factor-2

participants' worldview stands alone in its high agreement of the following belief all students are capable of learning and growing from the powerful ideas within a humanities curriculum and, in doing so, these participants claimed a full education is of equal value to trades students, as it is to students of those entering the academy. However, Factor-2 participants prioritize development of the mind over that of skill development. In doing so, they express a somewhat different epistemological view from Factor-1 participants expressed that they valued academic and vocational knowledge, mind, and body, equally.

Differences between the perceptions of participants affiliated with Factors 1 and 2 can also be seen in their perceptions related to pedagogy. For example, Factor-1 participants perceive learners to coconstruct knowledge and deliberately create authentic, interactive and problem-based learning environments so as to facilitate or mediate learners' practical and theoretical understandings of new concepts. These pedagogical decisions, carried out in the context of practical activities, blend both vocational and knowledge, in what Rose (2005) referred to as a symbiotic relationship between mind and body. Alternatively, Factor-2 participants asserted students need to be led, stimulated, and coached because learning, the development of the intellect, is arduous work, which is reflected in their desire to expose students to the content of the humanities curriculum. Therefore, while both groupings perceive students to be active and capable agents in the acquisition of knowledge, their high-ranked statements represent divergent epistemological beliefs regarding the content of the curriculum, and differing perceptions regarding developmental theory related to how learners acquire and construct knowledge.

Factor 4 presents a similar view to Factor 2, by claiming the academic-vocational divide is an arbitrary division, firstly, of subject matter and, secondly, of equally capable and mentally active learners. However, differing views support this claim. Factor-4 participants asserted the merging of vocational and academic knowledge in a cross-curricula context will prepare learners to adapt both mentally and practically to meet changing demands associated with the 21st century; in addition to this view, Factor-4 participants highly agreed that students learn best by doing. Both of these views sit in contrast to Factor-2 participants' views. Factor-4 participants' perceptions are grounded in the notion that the intelligence of vocational workers is hidden behind institutional

hierarchies, and behind the investments of industry. As such, Factor-4 participants perceive all students to be mentally active and capable of learning by doing in a cross-curricular context in which academic and vocational curricula are merged. This belief can be seen to align with Billett's (2001b) notion of situational learning, in which knowledge is understood as subjective and dependent on context.

While participants affiliated with both Factors 3 and 4 favoured situated learning environments, their reasoning represented differing perceptions. Factor-3 participants collectively viewed TVET students as nonacademic, valuing hands-on work over theoretical modes. In doing so, the worldview of Factor-3 participants stands in disagreement with those of Factors 1, 2, and 4 by advocating for two streams of education, one for mind and one for body, thus supporting the continuation of the academic/vocational divide. Factor-3 participants' worldview is grounded in the notion that there are two types of learners, manually minded and theoretically minded. They perceive students in trades as lower academic achievers, leading to the assumption that both students and instructors value hands-on forms of learning over more theoretical modes. Factor-3 participants value structures align with the fundamental underpinnings of behaviourism and the utilization of competency-based education (Billett, 2016; Green, 2000; Lucas et al., 2012; Rose, 2005). This utilitarian-based pedagogy is reflective of old vocational modes, grounded in the understanding that TVET is designed to educate the lower socioeconomic group and the lower academic achievers to become useful and financially independent members of society. At the same time, this viewpoint held by Factor-3 participants represents hierarchical epistemological perceptions that place academic knowledge in higher standing than vocational knowledge.

6.3.1. Section Summary

Participants affiliated with Factors 1, 2, and 4 perceive TVET students as capable and cognitively active. On this understanding, Factor-1 participants aims to support students to reach their full potential through constructivist pedagogical approaches. Whereas, Factor-2 participants assert students must be exposed to the humanities curriculum, relying on the strengths of the curriculum content to expand the minds of

students so they reach their full potential. Factor-4 participants expressed the need for a restructuring of the TVET system as a whole to expand curriculum content, yet, at the same time, they also reflected similarities with Factor-1 pedagogical approaches, claiming learning needs to be taught in the context of practical problem solving. In deviation with these views, Factor-3 participants' epistemological worldview can be seen in stark contrast, advocating for two streams of education, one for academic development and one specifically for the development of practical skills, thereby reinforcing beliefs underpinning the academic–vocational divide.

6.4. Research Question 3: What are the General Perceptions of Vocational Instructors Regarding the Purpose of Vocational Education?

According to participants aligned with Factors 1, 2, and 4, a key purpose of vocational education is for students to develop critical-thinking abilities. However, despite aspiring to meet the same goal, each of these three groupings differ in perspectives from each other when advocating their preferences for one pedagogical approach over another, and also when proposing curriculum content. Overwhelmingly, participants affiliated with all three groupings named critical thinking as an ultimate goal of TVET during their post-sort interviews.

Factor-1 participants stated critical thinking is fundamental to all learning, leading them to advocate for authentic learning environments in which the cognitive dimensions of practical work are required. They claimed, however, that ITA program outlines obstruct learners' growth and development of critical thinking skills. This is because of two key issues: (a) the content presented in program outlines is outdated and (b) the outline itself promotes the teaching of decontextualized and deconstructed competencies, which, participants claimed, deprives learners from developing a full conceptual understanding. For these reasons, participants in this factor indicated the purpose of TVET is to go way beyond helping students pass the test. This is the crew that wants students to develop the capacity to hold ideas in their hands and to manipulate and move them around in three-dimensional ways. In conclusion then, Factor-1 participants

contextualized critical thinking in an applied manner, wanting students to think critically in action.

