MIXED METHODS DEVELOPMENT OF A SURVEY INSTRUMENT FOR CATALOGUING STUDENT PRACTICES AND PERCEPTIONS

by

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ABSTRACT

How can outside-the-classroom agencies (e.g., universities, school districts) contribute to effective schooling in terms of student self-development? How can external initiatives be designed, implemented, and institutionalized to lead students to change existing classroom practice? As a first step in answering these questions, a survey instrument was developed to map baseline and post-initiative perceptions of teacher practice, student responses, and self-initiated practices in various course and lesson situations in schools in Newfoundland Labrador, Canada. The mixed methods program of research included an Exploration Phase with major projects entitled *Teacher Description of Practice* (n = 80), *Student Description of Practice* (n = 60), and *Student Journal of Teacher Practice* (n = 75), and a Development Phase with projects entitled *Student Explanation of Teacher Description* (n = 60), the *Development Study* (n = 60), and the *Final Survey* (n = 180). The teacher project, for example, collected 80 teacher descriptions of practice in 16 long- and short-term situations as well as perceptions of effectiveness. A website was developed for project administration and to accept data entry from participants representing 30 geographically separate schools. Qualitative data analysis consisted of text mining, concept mapping, keyword coding, categorization, and theme recognition; quantitative analyses consisted of descriptive statistics, item associations, and reduction of equivalent expressions. Analysis was designed to carry the richness of description through to the Final Survey. Measures of credibility and validity included the mixed method structure, large samples for descriptive research, question duplication, active website administration, pilot groups, member checking, triangulated descriptions, focus groups, case studies, participation across the mixed methods paradigm shift, a study of student misconceptions, and survey redevelopment. The instrument, entitled *Student Practice and Perception of Teacher Practice,* was included in this work as were descriptions of survey administration and data analyses.

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Appendix 1: Research Website (CD / Flash Drive)

Note: Links (underlined) in the electronic MS Word version of the thesis take the reader to the appropriate sections of the research website. Links do not work in the PDF version. Examiners who received only a paper copy of the thesis and who would like an electronic version please contact Nancy Bishop at nlbishop@mun.ca

CHAPTER 1: FRAMEWORK

My interest is in student perception, decision making, and practice which leads to self-development, self-regulation, and autonomy, and the organizational environments and situations in which this can take place. Specifically, I am interested in the effectiveness of outside-the-classroom initiatives designed to influence student classroom practice. Initiatives which lead to change in practice and more effective schooling require introduction, implementation, and institutionalization strategies (Hall & Hord, 2006). This program of research investigated mapping the initial state of classroom practice through the design of a survey instrument for long-term (i.e., course) and short-term (i.e., lesson) situations. The program was based on three concepts of teaching: management of learning, leadership in teaching and learning, and promotion of student self-instruction and self-determination. These approaches are not mutually exclusive in the Newfoundland Labrador (NL)education system and some teachers exhibit management, leadership, and promotion of student self-determination. However, others appear to lack one or more of these aspects.

The classroom is a complex environment. In my experience, teachers and students bring their lives into the classroom and it is unrealistic to believe that closing the door leaves society, thoughts, and feelings outside. In fact, many teachers who participated in this research suggested they relied on students' prerequisite knowledge, experiences, academic skills, and practices. The classroom is also complex because teachers engage students in a variety of ways and learning involves a variety of cognitive processes (e.g., perception, decision making). In addition, teaching and learning may vary with the classroom situation. My experience has taught me, for example, that student practice during the first ten minutes of a period are very different from the final ten minutes. Practices during the Main Part of Class depended upon whether the period occurred at the start or end of a unit, sometime after groundwork concepts had been laid, or the start or end of a school year.

The goal of this research was to develop a valid and reliable survey instrument to examine High School (HS) student situational practice and perception of teacher practice. No such instrument exists in the literature. Stronge and Tucker (2003) suggested that such an instrument focusing on "specific job behaviours important to successful teacher performance" (p. 56) would be a valuable research tool. The developed instrument was rigorously tested and should help researchers investigate situational student practice, achievement, and self-development. The instrument should also help teachers discover the realities of their classroom practice from students' perspectives.

Table 1

Thesis Details

Aspect	Description
Topic	Leading change in student perception and practice.
Problem	Leadership inside and outside the classroom is ineffective because student perception and practice are situational and unmapped.
Question	Which situational practices do students have? How can these be influenced effectively?
Goal or Purpose	To develop a survey instrument to measure student practice and perceptions of teacher practice in various long-term or course and short-term or lesson situations.
Objectives	Exploration of teacher and student practice in lesson and course situations through the collection of rich descriptions. The development of a survey instrument to measure classroom practice from student perspectives.
Keywords	Leadership, change, self-development, perception, learning, practice, situation, distance education, effectiveness, influence, teaching, survey.
Student Benefits	The act of answering survey questions requires individual reflection, which could lead to increased self-knowledge and changes in self-perception. In addition, the "meta" experience of questioning practice could lead to more frequent questioning of practice.
Teacher Benefits	A course or class survey could help a teacher identify common and unique student practices and adjust instructional approaches to maximize students' abilities. In addition, an increased understanding of student perception could be used to reduce misconceptions.
Organizational Benefits	A school-wide map of student perceptions and practices across all teachers and/or grades could lead to better designed organizational initiatives with more effective implementation and institutionalization.
Research Significance	The generalization of school-wide maps could lead to a better understanding of self-development mechanisms already existent in pedagogical approaches. In addition, increased understanding could lead to future research into perception, practice, assumption of ownership, and autonomy.

If Fullan, Hill, and Crevola (2006) are correct and the answer to effective teaching and classroom instruction is "matching the teaching and learning

opportunities to the needs of individual students" (p. 33), then this instrument, developed through such matching, should also be of great benefit to students.

The relevant literature was reviewed through a series of paradigm shifts associated with educational leadership, organizational change, teaching, and learning. A model of teaching and learning was developed from theory to include foundational behavioural, cognitivist, constructivist, and humanistic approaches. The review concludes in the development of a framework to map student practice and perception of teacher practice as the basis for the research methodology.

1.1 Collection

Research began with an examination of Newfoundland Labrador (NL) curriculum documents describing teaching approaches, learning objectives, and student evaluation. Two databases were generated using qualitative analysis software (viz., MXQDATA). The first was comprised of Kindergarten (10), primary (18), elementary (20), intermediate (21), and High School (67) outcome lists. The second was comprised of primary (27), elementary (30), intermediate (36), and High School (96) curriculum documents including the *Program of Studies,* pathways documents, foundation documents, and other guides for example, *Evaluation of Students in the Classroom*. Primary, elementary, and intermediate documents described a standard set of concepts to which all students had been exposed. However, it was also concluded that student course choice led to the omission of specific concepts (e.g., leadership, decision making), which were specific to certain courses.

The databases were used to generate a lexicon of keywords to explain research purpose in terms familiar to teachers and thereby attempt to avoid possible misconceptions. The initial keyword list consisted of *change, leadership, teaching, learning, perception*, and *practice*. It was expanded as synonyms were discovered. For example, in the curriculum documents, *perception* (nine hits in seven lists) appeared to be equivalent to *perspective* (33 hits in 16 lists) and *point*

of view (12 hits in nine lists); as in exploring multiple perspectives (English 2202), developing point of view (English 3202), and showing empathy for other people's way of seeing (Art 1201).

Similarly, the term *practice* (105 hits in 41 lists) as in *teacher practice* was not used to describe repeated student behaviours. Instead the documents described student *abilities* (85 hits in 44 lists) and *skills* (180 hits in 60 lists) which were expected to be mastered and chosen as *strategies* (207 hits in 54 lists), *techniques* (84 hits in 34 lists), *habits* (13 hits in 11 lists), and *styles* (23 hits in 13 lists). Natural abilities, learned skills and techniques, chosen strategies, and reoccurring preferences (i.e., habits, styles) were occasionally distinguished but commonly presented as equivalent. For example, working cooperatively (Career Exploration 1101), problem solving (Communications Technology 2104), and respecting the rights of others (Theatre Arts 2200) were described as abilities. Making visual images (Art 1201), geometric constructions (Math 3206), and coaching leadership (Physical Education 3100) were described as skills. Defending a position (Canadian Geography), using prior knowledge (English 1202, 2202, and 3202), and balancing study and leisure time (Healthy Living 1200) were described as strategies. Recognizing nonverbal cues (French 2200 and 3200), enhancing the impact of imaginative writing (English 2202) and the safe disposal of lab materials (Science 2200 and 3200) were described as techniques.

The *Review of Educational Research* and 95 other journals were used to compile a searchable collection of primary-source literature. For example, a search of the *ProQuest Dissertations & Thesis Database of North American Masters and Doctoral Theses* identified sixty studies of student perception of teacher practice which were considered to be valid, of a comparable population and research problem, and available in a digital format. Nineteen of the 60 studies which did not focus on post-secondary students described student perceptions of discrimination, teacher stress, or a specific subject such as science or physical education. Two theses of interest were discovered: a 2002 student satisfaction survey by Moreira (2002) which focused on teacher personality characteristics and

teacher-student relationships, and a 1999 perception of practice survey by Brenner who developed 17 Likert-style questions to study student and parent perceptions of cooperative practice.

1.2 Organization and Leadership

A public education system is a hierarchy of government, district, and school administrators, as well as teachers and students. Student classroom practice is governed by systemic philosophies (e.g., students as raw materials), structures (e.g., grade levels), and policies (e.g., no zero policy) which may be known or unknown to students. Theoretically, today, education is for the benefit of the learner who undergoes individual cognitive change from a state of *not knowing* to a state of *knowing* (Vygotsky, 1930). However, in the late 1800s and early 1900s, the promotion of universal, free, and efficient schooling to teach literacy on a large scale led to education systems with hierarchies, priorities, policies, timelines, resource allocation, and other boundary conditions (Dewey, 1938). One prominent view of education corresponded to the classic organizational paradigm of scientific management (Taylor, 1916). Schools were considered by some to be "factories in which the raw materials (children) are to be shaped and fashioned into products to meet the various demands of life" (Chubberly, 1916). This philosophy of education and social engineering still exists today.

Research by neoclassical organization theorists discovered that the productivity of factory workers was related to relationships inside organizations (Bernard, 1938; Simon, 1946), leaders' conceptions of workers (McGregor, 1957), and workers' needs and motives (Maslow, 1943). This led to considerations of decision making (Follett, 1926), power structures (e.g., coercive, positional) (French & Raven, 1959), productivity (Kanter, 1979; March, 1966), and theories of culture (i.e., shared values, beliefs, assumptions) (Schein, 1993; Trice & Beyer, 1993). Modern structural models of organizations (Argyris & Schon, 1995; Katz & Kahn, 1966; Senge, 1991) recognize not only systems but the human element

inside systems (e.g., knowledge mapping, shared vision). Bolman and Deal (2003) proposed a unifying model of organization theory which included structure, relationships, power, and culture, and used corresponding metaphors likening an organization to a factory, family, jungle, and theatre.

Educational organizations have also come to recognize the importance of structure, relationships, power issues, and school culture. For example, schools have been recognized as complex mixtures of hierarchical power, pedagogical expertise, reward, and coercion (Hoy & Miskel, 2001). In my five-year role as a district administrator, it was my observation that a school's culture could be sensed in a walk from the front door to the principal's office. The smiles or absence, the walls barren or bursting with art, and/or the noise of laughter or rage were all indications of working conditions. As an experienced teacher, it is not difficult to picture a school as a blend of factory (e.g., outcomes), family (e.g., support), jungle (e.g., competition), and theatre (e.g., soap opera).