Similarly, the worldview of Factor-2 participants recognizes trades work is thought-enabled work, requiring analysis, evaluation, and synthesis of information. They too perceived the purpose of TVET is to span beyond the restraints of competency-based curriculum and standardized program outlines. Although participants affiliated with Factors 1 and 2 share similar views up to this point, Factor-2 participants then divert their views by claiming academic freedom is essential to their teaching, noting their desire to expand curriculum choices that far exceed the limitations of the ITA program outlines. Factor-2 participants stand alone in their strong agreement to expose students to the powerful ideas within a humanities curriculum. In doing so, Factor-2 participants express views that prioritize the development of the mind, over that of skill development. Therefore, critical thinking in this worldview is a frame of mind that is developed through exposure to curriculum outside of the trades. The purpose of TVET, according to the worldview of Factor-2 participants, is to prepare learners cognitively and emotionally for all aspects of life, rather than narrowing students' opportunities by limiting them to the performance of specific skill sets.

Sharing the common thread of critical thinking, Factor-4 participants articulated that TVET students need to learn how to think critically. However, those affiliated with Factor 4 contextualized critical thinking both with and without information technology. This worldview draws attention to the contradiction between the goals of standardized competencies compared with the goals of 21st century learning outcomes. Participants grouping together in Factor 4 claimed standardized competencies lead to standardized outdated practices for both the teacher and the learner. To sum it up, they claimed standardized competencies are the antithesis to critical thinking. They asserted the aim of TVET should be to produce learners with a problem-solving frame of mind so as to adapt to future demands, which is to be achieved through an instructor-driven dynamic cross-discipline curriculum.

Instructors affiliated with Factor 4 also shared similarities with those of Factor 1 in relation to their perspectives that advocate for situated learning environments. While Factor 1 also promotes situated learning, they do so for a differing purpose. Factor-1 participants assert students develop both the technical skills required by industry and the ability to think critically when teaching takes place in authentic, problem-based environments. This view deviates, however, from the dynamic instructor-driven curriculum proposed by Factor-4 participants, who rejected all aspects of a competency-based and industry-led curriculum.

Alternatively, Factor-3 participants claimed the purpose of TVET rests primarily on the development of specific skill sets to meet the current needs of industry. This view is in keeping with the traditional apprenticeship model and recognized for its ability to prioritize work relevance over academic goals (Kemmis & Green, 2013). Within this worldview, decisions are made and motivated by the economic drivers of industry, grounding the purpose of TVET in the paradigm of utility.

6.4.1. Section Summary

Participants affiliated with Factors 1, 2, and 4 asserted critical thinking is an essential element of TVET; however, participants of these three groupings hold differing views as to the context of critical thinking. Factor-1 and Factor-4 participants value the development of critical thinking in relation to technical skills. Factor-1 participants aim to develop critical thinking in keeping with ITA required technical skills; alternatively, Factor-4 participants aim to develop critical thinking through a cross-discipline curricula approach, in which practical skills are dependent on the situation, and not on predetermined competencies. Factor-2 participants prioritize the development of the mind over the need of technical skills and aspires to foster critical thinking through exposing students to curricula content outside of the ITA outline. Factor-3 participants, however, stand alone in their views, as they place a high value on the development of in-demand skill sets over the development of critical thinking skills.

6.5. Research Question Four: What are the General Perceptions of Vocational Instructors Regarding the Future Needs of Vocational Education?

Participants affiliated with Factor 1 claimed students are going to be facing problems they never saw in the curriculum, so they believe the instructor's role is to teach students to think outside the box, which relates back to this factor's prioritization for students to develop critical thinking cognitive structures. In keeping with this view, participants of this factor hold the worldview that information technology will be a key part of student learning and living in the future. Based on these claims, participants affiliated with Factor 1 strongly assert that students need to learn how to discern between information, and misinformation. The answer to these issues, according to Factor-1 participants is the investment of resources to develop learning objectives aimed to teach students how to learn using information technology. Factor-1 participants advocate for the addition of digital literacy to the current curriculum; they also proposed the addition of soft skills, claiming that employers are frequently requesting soft skills over technical skills.

Collectively, Factor-1 participants asserted professional development for TVET instructors is not prioritized within the system (claiming professional development opportunities for TVET instructors differ from K–12 teachers and from academic collective agreements in which professional development is resourced and mandated annually), which they feel is detrimental to the future of TVET. Participants affiliated with this factor implied that the absence of professional development opportunities may be due to the misconception that trades is easily learnt and easily taught (Billett, 2003), and therefore not a requirement. Factor-1 participants may also highlight the notion that knowledge held by instructor has been overlooked (Rose, 2005). Regardless, Factor-1 participants share the worldview that TVET instructors require professional development in two areas: (a) trade-specific training, claiming that instructors' skill-sets are falling behind industry, and some may be teaching obsolete skills and knowledge due to advances in the trade, and (b) in the context of teaching and learning, Factor-1

participants advocated for a collaborative approach to professional development, which again reinforced their constructivist approach to pedagogy.

Alternatively, Factor-2 participants hold a worldview that implies a full education is as valuable today for all learners, including those choosing to enter trades, as it has been throughout history. Factor-2 participants have shown a consistent focus grounded in the notion that a full canonical education will prepare students both cognitively and emotionally for all aspects of life, which also reinforced these participants high level of disagreement toward the teaching of specific skillsets, and the delivery of competency-based education. From this perspective, Factor-2 participants perceived education, albeit TVET or academic, for the purpose of developing learners' ability to think deeply and critically from various perspectives in preparation for the life they wish to live—neither to restrict nor stratify learners to a predetermined place in society. Factor-2 participants understand the power of curriculum, stating, “We can't restrict people,” as education today is all about access to knowledge.

When considering the future of TVET, Factor-3 participants stand firm in their strong agreement with the old-vocational apprenticeship model, asserting that the aim of TVET is to train and mentor students to perform predetermined skill sets as required by industry. However, Factor-3 participants, like those Factor 1 acknowledged that rapid changes in industry have left instructors teaching obsolete skills sets on outdated machines, accompanied with outdated forms of knowledge. Participants in Factor 3 admitted they face challenges having not worked in industry for varying amounts of time, leaving them lacking in both knowledge and experience of current practices. These claims highlight a disruption within the apprenticeship model, noting that this model is dependent on the passing down of skills from master to novice. Needless to say, rapid changes due to advances in technology have created a phenomenon in which the role of mentorship and apprenticeship is fast becoming obsolete for certain trades.

In addition, Factor-3 participants noted the lack of technology used in the learning environment means instructors need to screen what students are viewing on the Internet, because students lack the ability to think critically about their subject in order to filter the

accuracy of content available through accessible sources. On one level, this concern aligns with the view of Factor-1 participants, who claimed digital literacy should be embedded into TVET curricula, in order to offer learners access to knowledge and to provide them with the cognitive tool kit to decipher between information and misinformation. However, Factor-3 participants' claims also differ from those of Factor 1, because Factor-3 participants have no desire to increase the use of technology in their teaching, nor do they plan to embed digital literacy into their curriculum. Furthermore, this difference between participants affiliated with Factors 1 and 3 drew attention to Factor-3 participants' perceptions in regard to the capacities of the learner and their pedagogical model of mentorship.

Factor-4 participants' primary defining statements showed an overwhelming focus on the future of TVET. The 21st century progressives, who identified as empowered professional, aim to play a key role in all areas of the curriculum development process. As critics of the current ITA system, 21st century progressives exposed a hierarchy within the curriculum development process, claiming the voice of industry carries significantly more weight than that of the educators, maintaining that this practice has devalued the standings of instructors by overlooking their knowledge as both educators and SMEs.

The 21st century progressives advocated that students need to learn how to think critically on the basis that scientific principles and concepts can be applied across the existing borders between different trades and disciplines. These participants understand what it means to learners when information is freely available, claiming that trade workers of the future will need to know how to utilize that knowledge in new unforeseen contexts. The 21st century progressives proposed teaching and learning takes place in a cross-curricular context in which practical problem solving provides learners with authentic risks and realities that are lost when taught out of context. Participants of this factor firmly asserted the learning environment needs to be dynamic, so as to provide learners with the opportunity to simultaneously learn and apply concepts to unfamiliar problems.

6.5.1. Section Summary

Factor-1 participants, the constructivist crew, want to rebuild the TVET system from the inside. They have an awareness of the changing requirements for practice in the 21st century and see value in the implementation of constructivist pedagogical approaches, combined with the approach to add on to the current curriculum with topics such as digital literacy and soft skills. They want to strengthen the abilities of instructors through a collaborative approach to professional development, which aims firstly to ensure industry currency of instructors by advancing their trade-specific knowledge and skills and, secondly, by advancing their knowledge and skills in the field of teaching and learning, both with and without technology. According to participants affiliated with Factor 1, the key to their success is an increase in resources, thereby providing the level of professional development opportunities required by instructors in order to make significant change.

Underpinning Factor-2 participants' worldview is the notion that all students possess the intellectual capacity to be worthy of a holistic education. Participants of Factor 2 view 21st century trades education through an epistemological lens that rejects the hand-mind binary and its associated labelling of students as manually minded, thereby rejecting the academic–vocational divide. According to the canonical cluster, the bigger purpose of education requires academic freedom in order to prepare students for life, both cognitively and emotionally. Factor-2 participant curriculum choices far exceed the limitations, including time constraints, of the ITA program outlines.

The experiential team plans to reinforce the values held by the age-old paradigm of apprenticeship. Based on the understanding that throughout history workers and industry have benefitted from this model, Factor-3 participants ground their beliefs in the paradigm of utility and plan to continue advocating that students learn best by doing. They stand firm on their understanding that there are two types of learners: (a) book smarts versus hands-on and (b) hands-on learners want to get in there, and get dirty. Factor-3 participants acknowledged the changing demands for the 21st century workforce, both from the perspectives of teaching, and also as it relates to industry;

however, despite these changes, the experiential team envisions the future of trades education as continuing to teach predetermined competencies in order to produce the best industry-ready students.

While Factor-1 participants want to fix the current TVET system from the inside out, Factor-4 participants want to burn it down and rebuild it from the ground up (figuratively speaking). Factor-4 rejected notions of hand–head/mind–body binaries and proposed a different epistemological lens that blurred the lines between academic and vocational education, claiming the future of TVET calls for the teaching of critical thinking and problem solving within a cross-curricular culture. Factor-4 participants’ most radical notion is linked to their identity as empowered professionals, and their ideas would disrupt the long-standing history underpinning the industry-led aspect of trades and vocational education and training. Factor-4 participants represent new vocational thinking in keeping with Grubb (1996), Lucas et al., (2012), and Marshall (1997), and, as educators, suggested building curriculum through a concept-based lens that focuses on the student’s ability to competently learn, understand, apply, and adapt.

Chapter 7.

Conclusion

Using Joseph's (2000) cultures of curriculum framework as my theoretical lens, I have conceptualized curriculum as culture in the field of TVET. In doing so, I conclude that the range of values and beliefs held by TVET instructors show some common goals and many incongruent and conflicting ideals.

The common ground is a deep belief held by instructors in three out of four groupings that the abilities of students to think critically and use scientific concepts are the most necessary cognitive tools for trades students heading into a future in which skillsets and cognitive requirements are unpredictable. The pedagogical pathways that these groupings propose to achieve these goals, however, vary widely.