As organization theory developed some managers were recognized for traits such as drive and/or integrity (Boyatzis, 1982; Stogdill, 1948) which enabled them to influence followers to higher levels of productivity. Proponents of organizations as structures (e.g., Blau & Scott, 1962; Mintzberg, 1979) described such leaders as team builders and strategic planners; those who suggested organizations were controlled through power and politics (e.g., French & Raven, 1959; March, 1966) described leaders as negotiators and spokesmen. The necessity of strong leadership for successful organizations is "well-articulated in the field of education" (Sheppard, 1995, p. 1). Leithwood, Louis, Anderson, and Wahlstrom (2004) suggested that administrative leadership from outside the classroom was second only to teacher classroom practice, such as leadership inside the classroom, as a factor influencing student learning. In a comprehensive review of the educational literature, Leithwood, Jantzi, and Steinbach (1999) identified 20 concepts which they categorized as six approaches to school leadership based on influence, who exerted it, its source, purpose, and outcome (p. 18). Their approach was an application of power structures (French & Raven,

1959) to the school setting. This research assumed these approaches as aspects or dimensions of leadership (Table 2).

These approaches were not understood as mutually exclusive but coexistent and interrelated by purpose. For example, a combination of moral and managerial leadership might be necessary to create an effective learning environment. It is possible to attribute all these aspects to school principals who must not only participate with teachers to maintain the purpose and quality of instruction but manage organizational tasks and situations as they arise. Credibility, competence, vision, and ability to inspire have been suggested (Kouzes & Posner, 2011) as how leaders accomplish these tasks.

Table 2

Leadership Approaches

Aspect or Dimension	Characteristics	References
Contingent	Focused on flexible approaches to situations and circumstances; being prepared. Based on a leader's attributes, behaviours, traits, and characteristics exercised in problem solving to respond to challenges and achieve formal goals.	Blake & Mouton (1964), Fiedler, Chemers, & Mahar (1976).
Managerial	Focused on organizational tasks, transactions, and administration. Positional power is enacted through policies and procedures to ensure the completion of tasks. Leadership and management have been conceived of in the literature as distinct functions or as complementary concepts.	Evans (1998), Leithwood et al, 1999), Bolman & Deal (2003).
Participative	Focused on social aspects, shared decision making, and ownership. In educational organizations, "variously termed site-based management, local management of schools, or shared decision making" (Leithwood et al, 1999, p. 13).	Follett (1926), Leithwood et al. (1999).
Instructional	Focused on teacher-student classroom activity. Influence is typically exerted by teachers through positional power to increase measurable levels of achievement.	Hallinger & Murphy (1985).
Moral	Focused on non-contingent values and ethics. It be an imperative and the foundation of all leadership practice. Formal leadership is guided by moral values and/or purpose.	Evans (1998), Fullan (2003).
Transformational	Focused on the capacity and process of enabling change in followers. Leaders inspire the building of commitment and capacity for increased productivity and sustainable growth.	Burns (1978), Bass (1990), Leithwood et al. (1999).

Note. After Leithwood, Jantzi, & Steinbach (1999).

If administrative leadership is second to classroom practice in influencing learning, then the classroom practice of teachers may be described as a primary form of leadership. Fullan et al. (2006) state that effective teaching involves "matching the teaching and learning opportunities to the needs of individual students" (p. 33). Teachers assume a leadership role when they attempt to lead students through course work to a greater understanding of curriculum content. Hallinger & Heck (1999, 2002) used the term *instructional leadership* to describe the integration of the transformational aspects of leadership with classroom managerial practice. This thesis suggests that teacher leadership inside the classroom involves all six aspects: recognizing contingencies, good management, participative relationships, effective approaches, a moral focus, and an ability to transform students. Teachers lead through their established credibility as content experts, competence in communicating ideas, vision of student need, and inspiring a desire to learn.

Ultimately, Leithwood et al (1999) defined leadership as what followers "perceive leaders to be actually doing" (p. 125). A perception is a sensed awareness followed by cognitive association, evaluation, and representation. Gagnè (1985) suggested that perception played a significant role in influencing mental processes in problem solving and decision making activities. He suggested the basic processes included reception, expectancy, retrieval, selective perception, semantic encoding, responding, reinforcement, retrieval, and generalization. Wertheimer (1938) used the term *perceptual organization* to describe categorization of perception within mental structures constructed from experiences, values, and beliefs. He suggested that categorization was based on the similarity of new perceptions to developed structures and that learning occurred when categorization was challenged. In research comparing the validity of student, principal, and self-ratings of teacher practice, Wilkerson, Manatt, Rogers, and Maughan (2000) concluded that "students can discriminate teacher performance in relation to their own learning" (p. 190). Hence, teaching may be defined as what students perceive teachers to be "actually doing."

1.3 First Paradigm: Management

Leithwood, Louis, Anderson, and Wahlstrom (2004) defined teacher practice as “everything a teacher does in a classroom environment to manage the behaviour of students and to foster their learning” (p. 10). For example, always starting a lesson with a quick review of the previous class could be used to stimulate a standard response of checking notes against the teacher’s review. Describing how a new concept fit into a larger picture fostered learning by managing student cognition. Students, as individuals trained to observe, recognize the teacher purpose in situations and act or react in specific ways. For example, students are aware of differences between a regular and review class, such as the tension of upcoming assessment and the need to be sure. Merrill (1983) attempted to identify discrete components (viz., component display theory) and combinations (viz., instructional transaction theory) of teaching behaviours to obtain precise descriptions and sequences of instructional activities. Strategies could then be sequenced based on learning objectives, student prior knowledge, and content complexity (Gagnè, 1985; Merrill, 1983; Skinner, 1954). If teaching can be viewed as combinations of behaviours, then so can student reaction to teaching.

The contingent (Blake & Mouton, 1964, 1985) or situational (Hersey & Blanchard, 1969) aspect of leadership was of interest in this research. “What an individual actually does when acting as a leader is in large part dependent upon characteristics of the situation in which he functions” (Hemphill, 1949). Research has shown that some leaders become authoritarian and manage situations while others choose a more democratic or laissez-faire approaches. For example, the contingency model (Fiedler, 1967) characterized leaders as either task-oriented or relationship-oriented with effectiveness a function of positional power, task structure, and relationships. Vroom and Yetton in 1973 took the approach of mapping situational attributes and using these for decision making (Vroom & Jago, 2007). This was known as situational contingency theory. Path-goal theory

suggested leader situational behaviour was contingent on (House, 1971) or complimented (House, 1996) followers' abilities and deficiencies to raise group achievement and satisfaction. Such leaders may be achievement-oriented, directive, participative, and/or supportive. Hersey and Blanchard (1969) described situational leadership as pragmatic and adaptable based on the circumstances and followers. Their model suggested leadership style must match the appropriate level of follower development (Hersey, Blanchard, & Johnson, 2008).

Teachers who approach classes as task-oriented situations may take a pragmatic approach of using student skills at their current level of development. They could manage learning to compensate for student skill deficiencies and delivery of difficult curriculum content. In this teacher-managed behaviourist paradigm, teachers focus on student assimilation of curriculum content organized in units, topics, or chunks of information. Information is communicated in a managed environment to control student perception and reduce misconception. Teachers vary their use of stimuli and association to manage response. Student achievement could be defined as the ability to replicate content on standardized tests. The focus is on management which "begins and ends in the environment that is external to the learner" (Dabbagh & Bannan-Ritland, 2005, p. 325). Related concepts and theories include Aristotle's laws of association, controlled learning environments (Thorndike, 1902), drive reduction theory (Hull, 1943), extrinsic motivation (Maslow, 1943), the recency principle (Guthrie, 1952), programmed learning (Skinner, 1954), and reinforcement theory (Bandura, 1971).

Developments in psychology in the 1960s led researchers to consider cognitive processes (e.g., problem solving) and reframe learning as information input, processing, storage, and output. Characterization of information with recognizable attributes can direct student perception, collection, categorization, and storage in short- or long-term memory (viz., load theory). Aptitude-treatment interaction theory (Cronbach & Snow, 1975) presumes that individuals have mental characteristics that interact with instruction to affect learning. Bandura (1971) used the term *social learning theory* to suggest that learning could occur through student

observation (e.g., listening) without any accompanying reinforcement as long as the mind was engaged (e.g., listening without notetaking). Student perception could be used to advantage if teacher stimuli marking new information make semantic encoding clear and unambiguous (Gagnè, 1985). Newell (1994), in his unified theory of cognition, suggested it was important for teachers and students to agree on generated ideas to avoid misconceptions. Managed student cognition can ensure that developed schema correspond to those of the teacher. Like behaviourism, the purpose of assessment is to determine the learner's ability to output information matching the input data; however, the focus is on managing cognition not practice. Related theories include script theory (Schank & Abelson, 1977), cognitive load theory (Sweller, 1988), anchored instruction (Bransford, 1990), mind mapping (Buzan & Buzan, 1995), rational analysis (Anderson, 1995), and subsumption theory (Ausubel, 2000).

Situated cognition theory (Brown, Collins, & Duguid, 1989) suggested that working knowledge was situated in activity and that the learner must first recall the situation to retrieve the associated knowledge. Situational experiences are believed to produce scripts of events stored in long-term memory as procedures for subsequent decision making. Schank and Abelson (1977) proposed that repetition and routine (viz., situational practice) clarified schema and that scripts could be retrieved and adapted for new situations. The theory of analogical teaching (Johnson, 1995) was based on helping students compare new and familiar situations to understand the *new* within a familiar context. *Crystallized intelligence* (Cattell, 1971) was a name given to student ability to apply accumulated knowledge, reasoning skills, and problem solving approaches to similar situations.

Distance education (DE) is an example of a new situation faced by many NL HS students. It has been understood as a necessity to accommodate programme needs of small rural schools and societal demands for curriculum opportunities (Barker, Wendel, & Richmond, 1999; Furey & Murphy, 2005). Through a public virtual HS hosted on a private network, the Centre for Distance

Learning and Innovation (CDLI), teachers and students meet in virtual classrooms replete with presentation, mind (Jonassen, 1990), and resource-based inquiry (Blumenfeld, Soloway, Marx, Krajcik, Gudzial, & Palincsar, 1996) tools such as audio conferencing, whiteboards, application sharing, text chat, proprietary content, and postings.

Clarke (2003) suggested that new technologies have enabled online or DE teachers to use theories and approaches developed in onsite or face-to-face (F2F) classrooms. "There are different theories about learning, the most important being humanistic, behavioristic, cognitive, and social learning theory; each supports a different approach to teaching and therefore to distance education" (Moore & Kearsley, 2005, p. 326). The behaviourist approach "still has an appropriate place in course design and instruction … [and] cognitive theories were a major underpinning of distance education in the past" (p. 323). It was easy to rationalize why some DE teachers and students think in terms of input and output. An internal CDLI study (Hipditch, 2008, pers. comm.) concluded that no two DE teachers were alike and that they approached teaching and interacted with students in different ways (e.g., prepared slides vs. impromptu explanations).

One interesting aspect of behaviourist and cognitivist DE approaches is the management of communication between teacher and student. In describing DE, Moore (1993) developed transactional distance theory to summarize the effects of teacher-student separation by time and place. "Transactional distance is the gap of understanding and communication between teachers and learners caused by geographic distance that must be bridged through … instructional design and the facilitation of interaction" (Moore & Kearsley, 2005, p. 223). However, a gap in understanding or *cognitive distance* occurs everywhere teachers and students are separated by intent, communication, and perception. Teachers who adopt a behaviourist and/or cognitivist approach manage cognitive distance through direct communication, prescribed cognition, and expected response.

1.4 Second Paradigm: Leadership

A second paradigm exists in which teachers lead students in the use of their cognitive skills (Beck, 2009; Vygotsky, 1930) through stimulating interest and demonstrating knowledge construction. Teachers lead by brainstorming supplying ideas, inventing experiences, having discussions, and respecting perspectives. It is like creating a supersaturated solution and standing back to let students add their thoughts to crystallize the mixture. However, this teacher-led paradigm disappears in the face of reality and reverts to teacher management. Who has not stopped a creative classroom discussion and said “Let’s get back to work”? The statement implies that construction, although cognitive, accomplishes less or is less certain than managed practice.