It cannot be ignored that tensions exist between the theoretical underpinnings of CBET, and the curriculum choices of Factors 1, 2, and 4. Participants who aligned with Factor-1 implementation of constructivist pedagogies, which aim to deepen learners' levels of understanding, are operating, by requirement of government agencies, within the competency-based paradigm. Therefore, while attempting to meet the aims of constructivism, participants in this factor ultimately undermine the goals of CBET, and at the same time, CBET ultimately undermines the theoretical underpinnings of constructivism. The same can be said for Factor 2, within which strikingly opposing theories are held between the field of CBET and the canonical drive for academic freedom, and likewise for Factor 4, in which the cross-curricular concept-based ideas on education are at odds with the skill-based, train-for-today foundations underpinning CBET. Despite the Factor-3 alignment with the goals and associated pedagogies of CBET, the fact remains there is a fundamental disconnect between 21st century workplace demands and its associated need for concept-based outcomes, and those associated with CBET.

Also significant are the distinct views held by each factor that represent a system divided against itself. Participants who aligned with Factor 1 hold to the idea that TVET education should be taught through constructivist approaches so as to develop both theoretical understandings and practical skills. Factor-2 instructors believe that TVET education should focus on the development of the intellect through canonical approaches, subordinating the need for skill development. Proponents of Factor 3 hold to the idea that TVET education should focus primarily on skill development, employing behaviourist approaches to teaching and learning, and, finally, those who align with Factor 4 believe that TVET education should focus on concept-based outcomes in a cross-curricular culture that aligns with new vocational thinking. Teachers working side by side in the same institution, and often in the same classrooms, hold these theoretically incompatible views.

Having gleaned these two major findings from this study, I claim that, first, tensions exist between the goals of instructors who align with Factors 1, 2, and 4, and the theoretical underpinnings of CBET, and, on the other hand, Factor 3 is found to be theoretically compatible with CBET. Second, the views held by each of the groupings represent distinct theories that are mutually incompatible. As such, the question arises as to how the field functions if people who teach in vocational education have widely differing views on fundamental curricular issues?

My belief is that the field of TVET operates simply because the dialogue that surrounds TVET curriculum is grounded in the technical and the practical, which is in keeping with Aoki's (2003) claim stating the technical view of curriculum (i.e., curriculum-as-plan) is the most challenging obstacle for curriculum developers today. As Beyer and Apple (1998) proposed regarding standardized curricula:

We are referring here to the transformation of curriculum theory and practice from concerns about *what* should be taught and *why* we should teach it to those problems associated with *how* to organize, and about all now, evaluate curriculum and teaching. The difficult ethical and political questions of content, of what knowledge is of most worth, have been pushed to the background in our attempts to define technically oriented methods that will "solve" our problems once and for all. (p. 3)

My view is that the TVET system functions, despite its incongruent beliefs, because the theoretical understandings of curriculum have been submerged by a paradigm of utility.

Moving forward, I propose that my study findings provide a starting point for trades instructors' discussions regarding curriculum decisions. My intention is for these findings to bring forth awareness of the largely unexamined theoretical confusion that I found to exist within the BC TVET system. From this awareness, my hope is that these findings challenge the stakeholder group of instructors, teaching and learning specialists, senior administrators, and policymakers to, first, reflect on their own belief structures surrounding TVET's purpose and aims and, second, to consider the theoretical underpinnings of the decisions they make regarding the future of TVET education.

7.1. Future Research

Based on the findings of this study, a further search of literature revealed Egan's (2008) study claiming incompatible theories coexist in mainstream education. According to Egan, the good news is there are only three main ideas in mainstream education; however, as he claimed, "the bad news is that these ideas are mutually incompatible, and the primary cause of our long-continuing educational crisis" (p. 3). Egan's argument is important to the outcomes of this study because it rests on the notion that while theoretical incompatibilities can coexist, they will, however, play out in ways that undermine and weaken the educational aims of each theory.

It is interesting to find an overlap between Egan's (2008) findings of theoretical incompatibilities in mainstream school and my findings gleaned from this study. Egan provided a framework to situate these new findings within and to support the need for future investigation. On Egan's understanding that incongruent theoretical understandings both weaken and undermine the aims of each theory, I believe awareness of the theoretical incompatibilities found to exist in the BC TVET system warrants further investigation in order to answer questions such as (a) how can the field of TVET function if people who teach in Vocational Education have contradictory views on so

many issues, (b) what is the cost, and (c) who pays this cost when people who teach in vocational education hold conflicting views on curriculum?

These findings come forth at a time when they can add to the body of literature investigating how to best to prepare vocational students with the appropriate knowledge and skills for life and work in the 21st century (Battelle for Kids, n.d.; Billett, 2016; Dede, 2009; Lucas et al., 2012; Rose, 2005; Taylor & Freeman, 2011; Voogt & Roblin, 2012). In addition, these findings may be valuable for those designing professional development opportunities and aiming to prepare instructors to teach students for a future that is unknown and for jobs that do not yet exist (Biemans et al., 2009; Billett, 2003; Carey et al., 2015; de Paor, 2018; Lucas, 2014).

The findings in this study may also lend support to other curriculum studies in both mainstream education and TVET. They concur with Billett (2016), Joseph (2000, 2011), Lucas et al. (2012), Nesbitt (2000), and Rose (2005), who individually brought to light the understanding that each school of thought, worldview, or orientation prioritizes one form of knowledge over another. This, in turn, shapes belief and value structures, forming perceptions in regard to the role of the teacher and the capacities of the learner, ultimately influencing what is taught and which pedagogical approach is deemed appropriate.

Having found that theoretical incompatibilities exist in the BC TVET system, these findings may also challenge the work of earlier researchers who framed TVET in one worldview. For example, Green (2000), with her categorization of TVET as a culture of curriculum grounded in utility, which was reflected in her categorization of this culture as a system whose aim is purely for “training for work and survival” (p. 29), may be surprised to find other perceptions are held by those working in the system. There are others, of course, who hold belief structures without reflection. This may include those grounding assumptions in Plato’s (2000) ideals, having been shaped by the curriculum culture of their own educational journey, and having found no purpose to question or reflect on their beliefs up until this point. This interpretation may also challenge the work

of those who have long assumed the TVET community holds the view that its students are manually minded.

In addition, there are those who regulate the TVET system and inform policy, such as the ITA and the Ministry of Advanced Education; these individuals may be challenged to learn that theoretical incompatibilities exist in the BC TVET system. Firstly, these findings shine light on the behaviourist theoretical understandings held by stakeholders shaping aspects of the TVET curriculum. Secondly, these findings draw attention to discrepancies between the academic and vocational education systems and the ways in which this plays out, such as the perceived role of the TVET instructor as SME (reflected in the lack of teacher training and further education), and the purpose of TVET and beliefs about the capacities of the learners (reflected in the use of CBET).

To ignore these findings may have a great cost to the TVET system as a whole. Not only will instructors continue to pull in opposing directions, with the consequence that much of their work and effort will be in vain (Egan, 2008), but also greater problems exist for those looking to implement system-wide reform. This forewarning comes from Madoc-Jones and Gajdamaschko (2005), who investigated Egan's (2008) claims of theoretical incompatibilities in mainstream education and stated, "The problem for gov't who wish to implement system wide programs for reform is that unless they take into account such difference they will likely run into real difficulties" (p. 74). This warning, combined with the findings in this study, comes at a time when globalization, automation, and the reality of living with job insecurity ubiquitous with the 21st century demands a new approach to education as a whole, including vocational education (Billett, 2016; Pfeiffer, 2015). The bottom line is, if the theoretical incompatibilities currently operating within the BC TVET curricula are not recognized, they cannot be addressed.

7.2. Limitations and Delimitations

It is possible that some participants were unfamiliar with the vocabulary used in the course of this study that became the 62-statement Q-sort. On a few occasions participants asked me during their Q-sorts to clarify the meaning of terms used such as

TVET, CBET, pedagogy, and competencies. While the term competency is frequently used in TVET, it is limited to the context of program outlines and assessment. Most participants were easily reminded as to the definition of pedagogy; however, it was apparent that this term is not used to describe the teaching practices used in TVET. In addition, few participants recognized terms such as TVET and CBET. Consideration of participants' challenges with the vocabulary used in this study brings forth a concern around the power differential this level of language may have created between the participant and the researcher.

Another limitation of this study is that it overlooked the uniqueness of each trade. This is because correlations between factor loadings and specific trades were outside of the scope of this study, and while the participants recruited for this study represented 10 Red Seal Trades as well as one trade no longer recognized as Red Seal, there may be other perceptions held by trades that were not represented.

I delimited this study to five postsecondary institutions throughout the Lower Mainland and Vancouver Island due to time, cost of travel, and accommodation. As a doctoral student, I had financial constraints that influenced such decisions. It may be possible that views held by TVET instructors vary according to their geographical location, which the outcomes of this study do not reflect. On a similar note, the literature review performed for this study represented a broad range of perspectives common to the field of education. However, there may be other views that were not represented in this study, which may have limited participants' choices when placing Q-sort statements in rank order.

7.3. Personal Reflections

I began this journey 6 years ago, propelled by a slight chip on my shoulder that I can trace back to my failing of the Eleven Plus. The actual failing of this exam did not cause such reaction, but as the subsequent years passed, the consequence of this failure became more apparent as it played out in many ways. The first being exclusion, as I was unable to undertake a full education based on others' assumptions about my level of

intelligence at 11 years of age. Then, having chosen a career in hairdressing, I experienced the consequences of stigma attached to trades, especially those considered soft trades. Yet again, this led to assumptions being made about my level of intelligence, this time drawn from my identity as a hairdresser.

Today, however, I am enormously grateful for these experiences of failure and exclusion because they have provided me with opportunities that I now see as privileges. This journey of privilege began when I was accepted as a nontraditional student into the Master of Education program at SFU in 2008 and has continued throughout my doctoral studies. During this time I have been fortunate to learn alongside Dr. Pidgeon, Dr. Gajdamaschko, and Dr. MacKinnon who have encouraged and challenged me to view the world from many perspectives.

My most powerful learning came from my introduction to the works of Lev Vygotsky (1978). This is because Vygotsky's theory of social constructivism disrupted my previously understandings regarding what it means to be intelligent. Today, I understand and accept that intelligence is socially constructed—mediated through history and culture. This not only allows me to interpret my own educational struggles, but also to understand others and to teach in a more meaningful way that ultimately supports students throughout their own educational journeys.

Today, I find myself reflecting on my own educational journey from a place that privileges me to know and understand that the beliefs and values that shape educational systems can aim either to exclude or include. As such, these beliefs and values can foster students' abilities to access knowledge, or they can build barriers that deny them this human right.

It is from this place of understanding that I now stand and advocate for inclusion. My work in trades, both at home here in BC and overseas in Trinidad and Tobago as well as Kenya, will benefit from my deeper understanding of curriculum theory.

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Appendix A.

Methodology Response Grid

| Strongly Disagree | Disagree | Moderately Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Moderately Agree | Agree | Strongly Agree |
|-------------------|----------|---------------------|-------------------|---------|----------------|------------------|-------|----------------|
| -4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 | +4 |
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Appendix B.

Q-Sort Instructions

1. Please read through all 62-statement cards to become familiar with the statements. As you read through, please organize the cards into three piles:
 - On the right, place the cards with the statements of which you agree.
 - On the left, place the cards with the statements of which you disagree.
 - In the middle, place the cards that you feel more undecided about or you neither agree nor disagree with the statement.
2. Beginning with the pile on the right, place the 5 cards that you most strongly agree with in the far right column in any order.
3. Next, turning to your left side, place the 5 cards that you most strongly disagree with in the far left column in any order.
4. Returning to the pile on the right, choose 6 cards that represent the next statements ^[]_[] with which you agree and place these cards under marker + 3, in any order.
5. Do the same with the pile on the left, following the pattern on the response grid as you work your way to ^[]_[] the center pile.
6. You are free to change your mind during the sorting process and switch items around as long as you maintain the requested number of items under each mark. Your sorted cards should match the diagram on the response grid.
7. Once you have completed this task, the principal investigator will take a digital photo to record the placement of your sorted cards.
8. After sorting the cards, you may be asked to take part in a short interview, approximately 5 minutes, to discuss your thoughts and reasons for the placements of your card.