Constructivists lead students through experience and application of knowledge by creating opportunities for learners to develop or discover solutions. Discovery learning (Bruner, 1961), for example, suggested students were more likely to remember what they learned if they did the work of fitting perception into existing cognitive structures or schema. Concept mapping (Novak, 1998) suggested students structure concepts in visual frameworks (e.g., diagrams, maps) which can be applied to problem solving. Gagnè (1985) suggested that perceptions caused learners to wander across conceptual landscapes (i.e., schema) to make connections between concepts with complex concepts resulting in more complicated maps. He believed that students possessed unique landscapes because of the uniqueness of experience. Wertheimer (1938) believed that perceptions could be overridden by the strength of constructed associations which he labelled a *perceptual field*. Related theories include cognitive structures and developmental learning (Piaget, 1958), discovery learning (Bruner, 1961), self-directed learning and andragogy (Knowles, 1975) self-regulated learning (Bandura, 1977), activity and social development theories (Vygotsky, 1930), scaffolded learning (Collins, Brown, & Newman, 1989), cooperative learning (Johnson & Johnson, 1989), and inquiry-based learning (Blumenfeld et al., 1996).

A constructivist theory of situation was developed by Jean Lave through her anthropological cross-cultural studies of mentored and apprenticed skilled trades workers. She used the term *community of practice* (Lave & Wenger, 1991) to describe a task-specific social group which grew through mentoring, sharing of relevant concepts (viz., cognitive coaching), and skill development in context. She concluded that learning was a social, contextual, relevant, and sometimes unintentional event and that knowledge transfer out of context was meaningless. In situated learning, collaborative groups of students were led by example in contextual activities until they reached a point when they themselves could mentor new students. Lave (1982) concluded that traditional classroom learning was ineffective and irrelevant to most people because it was out of context with respect to desired occupations. As a corollary, this research proposed that classrooms were the ideal environment for those occupied with being students and the development of learning skills.

Activity theory describes a *zone of proximal development* (Vygotsky, 1930) between a student's current state of knowledge and that which could be achieved by active collaboration and mediation within a group. It has been described in terms of expansive learning, change cycles, and adaptation somewhat similar to Senge's (1991) concepts of personal mastery and team learning in organizations. Mental constructs, ideas, methods, and physical artefacts were believed to enrich learning. Farres and MacDonald (2006) described four key assumptions of activity theory: interdependence of consciousness or shared perception, intentionality of actions or purposeful practice, mediated action or jointly developed products, and historicity or time within a culture.

The possible use of such constructivist approaches was lauded in the early days of web-based distance education (DE) in Newfoundland Labrador (NL) because students were already "plugged in" to resource-based learning technologies. Moore and Kearsley (2005) described DE classrooms as learning environments in which "individual learners support and add to an emerging pool of knowledge … creating learning communities" (p. 323). Dabbagh and Bannan-

Ritland (2005) used the term *social learning theory* (unlike Bandura, 1971) to mean "a socially mediated activity emphasizing the social framework or culture surrounding the learning context" (p. 333). In contrast to the first paradigm (viz., teaching as management of content acquisition), the second paradigm (viz., teaching as participation in cognitive play) suggests a focus on information manipulation, problem solving, idea generation, brainstorming, and experiential learning.

It was thought that learning might be constructed as teachers and students interacted in a resource-rich environment. A virtual science fair involving synchronous interaction between students and judges would be an example of constructive interaction in a DE environment. However, most NL DE teachers interviewed for this research rarely described taking advantage of web-based resources (e.g., libraries, museums) or creating learning communities (e.g., reaching out to guest speakers). Most described the environment as "difficult" requiring teacher management to ensure students stayed on task.

1.5 Third Paradigm: Self-Determination and Autonomy

In my years of experience teaching students one realization has struck me more than any other: Most students who began my classes that were already labelled by other teachers as *good* continued to succeed regardless of my teaching approach or the difficulty of the curriculum. These students appeared to succeed because they were confident enough to act autonomously, risk failure, self-evaluate, and adapt to new situations. These students exhibited leadership with respect to their own education. In terms of Self Determination Theory (Deci & Ryan, 1995), these students were inherently proactive in mastering their drives and had a tendency towards growth development (Deci & Vansteenkiste, 2004). These students appeared to be able to perform for any teacher; their performance was independent of the teacher. My many experiences coordinating distance education (DE) programs with HS principals reinforced this realization. Many Newfoundland

Labrador (NL) principals selected students for DE based on their competence, ability to self-regulate, and ability to act autonomously.

Conversely, students who were labelled as *struggling* before my courses continued to underperform unless their learning was managed or skill development facilitated. Self determination had not developed automatically in these students. My mistake in my early years was to focus on managing the learning of these students through methods of curriculum delivery; however, this approach left these students unchanged for subsequent grades. Transforming students by raising learning skill competencies, promoting self-regulation, and facilitating autonomy and self-determination would have served them better.

Ideally, in one philosophy, teacher-managed cognition could give way to teacher-led construction and self-regulation as a student progresses through grade levels. Behaviourist and cognitive approaches, as models on how to deal with the mechanics of information and learning, could be used to instruct students in the variety of ways to arrive at correct responses. For example, an elementary math student who learns a method of how to check division also learns how to be self-sufficient and self-confident. Constructivist approaches lead students to reasoning, decision making, risk-taking, and voice. Intermediate students who take risks in presenting their own poetry could become self-assured as they learn to value they own voice. HS teachers may encourage students beyond constructive thought. Learners capable of self-reflection may be able to analyze their own conceptual wandering resulting in more efficient perceptions of reality the next time a similar problem is encountered (Schunk & Zimmerman, 1998). A base of self-confidence developed through a lifelong progression of opportunities and self-assessment can help students reach their full potential; self-actualization (Maslow, 1943). This progression of paradigms would make student-led or autonomous learning the goal and achievement of an education system.

Self-regulated learning happens when controls (e.g., relevance, assessment) on aspects of learning (e.g., curriculum content, cognition) become intrinsic. The distance between teacher intent and student perception shrinks as

students recognize the teacher inside themselves. Self-knowledge (e.g., beliefs, motives) and metacognitive ability (e.g., self-reflection, reasoning) can guide cognition and facilitate the internal struggle between change and the status quo. Students express autonomy in classroom situations through such practices as class preparation, workload management, task prioritization, organization, task management, working peer relationships, engagement during instruction, efforts to find meaning, questioning, project completion, self-evaluation, test preparation, and/or voicing opinion. Borich (2007) suggested that students need opportunities to develop such higher-order behaviours and practices.

Transformational leadership appears to be specifically related to the self-development of followers. Teachers, as transformational leaders, may facilitate the development of student self-awareness, self-concept, self-esteem, assumption of control, and leadership. Burns (2003) suggests that transformational leaders motivate individuals "for participation in the process of change … which in turn brings stronger feelings of self-worth and self-efficacy" (p. 25).

> Transformational leadership occurs when one or more persons engage with others in such a way that leaders and followers raise one another to higher levels of motivation and morality. … [Such leaders] serve as an independent force in changing the makeup of the follower's motive base through gratifying their motives. (Burns, 1978, p. 20)

Teachers who take a humanist approach to learning focus facilitate student self-concept, self-development, and capacity for psychological growth through requiring it to deal with situations and experiences. "Students need to spend time … working independently … to develop perseverance in pursuing learning" (Auger & Rich, 2007, p. 219). Efficient perception and decision making lead to purposive task-centered behaviour and goal-directed actions when existing practice is insufficient to cope with and/or take advantage of changed conditions (Cyert & March, 1959). Change is a consequence of need and realization. Hall and Hord (2006) suggest that the process of changing practice is gradual as individuals "come to understand and become skilled and competent in the use of new ways" (p. 4). For example, a student who uses a specific technique (e.g.,

brainstorming) to solve a problem may come to realize general application of the technique in similar situations. Related theories include progressive education (Dewey, 1916), self-efficacy (Bandura, 1977), self-determination theory (Ryan & Deci, 1991, 1995), lifelong learning (Watkins & Marsick, 1993), reflective cognition (Norman, 1994), apprenticeship, and experiential learning (Rogers, 2003).

The DE environment may be ideal for humanist approaches to learning. Moore and Kearsley (2005) related autonomous learning in virtual classes to "independent learning in the early history of distance education" (p. 324) when traditional or paper-based DE was a forum to develop and express student autonomy (Holmberg, 1993). "The greater the transactional distance, the greater the need for learner autonomy" (Moore & Kearsley, 2005, p. 326) to accept responsibility, be motivated, and self-determined. Moore (1993) suggested that teachers could "contribute to the theory and practice of conventional education" (p. 22) through concepts such as student autonomy. However, in a comprehensive case study of three small NL schools, Furey (2008) concluded that the abilities of students who attend DE classes today are somewhat less than in the early 2000s when only advanced courses were offered and school principals chose students based on their abilities to assume responsibility and work independently. NL DE classes have become more inclusive over the past 10 years as course offerings were expanded to include academic courses. This change has raised an interesting question. Instead of assuming student self-regulation as a prerequisite to DE success, could the environment be used to facilitate student self-development?

1.6 Conceptual Framework

In which situations are teachers more likely to manage learning behaviour, lead students to construct learning, or facilitate self-development? What do students perceive at the start of class? What meaning do they make? Student situational practice and perception of teacher practice are not mapped in NL

schools or in the literature in general. The program of research was designed to investigate student perceptions and practices to better understand teacher management, leadership, and facilitation in the context of educational organizations.

Self-development and regulation may go undetected in the classroom if the teacher is overly focused on the curriculum and/or their role, and may be omitted from models if the researcher is focused on one perspective. For example, Leithwood (2006) developed a model (Figure 1) of how factors from outside the school (e.g., social trends, government) and classroom (e.g., school conditions, administration) could influence a teacher's thoughts, feelings, and practice, and subsequently influence learning. An earlier study by Kash and Borich (1978) had already concluded that "teachers' perception of their role and performance of that role dictate the emotional climate of the classroom and direct the pupils' energies toward teacher-determined objectives" (p. 43).

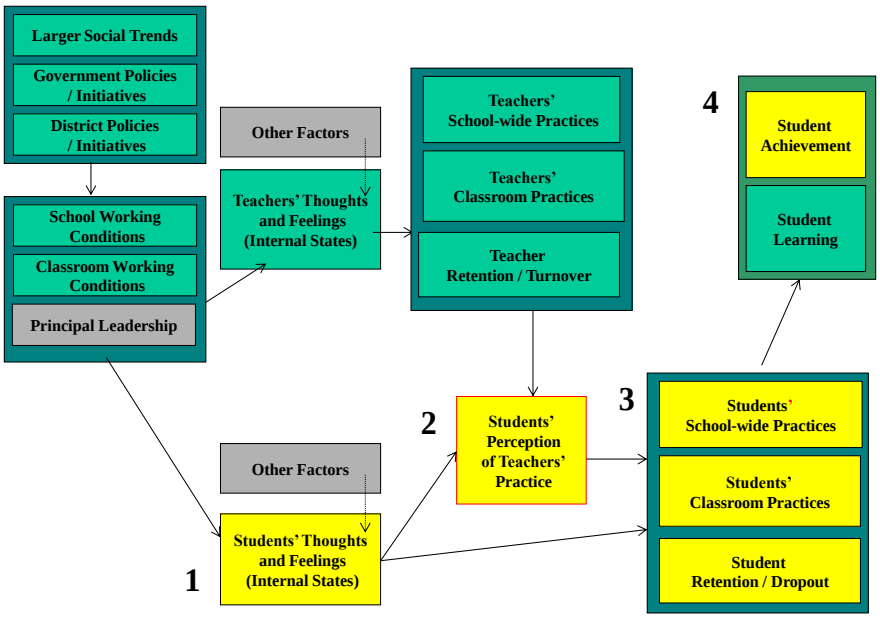


Figure 1. Modified version of Leithwood's 2006 model.
Leithwood's original model is denoted by the colour green. Grey boxes represent items mentioned in his text but not included in his figure. Yellow boxes are modifications by the researcher with box 1 suggesting students were also influenced by external conditions, box 2 suggesting that student perception existed as a factor between teacher practice and student learning, box 3 recognizing student practice, and box 4 distinguishing between learning and achievement.

However, learners were noticeably absent from Leithwood's model and only mentioned in the final product; student learning. Personal experience had demonstrated that students were much more embedded in classroom working conditions. Fullan et al. (2006) argued that the research literature "overwhelmingly indicated" that a precise knowledge of individual strengths and weaknesses at the point of instruction (viz., teacher focus) was a predominant factor that could lead to breakthroughs in student achievement. However, they recommended "matching teaching and learning opportunities to the needs of individual students and providing expert, focused teaching in every lesson" (p. 33).

Experience and the literature led the researcher to make four modifications to Leithwood's model. First (#1; yellow box), it was assumed that working conditions influenced students' as well as teachers' thoughts and emotional states which could enhance or inhibit perception (Bandura, 1977). For example, a transformed structure (e.g., reduced class size) and/or culture (e.g., desire to succeed) could influence students as well as teachers (Deal & Peterson, 1999). Second (#2), it was assumed that there was no direct link between teacher practice and student learning because of the many confounding variables (e.g., perception, cognition). Third (#3), it was assumed that students' perceptions of teachers (e.g., trust, credibility) influenced student practice. Fourth (#4), it was assumed that student practice directly determined learning and achievement, whether teacher-managed (first paradigm), teacher-led (second paradigm), or autonomous (third paradigm). Learning and achievement were not considered to be synonymous; neither were standardized exam marks (i.e., first paradigm), teacher judgements (i.e., second paradigm) nor self-development (i.e., third paradigm). Exploration of the revised model and integration of theories of organization, leadership, teaching, perception, learning, self-development, and student autonomy led to the construction of a framework for mapping classroom situations (Table 3).

The researcher's experience suggested that classroom practice could be classified as long-term or course and short-term or lesson situations, perceptions (e.g., effectiveness), and influences (e.g., societal changes). Crossing situations

with the leadership classification of Leithwood et al. (1999) resulted in a conceptual framework for investigating practice (Table 4). Contingent or situational leadership was reframed as preparation; classroom practice was believed to be more effective if participants came prepared for any contingency. Managerial leadership was equated to transactional or administrative structure (e.g., taking attendance, preparing homework). Participative leadership (e.g., shared decision making) was reframed as the fostering of positive teacher-student relationships. Instructional leadership was understood as approaches to communication, perception, cognition, and practice by both teachers and students. Hence it included behavioural, cognitivist, constructivist, and humanist approaches to teaching as well as self-motivated learning or self-instruction.

Table 3

Definitions and Arguments

Argument	Description
Organization	Educational organizations, administrators, teachers, and students have practices which influence learning. Opportunities and situations exist inside, across, and beyond systemic structures (e.g., schools, grades, courses, classes).
Management	Control or direction to achieve objectives (e.g., teacher-managed learning).
Leadership	Being ahead of and motivating others in thoughts, actions and/or practice (e.g., teacher-led activities). Transformational leadership facilitates follower self-development.
Instruction	Imparting knowledge and/or skills.
Teaching	Instruction with the philosophy of ensuring effective communication and learning. Can be approached as management, leadership, or facilitation.
Distance	Teacher-student cognitive separation. Intent, communication, and perception are important considerations. Geographic separation (i.e., distance education) masks the real issue.
Perception	Subjective or individual awareness and understanding in a situation. More significant than "objective" reality in influencing cognition and learning.
Learning	Acquiring knowledge and/or skills through perception, cognition, decision-making, and acceptance. Can lead to self-development and changed practice.
Self-development	Changes in self resulting from changes in perception, cognition, and/or learning.
Autonomy	Self-management, self-direction and/or self-leadership of learning and change.
Distance education	Teaching and learning using web-based technologies to link multiple sites. Historically, in Newfoundland Labrador, autonomous High School students were chosen to participate.

Leithwood et al.'s concept of moral leadership (i.e., non-contingent values and purpose) was reframed as evaluation or judgment, both formative and summative. Transformational leadership was understood as a focus on the change

process which began with individual reflection and matured as self-development. Six leadership categories were reframed to classify classroom practice and presented to teachers as a framework for project response.

Table 4

Conceptual Framework

Dimension	Explanation	Examples
Preparation	Gathering, planning	Organizing science labs, photocopying
Administration	Assigned duties, approach to organization	Taking attendance, reassessing outcome lists
Socialization	Relationship building and management	Telling stories, dealing with discipline issues
Instruction	Of individual students and groups	Drawing diagrams, explanations, group work
Evaluation	Formative, summative	Correcting drafts, unit tests
Reflection	On practice, on self	"My explanation was lost on students," "led practice raised scores"

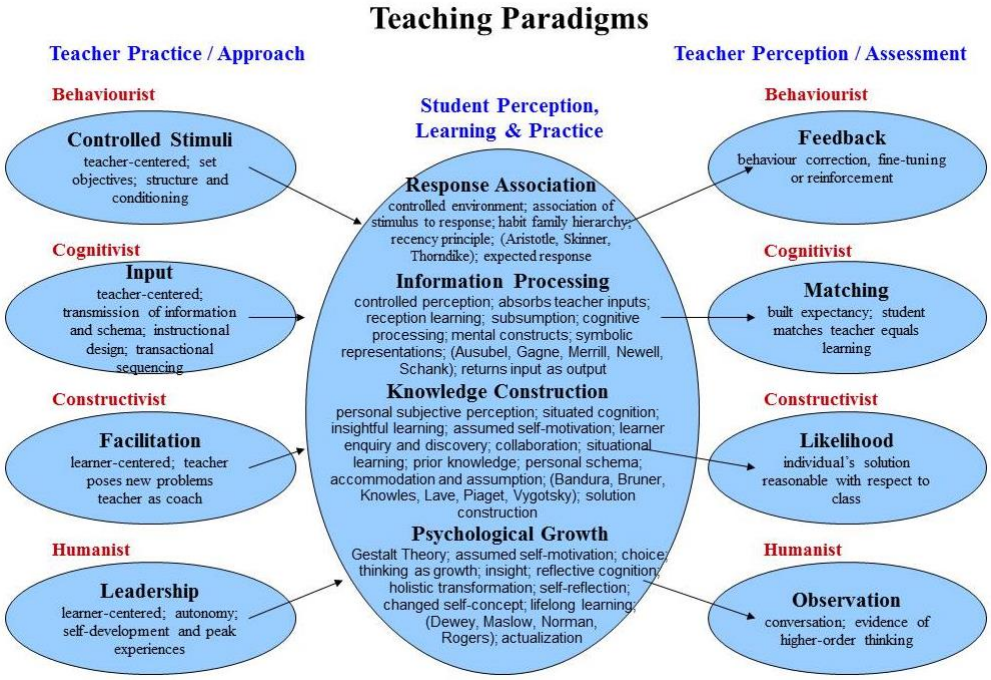


Figure 2. Teaching paradigms.
The model integrates behaviourist, cognitivist, constructivist, and humanist theories of teaching by highlighting teacher practice, student perception and practice, and teacher assessment. The arrows from one field to the next are meant to indicate flow as opposed to input and output; for example, controlled stimuli and managed response association to produce desired feedback. The power of the model lies in the variety of theoretical routes. For example, teacher-managed input but information processing overridden by reflective cognition to create self-development.

Consideration of the instructional dimension of leadership or the instruction dimension of practice, which included both teaching and learning, was central to classroom practice and the literature was explored in greater detail. Figure 2 was an attempt to integrate behaviourist, cognitivist, constructivist, and humanist theories into a working model. Teacher practice, student perception and practice, and teacher assessment complete a teaching-learning-assessment cycle. The model suggests that teacher stimulus, input, problem, or experience is perceived by the student and is associated, processed, developed, or internalized. The result is a response, output, solution, or development that the teacher evaluates as an expected, accurate, or probable solution, or growth. The power of the model was in considering theoretical developments from crossing flow lines for example, a constructivist approach which fails and results in rote feedback.

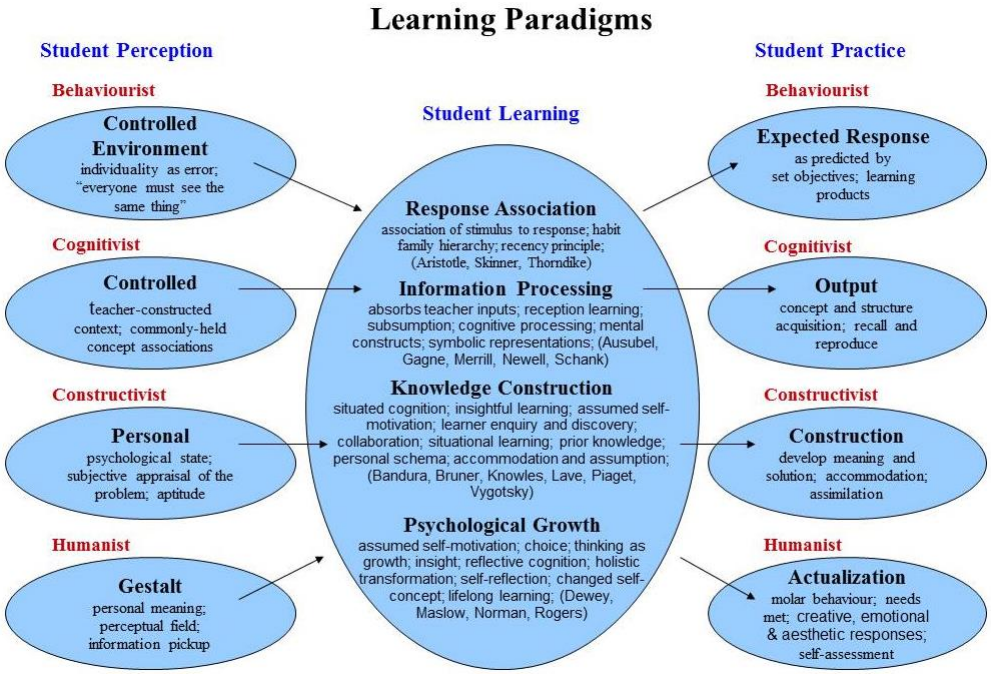


Figure 3. Learning paradigms.
The model integrates behaviourist, cognitivist, constructivist, and humanist theories of learning by highlighting student perception, cognition, and practice. The arrows from one field to the next are meant to indicate flow as opposed to input and output; for example, managed student perception in a controlled environment resulting in response association and expected response. The power of the model lies in the variety of theoretical routes. For example, personally constructed perception but failed knowledge construction because of managed information processing leading to an expected response; "I like what you saw so you should get this."

Figure 3 is a detailed representation of the Student Perception and Practice field in Figure 2; it helped the researcher appreciate theoretical relations between perception, cognition, and practice. Student perception in a controlled environment, control, personal experience, or Gestalt causes response association, information processing, knowledge construction, or psychological growth. This leads to response, output, construct, or actualization. An interesting aspect of the model is to consider the possibility of a single type of perception generating multiple types of cognition and practice. For example, student boredom in a controlled environment leading to lateral thinking, knowledge construction, and aesthetic responses.