Thank you for your time and willingness to participate in this study.

Version: November 15, 2017

Appendix C.

Letter of Invitation

November 19, 2017

Greetings, you are being invited by Sally Vinden, PhD Candidate, Faculty of Education, Simon Fraser University; Instructor, Faculty of Trades & Applied Technology, Vancouver Island University, to participate in a research project entitled Preparing Students for the Future: An Exploration of British Columbia's TVET Instructors' Perceptions that Shape their Pedagogical Decisions

I am doing this study to learn more about how instructors' think and feel about trades and vocational education and training (TVET) in general, how they perceive their teaching role and the teaching strategies that they use, and also how they perceive the future aims of vocational education.

Study Purpose:

This study aims to gain new insights in to instructors' perceptions that shape their pedagogical decisions. These insights may, in turn, provide a new understanding on the requirements for TVET instructors' professional development in the 21st Century. Findings from this study may also influence practices in the design of program standards, program and curriculum design, pedagogical approaches, and ultimately student learning outcomes.

The findings of this project will be used in partial requirements for the completion of my Degree in Doctor of Philosophy. The final report and results will be presented at conferences and publication opportunities will be pursued.

Study Procedures:

You are being invited to participate in this research study because you currently teach, or have taught, at a postsecondary institution within British Columbia, and specifically because you teach/taught an Industry Training Authority (ITA) standardized competency-based trades program.

Participation in this study would involve the completion of a short 5 question demographic survey, the sorting of 62 cards in a Q-sorting activity, and taking part in a short, 5 minute, interview following the Q-sorting procedure. Suggested time for participation is 1 hour.

The Q-sorting procedure involves the sorting of 62 cards that have statements about TVET printed on them, and your task will be to sort them according to whether you agree or disagree based on your own beliefs. This process should take no more than 30 - 45 minutes. After sorting the cards, I will ask you questions about why you placed the statements in certain areas on the response grid. This is because I am interested in your beliefs and values that guide your decisions. There are no right or wrong answers. With

your consent, this interview will be recorded using i-phone 7 digital voice recording. Your card sort and your responses during the interview will remain confidential.

Following the Q-sort, you will be asked to complete a brief 5-question survey to provide some general demographic data.

There is a chance that you may be contacted following your initial participation. This is because the principal investigator may require more information during the data analysis process.

Participation in this study is entirely voluntary, and it will be scheduled at a time and location that is convenient to you. You have the right not to answer any questions and to withdraw from the project at any time.

Confidentiality

All information gathered from your participation in this study will be coded and all personal identifiers will be removed, which assures your confidentiality. The data will be kept in a locked office and password protected on a computer hard drive. Only myself, Sally Vinden, as the principal investigator along with my co-senior supervisors, Dr. Michelle Pidgeon, Dr. Natalia Gajdamaschko, will have access to the data.

Your confidentiality will be respected during this research project and in the dissemination of its results; at no time will your name and/or affiliation be disclosed.

Remuneration/Compensation

Participants will not receive any remuneration for participating in this project. However, I will offer to provide refreshments, such as coffee, muffins, or pizza depending on the time of day and location of your participation in the study.

Contact for information about the study:

If you have any questions about this project, please contact Sally Vinden. You may also contact my co-supervisors: Dr. Michelle Pidgeon, Faculty of Education or Dr. Natalia Gajdamaschko, Faculty of Education.

Contact for concerns about the study:

If you have any concerns about your rights or treatment as a research participant, please contact Dr Jeffery Toward, Director, Office of Research Ethics.

Many thanks for your assistance.

Warm regards,

Sally Vinden

Appendix D.

Q-Sample

1. Vocational education should be integrated with academics.
2. Vocational education should expose students to all aspects of an industry rather than focusing on a limited range of skills.
3. The purpose of vocational education is to transform a person's mind and character.
4. Within vocational education, the needs of industry are privileged over students' needs and aspirations.
5. The aim of vocational education should be to develop students' ability to respond to the changing nature of work.
6. Vocational education is often viewed as something for students who have not performed well in school.
7. Any system of education that streams students into vocational fields without providing them first with a rich intellectual education has negative consequences for both the learners and for society.
8. The role of industry and government agencies in the development of core standards and assessments for trades, raises concerns of whose best interests are being served.
9. My students find hands-on work more rewarding than academic work.
10. Curricula focused primarily on skill development deprives students of the opportunity to develop an understanding of scientific theories that underpin practice
11. Students need to learn the work ethic and gain a wider view of their role as workers.
12. All students learn best by doing, not just manually minded students.
13. Students learn academic material best through a traditional teacher-centered approach.
14. Students are capable of developing and solving problems within work related contexts.
15. All students are capable of learning and growing from the powerful ideas within a humanities curriculum.