These models of teaching and learning were developed from the literature to brainstorm research and data analyses methodologies. For example, the model suggested that teacher-described practice would be needed to compare intent (e.g., management, leadership) with student perception and that student description would be necessary to link student perception of teacher practice with student practice (e.g., behavioural, autonomous).

CHAPTER 2: METHODOLOGY

A survey, the goal of this research, was the best way to discover student perceptions, practices, and choices. However, to attain this goal, survey development required a knowledge base of students' and teachers' experiences. Recognition of the need to explore variety in practice before survey development led to a two-phase approach: a qualitative, questionnaire-style Exploration Phase (EP) and a quantitative, survey-style Development Phase (DP). Hence, the overarching question, "Which situational practices do students have? How can these be influenced effectively?" was approached through a qualitative sub-question, "What variety exists in student situational practice?" and a quantitative sub-question, "Which situational practices are most frequent?"

Hence, the methodology used for this program of research could best be described as a mixing of qualitative and quantitative data, methods, methodologies, and paradigms. An outline of the research methodology is given in Figure 4. Recognition of the need to include teacher knowledge as part of the base led to a project approach to divide the labour and include multiple perspectives. Teachers and students were asked to describe their own situational practices and perceptions of practice from the other side of the desk. Figure 4 demonstrates the flow through the research projects in the program.

Note that most items in the figure spanned a timeframe of weeks instead of days or hours. A belief that the quality of EP descriptions depended on the flexibility of data collection led to treating questionnaires as working documents to which participants could return and revise descriptions. Administration in the timeframe was facilitated through web-based participant data entry and researcher monitoring and support. The use of online research also facilitated the inclusion of many schools in the development process. The various components of Figure 4 are explained throughout this chapter.

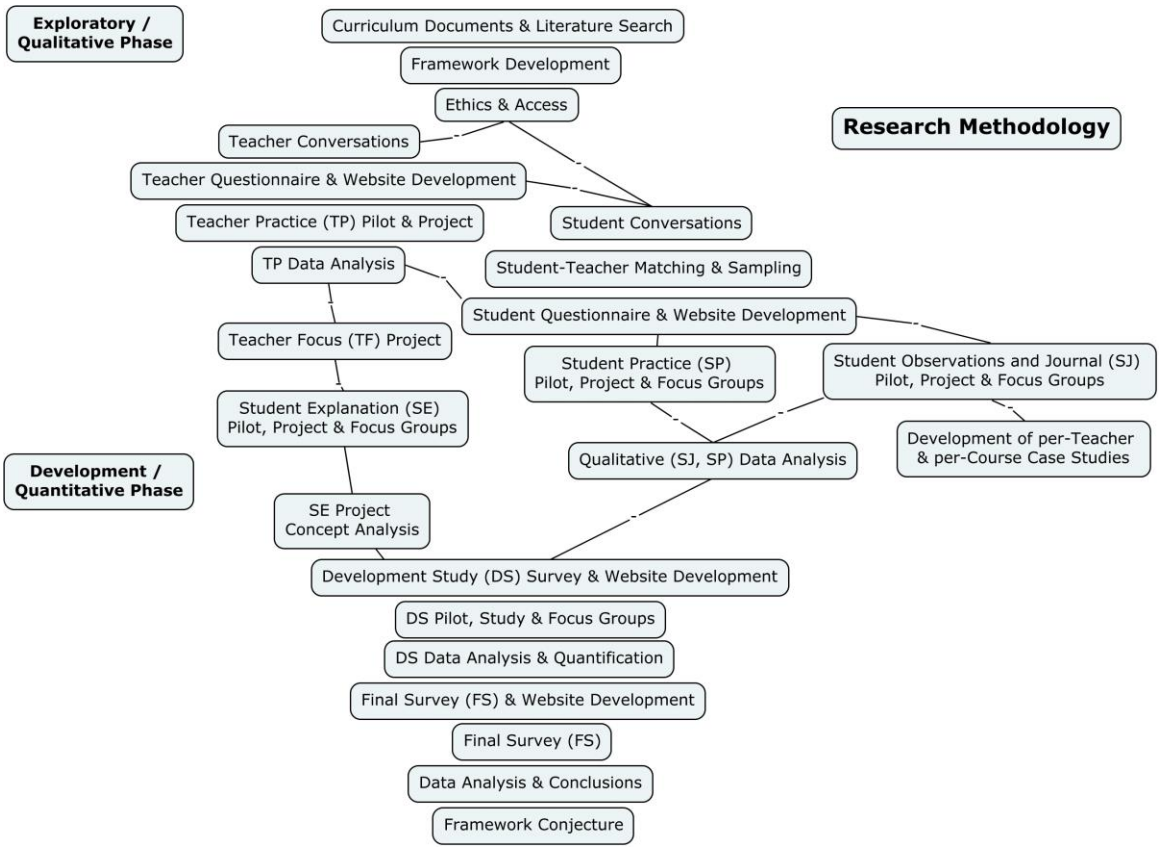


Figure 4. Research Methodology
The methodology had a qualitative Exploratory Phase (EP) and a subsequent quantitative Development Phase (DP). Note the EP consisted of many projects, such as the Teacher Description of Practice (TP) project. Every project was proceeded by a pilot or critique and followed by online focus group meetings. The line between phases is somewhat artificial as data analysis was always conducted for both for its intrinsic value and value for development.

2.1 Survey Development

Principles of survey design have been summarized by many researchers such as Alreck and Settle (2004), Czaja and Blair (2005), Fink (2003), Fink and Kosecoff (1998), Fowler (2002), Kish (1965), Oppenheim (1992), Salant and Dillman (1994), and Schuman and Presser (1981). These principles consistently included general issues such as ethics and respondents' rights, survey administration, item non-response, data analysis, and administrative costs; and concept-determined issues such as research purpose, question development, population and sample, concept testing, memory recall, measurement error, and

interpretation. General issues are governed by good research practice regardless of the problem and are discussed in later sections in this chapter.

Conceptual issues directly influence research validity, “the extent to which an empirical measure adequately reflects the real meaning of the concept” (Babbie, 2001, p. 143), and reliability, “the extent to which studies can be replicated” (Wiersma & Jurs, 2005, p. 9). The term *content validity* was used to refer to the extent to which a question assessed the concepts “it was intended to measure” (Fink, 2003, p. 51). Bradburn and Sundman (1992) state "the fact that there can be multiple meanings to the same question increases the importance of adequate developmental work” (p. 36). A question must lead a respondent to a specific knowledge base (e.g., memories, key concepts) but stop short of directing response. For example, it was assumed that asking participants to describe their behaviours at the start of a science lesson would lead them to recollect experiences and choose details to develop a response. Survey development methodology was envisioned as an external expression of the same process; collection and choice with every item “justified against the theoretical purposes of the research” (Buckingham & Saunders, 2004, p. 60). The program of research included a special project at the start of the Development Phase (DP) designed to map student understanding of concepts and identify common misconceptions. This approach to content validity resulted in a re-examination of question and response word choice to reduce the probability that students would guess the meaning of questions and, subsequently, to reduce measurement error.

The term *construct validity* was used to refer to “researcher-participant agreement on the operationalized forms of a construct” (Cohen, Manion, & Morrison, 2000, p. 110); the degree to which words could express an intended concept. My experience as a High School (HS) teacher has taught me that questions are a specific form of communication. They are constructed such that word choice, phrasing, emphasis, context, and examples influence reader understanding. “It’s vitally important that this fundamental task of composing the questions be done carefully and properly” (Alreck & Settle, 2004, p. 89). Fowler

(1995) suggests that good questions are designed to be consistently understood in a specific way, communicate to respondents the kind of answers that are wanted, and enable and motivate respondents to give answers. Pilot testing and focus groups were used to increase confidence in construct validity.

Given that questions were well-developed and concepts were understood, a third concern was participant ability to respond. For example, studies have shown that, when events are simple or episodic in nature, respondent recall is fairly accurate but, when events are complex or variable in nature, the accuracy of self-report data declines (Dykema & Schaeffer, 2000; Mathiowetz & Duncan, 1988). This is partially because responses not only reflect perceptions at the time of the event but also memories and psychological states that span the time between the event and the survey (Sudman, Bradburn, & Schwarz, 1996; Tourangeau, Rips, & Rasinski, 2000). To enable respondents, most questions prompted and isolated recall by leading respondents to consider specific situations (e.g., Unit Test, Class Start) and individuals (e.g., science teacher).

In addition, survey research assumes participant willingness to honestly self-describe perceptions and practice. Many measures (e.g., aliases, online data entry) were developed to ensure participant anonymity thereby reducing fear of disclosure. Even still, it was recognized that self-description was subjective. It could be true to both oneself and others (viz., true positives), true to oneself but false to others (viz., false negatives), false to oneself yet true to others (viz., false positives), or false to both self and others (viz., true negatives). For example, if the statement “I study every night” was true but not believed by the teacher then the false negative may have prompted the teacher to change practice to compensate for the erroneous belief. However, despite the complexities of honesty and subjectivity, it was assumed that there was no better source to describe learning than the learner. Open-response style questions were used to explore situations and allow participants free expression “to communicate the true answer” (Schwarz & Hippler, 1992, p. 41). Member checking and active administration through the virtual presence of the researcher were used to increase participant fidelity.

2.2 Mixed Methods Research

The focus of this program of research was survey development and administration. A simple two-phase approach was taken: to collect descriptions, identify practices, and discover (Glaser & Strauss, 1967, p. 2) or construct (Charmaz, 2006, p. 2) questions; to reduce the number of proposed responses to manageable lists of representative choices. The first phase was sometimes thought of as grounded theory work because classroom practice was explored through developing an "intimate familiarity" (p. 182) with situations using questionnaires to collect large quantities of description in three data sets.

The Exploration Phase (EP) was inclusive and open-response descriptions from multiple sources were gathered to construct a *universe* or collection of memorable and important practices. Open-ended response allowed participants to set their own response direction and use their own voice. This meant that responses were not phrased in the language of research literature but in that of students as they would talk to each other. As Creswell (2008) suggested, qualitative exploration can capture "actual words of people in the study, offer many different perspectives … and provide a complex picture of the situation" (p. 552).

The Development Phase (DP) was exclusive. This was not to reduce the number of practices attributed to a situation but to reduce the number of descriptions required to represent those practices. Reduction decisions were based on establishing equivalencies, frequencies, and associations. Students were asked to decide if two descriptions described the same practice and which description worked best, for example "copying notes from the whiteboard" or "writing down notes the teacher gave us." Subsequent data analysis indicated the likelihood of choosing a second practice having chosen the first: Frequent associations were examined and occasionally combined.

This include-then-exclude or collect-then-weed approach was both qualitative and quantitative in nature and recognized as *mixed methods* (Creswell,

Plano-Clark, Gutmann, & Hanson, 2003; Tashakkori & Teddlie, 2003). Tashakkori and Teddlie (1998) describe mixed methods research as “multiple approaches to data collection, analysis, and inference … in a sequence of phases [with] each phase … providing conceptual and/or methodological grounds for the next one in the chain” (p. 149). Four example designs for mixed methods research include simultaneous yet separate qualitative and quantitative data collection (viz., triangulation), simultaneous and integrated collection (viz., embedded), quantitative refined by qualitative collection (viz., explanation), and qualitative collection used for developing a quantitative instrument (viz., exploration). Each design using a qualitative and quantitative method; for example, exploration mixed methods through qualitative questionnaires and quantitative surveys.

This research was best described as exploration however, as was discovered, qualitative and quantitative paradigms were inseparable. The use of large samples and multiple groups not only achieved the goals of identifying a variety of practices and data saturation, it established that some practices frequently reoccurred in description while others were rarely mentioned. Hence, the desire to be inclusive also generated a reasonable relative ranking of the practices.