16. Students need to be led, stimulated, and coached because learning, the development of intellect, is arduous work.
17. The shop is where students see theory in practice and that is where the trades students are different -- they come alive on the shop floor.
18. My students have an innate affinity with information technology, and it would be a shame not to utilize that effectively in the classroom.
19. Students mentally organize information and are able to apply it to future problems or situations.
20. Learners are recognized as capable agents of knowledge production, rather than passive consumers of information.
21. Parents may be concerned with the stigma associated with vocational education and may worry about their child's chances of an academic education in the future
22. All trades work is thought-enabled work and it requires mental processes involving perception, attention, memory, knowledge, and judgment.
23. Teaching vocational education is about transmitting my skills to a new generation of worker.
24. Instructors are given the provincial ITA standard curriculum, and follow it rigidly.
25. Good work, such as thoroughness, promptness, neatness, reliability, and punctuality are to be taught and valued.
26. Collaboration with other instructors from either vocational education or academics has helped me to adopt new teaching methods.
27. I know my trade and I mold my teaching on how I learn and how I was taught.
28. We all know our trade but teacher training is helpful because it covers the theory behind the practice in adult education.
29. The best vocational educational learning is something which involves feedback, questioning, application and reflection and, when required, theoretical models and explanations.
30. The goal of teaching should be to spark each student's imagination, to find a hook in their heart and mind so that they feel a need to learn the material.
31. The instructor's role in translating competence-oriented goals into actual learning activities is crucial in the implementation of vocational education.
32. Vocational education needs to be taught in the context of practical problem solving.

33. In my classroom, I talk most of the time, students sit, listen, do bookwork, and take tests.
34. The teaching day severely limits the amount of time available to instructors to meet with colleagues for curriculum planning, brainstorming, and meaningful discussion.
35. Trades' Instructors should determine standards, design the curriculum for students work, and create the structure of classroom activity.
36. Classroom management builds good industrial habits.
37. Teaching and learning strategies, such as problem based group work, and case-studies, take up too much classroom time.
38. Learning in the trades should be assessed through authentic assessment practices that include: demonstrations, products and services sold to the public, and student contribution to the community.
39. Learning should be assessed through individual writing of essays and papers.
40. The focus on tests dictates what I cover in class each day.
41. I like students to hand write their assignments because I think they understand better compared to using a computer.
42. Drills are often the only method for teaching basic psychomotor skills.
43. The students learn to pass the multiple-choice exam but they don't have the experience or the knowledge to perform the skills.
44. Trades instructors should evaluate students' knowledge through questioning and engaging students in debate.
45. What may be deemed competent performance in one setting may be quite inappropriate in another.
46. Standardized competencies promote a mechanical and procedural approach to teaching and learning.
47. Standardized competencies describe jobs from the past.
48. Effective learning activities do not result from specifying levels of competence, they require specific attention in planning and designing.
49. Teachers need a clear understanding of the variety of learning methods that lead to different learning outcomes before they can make informed and effective pedagogical decisions.
50. Measuring observable changes in behavior is evidence of learning.

51. Open-ended questions are a more valuable learning tool than questions requiring only one right answer.
52. When a teacher stands in front of the class and presents conceptual information directly without student involvement, it results in students regurgitating content without any evidence of understanding.
53. Teaching and learning activities and assessment methods should be designed according to Bloom's Taxonomy, and demonstrate an understanding of the domains of learning.
54. Identifying a learner as having a certain learning style or preference is detrimental to their learning.
55. Lecturing to students is an efficient instructional technique.
56. All my students are going to need communication skills beyond what I had ever imagined when they enter today's workplaces.
57. The 21st-century skills agenda can lead to the temptation to keep adding things to the curriculum, resulting in a curriculum which is a mile-wide but an inch-deep.
58. Wifi is a distraction in the classroom.
59. Advances in information technology (IT) are changing the way we teach.
60. When information is available at the touch of a button, teaching is arguably less about filling students' heads with knowledge and more^[1] about teaching them how to become effective, lifelong learners capable of responding to a fast-paced world of relentless change.
61. The real answer to improving outcomes from vocational education is through gaining an understanding of the many decisions instructors take as they interact with students.
62. Academic freedom is essential for me to be effective in my instructional role.

Appendix E.

Consent Form

Who is conducting the study?

Principal Investigator: Sally Vinden, Faculty of Education, SFU.

Faculty Supervisors:

Dr. Natalia Gajdmaschko, Faculty of Education, SFU.

Dr. Michelle Pidgeon, faculty of Education, SFU.

Who is funding this study?

This study is not being funded.

Why you should take part in this study?

You are being invited to participate in this research study because you currently teach, or have taught, at a postsecondary institution within British Columbia, and specifically because you teach/taught an Industry Training Authority (ITA) standardized competency-based trades program.

Why am I doing this study?

This research study will be part of a graduate thesis as a requirement for the Degree of Doctor of Philosophy: Curriculum Theory and Implementation.

The purpose of this Q-methodology study is to investigate the current pedagogical practices used in British Columbia's Trades and Vocational Education and Training (TVET) by postsecondary trades instructors that teach from standardized competency based curricular.

I am doing this study to learn more about how instructors' think and feel about trades education in general, how they perceive their teaching role and the teaching strategies that they use, and also how they perceive the future aims of vocational education.

This study aims to gain new insights in to instructors' perceptions that shape their pedagogical decisions. These insights may, in turn, provide a new understanding on the requirements for TVET instructors' professional development in the 21st Century. Findings from this study may also influence practices in the design of program standards, program and curriculum design, pedagogical approaches, and ultimately student learning outcomes.

The questions that guide this study are as follows:

- What are the general perceptions of vocational instructors regarding their role as a teacher?

- What are the general perceptions of vocational instructors regarding the intellectual capacities of their students?
- What are the general perceptions of vocational instructors regarding the purpose of Vocational Education?
- What are the general perceptions of vocational instructors regarding the future needs of Vocational Education?

Your participation is voluntary.

- Your participation is voluntary. You have the right to refuse to participate in this study. If you decide to participate, you may still choose to withdraw from the study at any time without risk of consequence.

How is the study done?