In addition, it was learned that reducing the number of items to describe a situation required the quality of sufficiency. Limiting choice meant establishing representativeness and the discovered way to ensure this was to offer an open-response option during the reduction process. Students were invited to describe an omitted practice if they felt a fixed-choice list was too narrow. Hence, saturation of open-response exploration not only established the quality of the data but suggested the relative frequencies of practices (i.e., quantity). In addition, during the quantitative phase, maintaining item representativeness during fixed-choice reduction reasserted the importance of quality. Onwueguzie and Johnson (2006) use the term *paradigmatic mixing* to describe “the extent to which the researcher’s … beliefs that underlie the quantitative and qualitative approaches were successfully combined or blended into a useable package” (p. 288).

This program of research took the approach that measures of validity should be developed during each phase; that it was “the touchstone” (Cohen et al., 2000, p. 106) of each step. However, to avoid confusing the reader into thinking the researcher stressed positivist principles (e.g., deduction, objectivity) over naturalistic precepts (e.g., induction, perspectives), the alternative terms of *authenticity* (LeCompte & Preissle, 1993), *credibility* (Guba & Lincoln, 1989; Maxwell, 1992), and *legitimation* (Onwueguzie & Johnson, 2006) were considered. The researcher chose to use the term *validity* but defined it as confidence in the credibility of descriptions and representations. Confidence was understood to depend on internal authenticity sustained by the data and external authenticity sustained by the literature (Cohen et al., 2000, p. 107). However, questions of external validity and generalizability were secondary to establishing the validity of the instrument development.

One purpose of the EP was to collect qualitative data so the researcher could question participant understanding through a common vocabulary (viz., theoretical validity; Maxwell, 1992). Descriptions were collected of typical situations, not manipulated (viz., *ecological validity*) but labeled by the researcher (viz., *ontological authenticity*; Cohen et al., 2000). Confidence in the credibility of descriptions (viz., *descriptive validity*; Maxwell, 1992) was engendered through triangulation across projects. Focus group discussions were used to help the researcher understand meanings associated with situations and events (viz., *interpretative validity*; Maxwell, 1992) (viz., *inside-outside*; Onwueguzie & Johnson, 2006, p. 290). Creswell (2015) suggests that “it is important to determine if your theoretical explanation makes sense to participants and is an accurate rendering of events …” (p. 445). The term *fairness* (LeCompte & Preissle, 1993) was used describe the balance of richness and scope sought in summaries or lists of situational practice as representations of the multiple realities of a situation (Cohen et al., 2000, p. 108). The methodology was designed to create value in both phases of the program (*political legitimation*; Onwueguzie & Johnson, 2006, p. 293)

that readers would value both the qualitative descriptions of practice and the developed instrument.

Student misconceptions concerning vocabulary and meaning were investigated through the *Student Explanation* (SE) project. As previously suggested, "the researcher's … beliefs that underlie the quantitative and qualitative approaches" (Onwueguzie & Johnson, 2006, p. 288) were mixed or blended across phases. External expressions of this included the designed participation of students who had contributed open-response qualitative data in the ranking of itemized lists of practice. The conversion (p. 291) of descriptions to response choices, or EP data to DP data, and the validity of subsequent reductions depended upon participants. Onwueguzie and Johnson (2006) suggested that, "unless the same individuals or groups are involved in both the qualitative and quantitative components of a study, constructing meta-inferences … can be problematic" (p. 288). The strength of the EP, the large quantity of description, was carried over to the DP as participants voted during the *Development Study (DS)* on the complete lists of practice (i.e., *weakness minimization*; p. 290).

A reliable survey instrument is one for which respondents repeat choices and measurements consistently reproduce the same values (Alreck & Settle, 2004, p. 58). Some theorists have stated that the concept of reliability in qualitative research "plays a minor role" (Creswell et al., 2003, p. 133) or is a "contentious issue" (Cohen et al., 2000, p. 119); however, confidence in qualitative exploration would be reduced if the researcher could not depend upon participants to recall, prioritize, and describe the same practices in each situation. In addition, there were measures of repeatability across the paradigm such as, for the same participant, correlation between EP open-response descriptions and DP fixed-response choices.

However, determining repeatability was not always simple or possible because it conflicted with the purpose of development, which was to improve response choice. Description required the cognitive processes and effort of individual recall, while fixed-response choice was based less on brainstorming and

more on decision making. In addition, word choice used to synthesize response choices may have been sufficiently different so as to push respondents away from previous descriptions. These concerns were evaluated through comparisons of item rankings during survey development.

2.3 Project Approach

Initial assumptions about the problem influenced methodology. The first assumption was that classroom practice was not constant but varied with the situation (e.g., Unit Start, Group Work) and situation-specific questions were necessary to describe practice. Second, it was assumed that practice would vary with the subject (e.g., mathematics, music) and subject-specific questions were necessary. Third, it was also assumed that teachers' and students' perspectives were necessary to uncover a more complete story of classroom practice. Teacher description was based on pedagogical training and experience while student description was based on a knowledge of learning effectiveness. These assumptions led to a project approach with separate projects dividing the labour and representing different perspectives.

The Exploration Phase (EP) was based on the *Teacher Description of Practice* (TP) and *Student Description of Practice* (SP) projects through which participants used an online questionnaire to describe their perceptions of situations, practice in situations, and subject-specific practice. Self-description validity was investigated through teacher description of student practice in the TP project and student description of teacher practice in a project entitled *Student Journal of Teacher Practice* (SJ). The use of distinct project and student samples allowed the researcher to triangulate themes and construct a combined data set. The guidelines listed in Table 5 were developed and used to ensure project relatability.

Table 5

Project Guidelines

Guideline	Description
Correspondence	Teachers and students would answer corresponding sets of questions about long-term or course (e.g., Unit Start) and short-term or lesson (e.g., Class End) situational practice.
Workload	To divide student workload, one group would describe practice while another would describe perceptions of teacher practice.
Demographics	All students would answer the same set of forced-choice questions (viz., Section A) and comparisons would be used to validate sampling.
Subjects	Questions about practice would be applicable to all subject areas and classroom environments (e.g., distance education). Response would identify distinction.
Description	Questions about practice would be open-response type to allow participants the freedom to use their own words in rich description.
Pilots	Projects would be piloted by five to ten participants to highlight difficult phrases and offer suggestions.
Focus groups	Projects would be followed by online focus groups of five to ten participants to critique administration and identify difficulties.

Teacher Description of Practice (TP) Project

The first project developed was the *Teacher Description of Practice* (TP) project which then served as the standard for subsequent projects. Its purpose was to enable the researcher to collect teacher descriptions of situational practice. The project web module was designed as a five-page questionnaire: an introduction and instructions, demographics (viz., Section A), situations and perceptions (B), teachers as students and observed student practice (C), and influences from outside the classroom (D). Section A, *Your Profile*, was divided into *Your Teaching History* and *Your Current Teaching Assignment*. Section B, *Your Teaching Practice*, was divided into question sets on long-term or course and short-term or lesson practices, and perceptions of effectiveness. Teachers were given the conceptual framework as a guide for response. Section C, *Students' Academic Practice*, was divided into *You as a Student* and *Students I Have Observed While Teaching*. Section D, *Outside Influences on Teaching Practice*, asked teachers to describe influences from outside the classroom, such as school administration.

Questions were developed from the researcher's teaching and administrative experience, teacher suggestions at school meetings, research

committee suggestions, and a review of the literature. The project was the base upon which the program developed. Data from these sections influenced researcher understanding of teacher practice. Some data were outside the main story of instrument development and were not reported in this work.

Student Description of Practice (SP) Project

The second project developed was the *Student Description of Practice* (SP) project which was constructed as a reflection of the TP project to facilitate a comparison of perspectives. The project web module was designed as a five-page questionnaire: an introduction and instructions, demographics (viz., Section A), long-term situations (B), short-term situations (C), and influences from outside the classroom (D). Section A, *You as a Student*, began with two questions about Internet use and was then divided into *The Big Picture* (e.g., motivations), *Your Learning Preferences*, and *This Year*. This section was designed to collect more than just demographic information; it was developed as common to all student projects and gave the researcher the capability to compare data representing different samples. Section B, *What You Do During the Course*, focused on long-term situations. Section C, *What You Do During a Class Period*, was divided into *Your Learning Practice* which focused on short-term or lesson situations and *Is School Working for You?* (e.g., Ineffective Practice). Section D, *How Things Outside the Classroom Change What You Do*, asked students to describe the influences from outside the classroom, such as their community.

The SP project was the starting point for survey development. As with the TP project, ideas for questions came from a variety of sources and open-response questions were designed to collect rich descriptions of practice. Most questions were carried into the DP but modified by the process.

Student Journal of Teacher Practice (SJ) Project

The third project developed was the *Student Journal of Teacher Practice* (SJ) project, which was constructed to capture student perceptions of teacher

practice and to triangulate the TP project data. Teacher perceptions of student practice were already described as part of the TP project. The project web module was designed as five pages: an introduction and instructions, a demographics questionnaire (viz., Section A), the online journal (B), journal summary for teacher 1 (C), and journal summary for teacher 2 (D). Section A, *You as a Student*, was identical to Section A of the SP project which allowed the researcher to compare SP and SJ group demographics, learning preferences, and course enrolments.

Section B, *The Journal*, was divided into *Describing Your Courses* and *Journal Entries*. The first part was a set of eight forced-choice questions which included course number, environment such as distance education (DE) or face-to-face (F2F), experience with the subject and/or teacher, characterization of the teacher's main approach, and student satisfaction with course marks. The *Journal Entries* part was a series of open-response text boxes for each of which the student could indicate the date. The section or web page had duplicate *Describing Your Courses* and *Journal Entries* parts that allowed students to keep a journal on two teacher participants if desired.

Section C, *Teaching Practices You Observed for Teacher 1*, was a series of 16 open-response questions divided into Teaching Practices *During the Course*, *During a Class*, *Outside the Classroom* such as volunteer activities, and *Is This Class Working for You?* All of these questions had counterparts in teacher and student self-description. Hence, students who kept journals were also asked to summarize their observations under situational headings; the researcher compared journals and summaries as a measure of validity. Section D, *Teaching Practices You Observed for Teacher 2*, was identical to Section C.

Case studies developed from matching the description of participating teachers and students were not reported in this thesis to shorten the story. For example, 14 journals and/or summaries were written by nine students about four teachers who taught World Geography 3200 and 3202. Small numbers, but the researcher noticed similarities and differences in teachers' approaches. Similarly, 14 wrote journals and/or summaries about the practice of Teacher84 spanning

Biology 3201, Chemistry 2202, Canadian Economy 2203, and World Geography 3202. It was possible to distinguish course-specific practices.

2.4 Data Analysis

TP, SP, and SJ project descriptions of course and lesson situations were mined to identify as many "concepts of practice" as possible. A "concept of practice" was defined as a cognitive and/or physical behaviour described by a variety of equivalent linguistic expressions (e.g., copy definitions, rewrite important terms, note keywords, etc.). Hence, concept or text mining involved a judgement (Jurafsky & Martin, 2008; Martin et al., 2012) of respondent intent underlying word choice (i.e., synonyms, hypernyms, hyponyms), verb forms and conjugations, vagueness of language, and colloquial expressions.

Word to concept mapping was based on member checking, focus group discussions, and the researcher's experience. For example, twelve teachers were asked to read all peer descriptions of practice and identify those most representative of a situation (the *Teacher Focus* (TF) project; Chapter 3) and 60 students were asked to explain these representative statements (the *Student Explanation* (SE) project; Chapter 4) in their own words. This set of projects highlighted equivalent expressions and misconceptions, thereby acting as a member check on researcher interpretations.

Care was taken during Exploration Phase (EP) data analysis to avoid two common problems (Feldman & Sanger, 2006). First, equivalent expressions of a concept were defined as those judged to have the same pedagogic value. For example, students who described copying definitions or rewriting terms were understood as describing the same behaviour; however, those who described taking jot notes were understood as doing something pedagogically different. A balance was struck between recognizing concept equivalence and constraining recognition so as to not lose pedagogic variety through overgeneralization.

Second, the researcher attempted to avoid the unintentional categorization of non-equivalent expressions (Srivastava & Sahami, 2009). For example, students described enriching teacher-given notes during the Main Part of Class with their own jot notes taken during class discussions, copied textbook definitions, personal examples, meaningful diagrams, and/or information gathered from the Internet. These practices could have been judged as instances of a researcher-defined category (e.g., enriching teacher-given notes), as part of a sequence (e.g., prior to unit review), or as relatively independent practices. Judgements were based on the researcher's belief as to whether respondents would be able to recognize their described practice inside a researcher-defined category. The issue was generally avoided by adhering to the principle of text mining as exploration to uncover variety in practice. Hence, qualitative data were parsed, linguistically restructured, coded, and analyzed for patterns.

Analysis of EP open-response data resulted in lists of situational practices, which were used as fixed-response choices. The resultant lists were vetted through the Development Study (DS) project, a survey in which students were given the freedom to choose all applicable responses to a given question. Infrequently chosen practices (<25%) were dropped. An association analysis, a measure of the frequency of choosing a second item (e.g., taking notes from the whiteboard) given the first (e.g., copying notes), was used to identify redundant expressions. An item was eliminated from a response list if there was no loss in pedagogic value (e.g., loss of the source of the notes was judged as insignificant).

Note that this approach did not seek to summarize situational complexity as a set of principal components, representative factors, or latent variables during survey development. Analysis was always directed at preserving respondent choice and carrying forward the richness of the original data. Descriptions of practice were already "encoded" in the language of the target population and overzealous categorization or factor analysis could have obscured recognizable items and reduced the effectiveness of the Final Survey (FS). Student use of open response opportunities during the DS to explain their choices suggested such

obscuration was possible. Hence, during development, judgements of pedagogic value and member checking trumped statistical methods.

The use of statistical methods such as factor analysis to reduce FS results to a fixed number of variables may be appropriate to guide future research. Spearman's determination of positive correlations between student scores on seemingly unrelated subjects did lead him to postulate a general mental ability underlying cognitive performance (Cattell, 1978; Child, 2006). However, complex compound factors may be difficult to interpret in classroom situations and the loss of detail inherent through generalization may undermine the ability to action desired changes in practice. For example, asking students to take jot notes may be more actionable than asking them generally to enrich teacher-given notes.

2.5 Online Research

All research projects were hosted on a password-protected *Research Website*. An online approach facilitated teacher and student participation from a variety of schools which, it was assumed, would include more situational practices in description. This improved the timeline to one school year by decreasing travel demands on the researcher. It also facilitated project administration and the possibility of concurrent projects. Web-based questionnaires and email were familiar to most students; 75% of Exploration Phase (EP) students indicated they used the Internet “all the time” or took distance education (DE) courses, 24% were familiar but claimed no expertise, and only 1% claimed not to use it often.

The first website modules developed included the research description and consent forms (viz., Information Module), a monitored virtual classroom (viz., the Virtual Meeting Place), and a data display facility (viz., Administration Module). The Information module presented the conceptual framework (i.e., dimensions of practice) and research goal (i.e., development of a survey instrument) and offered the opportunity to submit consent forms online. The Virtual Meeting Place was open during project administration, lunch, after school, and on weekends to answer

participant questions and troubleshoot problems; it enabled the researcher to hold focus group meetings. The Administration Module gave the researcher password-protected access to online consent forms and project data; it facilitated active monitoring of data input and response to participant inquires without risking the database.

The development of research project modules happened on a continuous basis with new pages added as research data were analyzed and new projects were planned. The project modules were entitled *Teacher Description of Practice* (TP), *Student Description of Practice* (SP), *Student Journal of Teacher Practice* (SJ), *Student Explanation of Teacher Description* (SE), the *Development Study* (DS), and the *Final Survey* (FS). The front page of each module welcomed participants, provided instructions and contact information, described website features (e.g., save and return, colour changes), and hosted project sections as a series of web pages.

Design proceeded in five stages: the creation of the front or index page and section pages with appropriate headings and instructions, typing questions and response banks incorporating design elements, such as emphasis and colour, coding questions and responses for storage in the database, engaging control features to regulate administration, and making adjustments in response to feedback. Sections were independent, could be completed in any order, and could be saved without submission to reduce the pressure of immediate completion. Adjustments were made based on pilot studies, participant email, and focus group feedback, such fine-tuning, was an essential element of the development process.

Features such as data entry, dynamic probing, error checking, and immediate feedback (Alreck & Settle, 2004; Anderson & Kanuka, 2003) made the website ideal for research and greatly simplified project administration. Project access was password-protected and limited to specific users, which meant, for example, that a teacher could not view the SP project. The researcher did not have to gather participants together or arrange for project administration at 30 schools. In addition, special usernames were created to enable committee members, district

administrators, and other gatekeepers to review projects without the necessity of time-consuming meetings. Features or aspects of the website designed to protect participants and facilitate administration were listed in Table 6.

Table 6

Website Features

Feature	Description
Website	Projects were hosted on a research website and were text-based to reduce bandwidth requirements.
Privacy	The website was accessible from private locations such as home or the office to maintain anonymity.
Access	Project access was password protected and each password was project-specific. Passwords were emailed to volunteers after confirming participation. Red links were used to indicate a project was currently accessible and active.
Structure	Project structure was standardized as an index page linked to four sections (A, B, C, and D).
Preference	Sections could be completed in any order (e.g., self-description first or last)
Timeframe	Sections could be completed any time within the project timeframe (i.e., two to four weeks) at the respondent's convenience.
Prompts	Question keywords were highlighted to draw attention to the situation (e.g., Course Preparation) or significant points (e.g., "this ONE teacher").
Response	Response lists for forced-choice questions were blocked as a visual representation of the response universe. Responses were kept in alphabetical order to avoid bias.
Administration	Participation were monitored through the Administration Module and persistent email.
Researcher-led Assistance	The researcher had the ability to flag item non-response, email participants, and provide them with assistance.
Respondent-led Assistance	Respondents had opportunities to email and/or speak directly to the researcher to clarify misunderstandings. Email checks and the Virtual Meeting Place were scheduled.
Store and Return	Incomplete sections could be saved and completed later. Responses could be revised at the participant's discretion. This was done to reduce completion pressure.
Links	Links were colour-coded to indicate a respondent's decision. On subsequent access, the respondent saw green links indicating completed sections and yellow indicating sections saved to be revisited.
Automatic Notification	Flagging a section as complete automatically generated an email notification for the researcher's running record. The email included participant id, section, date, and time.
Data Storage	Data were stored in a secure online database. A boundary marker separated records (i.e., participants) and data sections.
Access Denied	Access was denied after project timeframes were complete. Students could not revisit or revise data.

Many of these features contributed to making project administration an active process. Participants simply logged in and typed answers to questions. They could talk to and/or text the researcher using the Virtual Meeting Place as questions and/or problems arose and the researcher could monitor progress using

the Administration Module. The researcher received an automatic time-stamped email message when a participant clicked the button indicating a section was complete. This allowed the researcher to keep a running record of project completion status and email participants who procrastinated or experienced difficulties, thereby reducing dropout rates. Time stamps were used to calculate the amount of time necessary to complete a section, assuming the participant did not take an unmeasured break. The researcher did not have to wait until project completion to read data, engage in member checking, flag item non-response, and offer advice.

The website was a means for data entry and database access. Coding questions in HTML was a straightforward process but was left until critiques and modifications were complete. For example, the first question of Section A of the TP project asked teachers the level of their current teaching certificate. The variable used to store the response was labelled *Question1* and a list of response values was used to create a drop box from which participants were asked to choose.

```
<p>Your current provincial teaching certificate level? <select
name="Question1"> <option value="Level IV">Level IV</option> <option
value="Level V">Level V</option> <option value="Level VI">Level VI</option>
<option value="Level VII">Level VII</option> <option
value="Other">Other</option> </select> </p>
```

Or, for example, the first open-ended question in TP Section B asked teachers to list their course preparation practices. As the third question on the web page, it was coded as *Question3* and a 5X60 text area was created in which teachers typed their response.

```
<p>1. Please list your practice associated with <strong>the start of a course
before you meet your students</strong>. e.g., planning an evaluation
scheme)</p> <p> <textarea name="Question3" rows="5" cols="60"
id="Question3"></textarea> </p>
```

In contrast, coding the *DS* involved more time-consuming work because of the multiple-choice checkbox format. Each choice in a response list necessitated an array element and a line of HTML code. An open-response option was also maintained on most questions. For example, for DS Section B Question 1,

responses were structured in a table which asked students about course preparation practice. Note that the HTML code includes an open-response option identified as Question2 and that the code segment has been shortened. The FS module did not take as long to develop because questions and response arrays were copied, edited, and placed in the new structure; the number of sections, questions, and responses were reduced.

```
<p><b>15. What do you do <font color="#800000">to get ready</font> for a
course <font color="#800000">before it begins</font> or during the first few days
of the school year?</b></p> <table style="border-collapse: collapse"
id="AutoNumber1" cellpadding="0" cellspacing="0" bgcolor="#CCCCFF"
border="0" bordercolor="#111111" width="80%"> <tbody><tr> <td
width="50%"><input name="Question1[]" value="Gather supplies"
type="checkbox">Gather supplies (e.g., binders)</td>  <td width="50%"><input
name="Question1[]" value="Skim through the course curriculum guide"
type="checkbox">Skim through the course curriculum guide</td> </tr> …
(shortened) …<tr> <td width="50%"><input name="Question1[]" value="Read the
textbook chapter outlines" type="checkbox">Read the textbook chapter
outlines</td> <td width="50%">Other:<input name="Question2" size="40"
value="" type="text"></td>  </tr> <tr> <td width="50%"><input
name="Question1[]" value="Review notes from a previous course"
type="checkbox">Review notes from a previous course</td> <td
width="50%"></td> </tr> </tbody></table>
```

Data were coded as the same text the participant saw on the website. For example, if a teacher chose the drop box response “Level VI” to TP Section A Question1 (i.e., provincial teaching certificate) then the response was coded and saved as “Level VI.” Questions which required multiple responses produced comma-delimited data, for example “Academics. I like being a student,” “Friends or social life” in response to SP Section A Question 4 (i.e., motivation for attending school). Code phrases were used to facilitate researcher review of the data using the Administration Module and simplify recognition of database issues such as duplicate records. Data were exported as tab-delimited TXT files together with section labels and boundary markers separating records. These files were imported into spreadsheets after which single character codes were substituted for lengthy phrases. Substitution was simple because phrases were sequenced alphabetically on web pages; however, phrase-to-character replacement tallies

were also kept as a validity check. All spreadsheet files were reread against the original database through the website Administration Module.

Online research was facilitated by use of convenience sampling, organizational gatekeepers, and face-to-face (F2F) meetings to explain research purpose and methodology. "If the survey is introduced properly, the response rate will be increased, and the reliability and validity of the survey will be enhanced" (Alreck & Settle, 2004, p. 147). This approach avoided the need to attract participants through web-based and email invitations, and ensured random sampling which Alreck and Settle (2004) and Czaja and Blair (2005) described as a major problem.

Anderson and Kanuka (2003) list response bias, data authenticity, security, respondent anger, and procrastination as other potential problems. Response bias was not a problem because target populations were known to use the Internet from school and/or home and some attended DS courses. Data authenticity was addressed through triangulation and focus groups. Security was maintained through use of a secured private domain and password protection. Procrastination was addressed by active administration, including a constant flow of email and offers of assistance, so respondent anger was never an issue.