If you say ‘yes’, here is how the study will be done:

Participation would involve the following steps:

- At the beginning of the study, you will be asked to sign the consent form and return it to the principal investigator.
- A unique alphanumeric code will be assigned to each participant and attached to all documentation used throughout the study, thereby removing any identifiers, such as names, emails, contact numbers, and addresses.
- Next, you will be asked to participate in a Q-sorting activity that involves sorting and ranking 62 statements using the Q-sort response grid. Statements are sorted on a scale ranging from +4 (agree with most strongly) to -4 (disagree with most strongly). All statements relate to aspects of postsecondary education with a focus on TVET.
- The principal investigator will provide you with instructions for the Q-sorting procedure at the time of the study. You will have the opportunity to ask questions at this time.
- Once you have sorted and ranked all the statements, the principal investigator will take a photo to record your placements using an i-phone 7. The photo is taken to record the placements of the statements only. As the participant, you will not be photographed.
- Following the Q-sort, you will be asked to take part in a short, 5 minute, interview with the principal investigator to answer questions about why you placed statements in certain areas on the response grid. There are no right or wrong answers.
- The principal investigator will give you the choice to be audiotaped during your interview. If you agree, the recording will be made using an i-phone 7

digital voice recording. The audiotape will be transcribed and a copy of the transcription can be sent to you.

- One-on-one interviews will take place in a pre-arranged private location that is convenient to you, and agreed upon by you prior to the study.
- You will also be asked to complete the five question demographic survey to be issued to you at the time of participation.

Total amount of time required is approximately 1 hour. This includes your participation in: Q-sort, short interview, and 5-question demographic survey.

There is a chance that you may be contacted following your initial participation. This is because the principal investigator may require more information during the data analysis process. Please state whether you wish to be contacted, or not, by circling either:

YES: I wish to be contacted, or, NO: I do not wish to be contacted.

Is there any way being involved in this study could be bad for you?

- There are no foreseeable risks from your participation in this study.

What are the benefits of participating?

- No one knows whether or not you will benefit from this study. There may or may not be direct benefits to you from taking part in this study.

Will you be paid for your time taking part in this research study?

- We will not pay you for the time you take in this study.
- The principal investigator will offer to provide refreshments, such as coffee, muffins, or pizza depending on the time of day and location of the study.

How will your identity be protected?

- All documents will be identified only by a unique code number and kept in a locked filing cabinet. Participants will not be identified by name in any reports of the completed study.
- Digital photographs of Q-statements, and recordings of interviews, using i-phone 7, will be downloaded to a USB memory drive and removed from i-phone storage within a 24 hour period following participation.
- The data records are kept on a USB memory drive and kept in a locked filing cabinet as well.
- Please note: Strict confidentiality cannot be maintained in a group setting. We are unable to control what participants do with the information discussed during the time of participation.

- In current best practices in research, electronic data is to be preserved for future use in open access initiatives. Open access initiatives allow researchers from different universities to share their data upon completion of their studies, in an effort to stimulate further use and exploration of existing data sets. Data from this study will be uploaded to an online repository and these files will be stripped of any information that could identify participants (e.g., names, email addresses), to ensure confidentiality.

What if I decide to withdraw my consent to participate?

- You may withdraw from this study at any time without giving reason and without risk of consequence.

STUDY RESULTS

- The results of this research study will be reported in a graduate thesis and may also be published in journal articles and books.
- The main study findings will be presented at academic conferences.
- You may obtain a copy of the results from the main study, upon completion, by contacting Sally Vinden.

Who can you contact if you have questions about the study?

- Feel free to ask the Principal Investigator any additional questions about this research study at any time.

Who can you contact if you have complaints or concerns about study?

- If you have any concerns about your rights as a research participant and/or your experiences while participating in this study, you may contact Dr. Jeffrey Toward, Director, Office of Research Ethics.

Future Use of Participants Data

- It is possible that the research data collected in this preliminary pilot study may be used in future research studies.
- Once the principal investigator leaves Simon Fraser University, stored data will be stripped of any information that could directly identify participants (e.g., names, email address), or indirectly identify participants to ensure confidentiality and will be transferred to SFU RADAR to be preserved for future use in open access initiatives.

PARTICIPANT CONSENT

Taking part in this study is entirely up to you. You have the right to refuse to participate in this study. If you decide to take part, you may choose to pull out of the study at any time without giving a reason and without any negative impact on you.

- Your signature below indicates that you have received a copy of this consent form for your own records.

OFFICE OF RESEARCH ETHICS

- Your signature indicates that you consent to participate in this study.
- Your signature indicates your consent to digitally record your interview.
- You do not waive any of your legal rights by participating in this study.

Participant Signature

Date (yyyy/mm/dd)

Version: November 14, 2017

Appendix F.

Post Sort Interview Questions

1. Tell me about the statements you placed in the Strongly Agree column. What do these statements mean to you?
2. Tell me about the statements you placed in the Strongly Disagree column. What do these statements mean to you?
3. As you sorted the cards, did you feel that any statements about your beliefs and values were missing? If so, what are they?
4. Which statements were easy for you to place, and why?
5. Which statements caused you the most difficulty to place, and why?

Version: November 19, 2017

Appendix G.

Demographic Survey

1. How many years, including this academic year, have you been an instructor in an ITA trades program in BC? Please circle the appropriate response.

0–4 Years 5–9 years 10–14 years 15 or more years

2. How many years did you work in your specific trade prior to becoming an instructor? Please circle the appropriate response.

0–4 Years 5–9 years 10–14 years 15 or more years

3. Which Trade Credentials do you hold? Please circle those that apply.

- Provincial Trade Certificate
- Red Seal Endorsement
- Others _____

4. What is your highest earned academic credential? Please circle those that apply.

Grade 12
2 year Diploma
(PIDP) Provincial Instructors Diploma Program
Bachelor Degree
Masters Degree
Doctorate Degree

5. Please tell me about any professional development activities that you have participated in during the past 2 years. Please include both Trades Specific, and Instructional related activities.

Version: November 19, 2017