2.6 Ethics

The researcher was known to many teachers as a successful district leader with the "ability to draw people out" (Miles & Huberman, 1994, p. 38) and as a classroom teacher "intimately familiar" (Charmaz, 2006, p. 182) with practice. Researcher credibility may have influenced teacher volunteerism; however, most students were unknown to the researcher. As a fellow teacher, the researcher was bound by the NL Teacher's Association Code of Ethics as a guide to acceptable practices between colleagues (e.g., to act in a manner which maintains the honour and dignity of the profession). The program of research was also guided and under

the review of a doctoral committee to ensure that all aspects met the highest moral, ethical, and scientific standards. No conflicts arose during or after this research.

Access and Consent

The research problem and methodology required data collection from Newfoundland Labrador (NL) high school (HS) teachers and students. Schools were organized at the time of the research into the Eastern (ESD), Central (NCSD), Western (WSD), Labrador (LSD), and Francophone (CSF) districts. Further consolidation in 2013 resulted in the English (NLESD) and Francophone districts. The Central District was targeted because it was within a convenient driving distance of the researcher's home. "Time and cost prohibit a researcher from collecting data on the entire population that is of interest" (Henry, 1990, p. 9). It spanned a geography from Terra Nova National Park (east) to the Baie Verte Peninsula (west) and from Notre Dame Bay (north), to the Coast of Bays (south). The Central District consisted of western (i.e., former District 5) and eastern (i.e., District 6) parts and their boundary was used to delineate research subpopulations.

The provincial virtual school, the Centre for Distance Learning and Innovation (CDLI) (i.e., 30 teachers, 8 administrators, and 7 technicians), served 36 Central District schools (cf. 109 provincially) offering 37 advanced or academic distance education (DE) courses based on the provincial curriculum documents (M. Barry, pers. com., 2005). Course delivery followed a synchronous-asynchronous (i.e., teacher present-absent) model with customized ratios such as six synchronous and four asynchronous classes in a 14-day cycle for advanced math. Learning management (e.g., WebCT, Desire to Learn) and web conferencing (e.g., e-Live, Blackboard Collaborate) software was used for course delivery and the most popular media were voice, whiteboard, text chat, and visuals.

To gain access from the district and CDLI, a five-page document entitled Consent for Access to School District Personnel and Resources was written, based on the text of the Ethics Proposal approved by Memorial University. The document included information on the research purpose, researcher, theoretical framework,

timeline, informed and voluntary consent, withdrawal, proposed interactions with participants, anonymity, risks and benefits, data security, dissemination of results, and contact information. Organizations were requested to contribute demographic data on teachers (e.g., assignments, experience) and students (e.g., enrollments, marks), access to digital networks, such as district email and virtual classrooms, and access to school computers to install encryption software. Space was also provided for directors to attach additional conditions or amendments.

Written agreement from both directors was given in meetings within two weeks of receiving the proposal. They agreed that participants would be anonymous and only parents would be aware of student participation. Collected data were confidential but summaries would be made available as situational profiles. The only requested condition from the Central District was that the researcher seek consent from school administration. Unrequested, the director of CDLI volunteered to host the research database and contributed programmer time for website development. Access to students attending CDLI courses was contingent upon the school district agreement.

The Central District had 67 schools (cf. 23.9% of provincial) with a median size of 156 students (cf. 211); 82% of which were in rural communities (cf. 64%). Fifteen schools had populations greater than 300 students, 32 with populations between 100 and 300, and 20 with populations under 100 (Newfoundland Labrador, 2009). The district could be characterized as more rural than the provincial average; however, all NL districts could be so characterized in contrast to the largest district, the Eastern District. The 23 schools in the western part of the Central District (i.e., former District 5), which offered HS courses, became the target for the EP. An email was sent to principals in May and a follow-up telephone conversation was used to set an appropriate time for a school visit. Most principals were interested in the project and readily accommodated the researcher. The few who felt that the time of year may be a distraction consented after checking with their staff. The researcher was granted time during staff meetings, professional development days, and/or lunch breaks to speak to teachers.

The research purpose and method were presented at these meetings. Teachers were told that their school was chosen as a convenience sample (i.e., close to the researcher's home). Some teachers questioned students' abilities to describe teacher practice honestly and this led to discussions about the teaching-learning process. The intended research focus was described as student perception and that teacher descriptions of practice were being used as a basis for understanding perceptions. Teacher suggestions led to the development of questions concerning teacher roles outside the classroom (e.g., coach, DE facilitator), grades taught by a small-school teacher, and the multi-course or multi-grade nature of some classes. A few teachers were concerned about anonymity but satiated after measures outlined in the Ethics Proposal were described in detail (e.g., aliases, encrypted drives).

Envelopes with research descriptions and consent forms were distributed at these meetings. The description introduced the researcher, research purpose, foreseeable harms, anticipated benefits, efforts to maintain confidentiality, participant's right to withdraw, organizational commitment, and contact information. Participation was defined as the completion of an interview or online form and granting permission for student journaling of classroom practice. DE teachers were also asked for access to recorded classes. The online form was described as a working document, which allowed teachers to answer questions as time permitted and return later to edit and/or complete questions. The consent form asked teachers to choose between active participation, passive participation (i.e., opting out of the interview or online form but consenting to student journaling), requesting more information, and declining participation. Time was given after meetings to ask questions of the researcher, both openly and privately, for teachers to discuss the research among themselves, and to complete the consent form and place it in an envelope. Teachers also had the option of taking time to consider participation and return the form through district mail. Consent was never assumed and only recognized after receiving a signed form.

Teachers who declined were asked to give a reason as a measure of research validity. Those who did cited time commitments, work load, reassignment, retirement, deferred salary leaves, end of contract, educational leave, or discomfort in being monitored while teaching HS for the first time. CDLI teachers who declined cited the failed delivery of professional development benefits promised in other research, discomfort in having their practice examined in their initial year, or an unwillingness to grant access to recorded classes. Ultimately, recordings were not used because triangulation was possible by other means.

The process of recruiting student volunteers began the following September with an email request to principals to distribute envelopes to parents, containing a description of the research, the nature of convenience sampling, participation risks and benefits, student obligations, the withdrawal process, contact information, a parental consent form, and a student consent form. Parents were asked to consent to their child attending a school assembly describing the program of research. Parental response for student attendance was ubiquitous with two asking for more information. Consenting parents were asked to pass the description and consent forms to their child to read and bring to the assembly.

Assemblies, as arranged by school principals, were typically held for 15 minutes during a morning homeroom period in the school gym, lunchroom or a classroom depending on the HS population. The research rationale (i.e., to better understand student classroom practice), methodology, and potential risks were described to students. The consent form asked students to choose to either accept participation, request for more information via email with the researcher, or decline participation. Students were also given the opportunity to indicate their interest in a specific phase or project but were told that assignment was by stratified random selection. It was explained that neither participation nor non-participation would result in academic prejudice and that those who chose to participate could withdraw at any time by emailing the researcher. Those who withdrew were asked for their reason as part of the validation process and asked for continued use of

any data collected up to that point. No student who withdrew objected to this request.

Anonymity and Security

Teachers and students are part of a judgement-driven organization (i.e., school district) which evaluates teachers on their effectiveness in leading students to achieve high grades and evaluates students on their ability to demonstrate learning outcomes. The education system is based on the concepts of objectively applied standards and professionalism; however, excessive honesty can be problematic if information is taken personally or out of context. For example, student descriptions of teacher effectiveness could be used as part of a summative evaluation. Hence, it was understood that descriptions and disclosures could have unforeseen impacts on individuals and were kept in the strictest confidence.

Teachers were guaranteed anonymity with respect to administrators, and students were guaranteed anonymity with respect to teachers. Anonymity was protected from the start at initial meetings and assemblies. Every person presented with a consent form was asked to indicate acceptance or refusal and return it in the sealed envelope so that no one would be able to guess the decision. In this way, a returned envelope did not necessarily imply consent. Many people returned envelopes at meetings or assemblies but all were given the option of thinking about their choice and returning the envelope to the school office or through district mail.

Volunteers were emailed a unique username (e.g., Teacher24 or T24) at the start of a project and were asked to use this alias on all forms and in all discussions and focus groups. The list of assigned usernames was stored on a password-protected and encrypted memory stick and kept at a location different from that of data files and documents. The list was destroyed after participant data were examined and cleaned of identifying references, such as names and locations. The researcher reserved the right to publish reports and papers using cleaned descriptions and data.

Data entry was at the discretion of individuals and was completed through home and school computers. Teachers were given the option of completing the project (i.e., online form) themselves or meeting privately with the researcher at their school, on the telephone, or through the Virtual Meeting Place. Student observation of teacher classroom practice (i.e., SJ project) was discrete and, as some students described, indistinguishable from "paying attention and jotting notes." The identity of participating students was hidden from teachers to manage potential measurement effects. Teachers did not know how many students, if any, were noting their practice, which course would be described or the timeframe of the project.

The research almost exclusively used electronic forms and documents, which were practical because of participant access to the Internet. The only hardcopies bearing any participant data were the initial consent forms, which were kept in a locked filing cabinet at the researcher's office. There was no paper trail. Digital data were collected through a private network (i.e., CDLI) in a database which was only accessible by the researcher. The researcher was the only person to read the raw data and the laptop used for analyses had three levels of password protection with files kept in an encrypted disk partition.

Risks and Benefits

The researcher worked to minimize foreseen risks and maximize anticipated benefits. A primary benefit for participants was the opportunity to have a voice and/or contribute to the system in which they worked. Finding voice and being able to "tell my story" was important to the researcher because "students are the only ones … who have direct knowledge about classroom practice on a regular basis" (Stronge & Ostrander, 2006, p. 137). In addition to voice, the researcher shared ownership with participants as actively involved co-developers searching for "something that really worked." The researcher relied on participant feedback and opinion as much as description and response choice

All levels of participation required time which might otherwise be spent preparing lessons or completing homework. The time lost was described as an opportunity for personal evaluation of practice and to gain insight, which might improve effectiveness. Focus group participants were also able to share descriptions and learn from others. Classroom time was unaffected because communication, data entry, and focus groups occurred after school.

As far as was known, no inadvertent disclosures occurred during this research and measures taken to protect participant anonymity were successful. However, in the event of a disclosure, the researcher was prepared to meet participants and attempt to mediate consequences. It was recognized that direct, public, emotional, and occasionally disruptive disclosures were not uncommon in classrooms. Teachers, as a tenet of their professional Code of Ethics, are expected to solicit candid student feedback to judge their own effectiveness and provide students with the best learning opportunities. It was standard practice for school administrators to invite student feedback.

No compensation was offered to teachers for their participation except for opportunities to express opinions. Students were offered an opportunity to win a draw prize after the FS was completed. Names were literally written on pieces of paper and drawn from a hat for a Nintendo Wii system.

2.7 Teachers

The teacher population in NL was 5498 at the time of this research (Newfoundland Labrador, 2009); it had been in a decline from when school districts were amalgamated in 2004 (-2.3%) and 1997 (-18.0%). Of the 2009 population, 62.2% were employed as classroom teachers and 37.8% filled other roles including special education, school administration, department heads, guidance, support for the physically disabled and mentally handicapped, and district office administration. Hence, the provincial student to system ratio was 11.9 to 1 and student to teacher ratio was 21.1 to 1. University graduates with a B.Ed. qualified

for a level V certificate (32.7% of provincial) and those with additional course work qualified for certificate VI (33.0%) or VII (32.9%). NL teachers had an average of 14.5 years teaching experience; this was distributed as 36.1% (<10 years), 34.6% (10 to 20 years), and 29.5% (20 to 30 or more years). The Central District employed 19.3% of the provincial teacher population with 10.0% in its western part and 9.3% in its eastern part. Teacher experience was distributed as 36.3% (<10 years), 32.9% (10 to 20 years), and 30.3% (20 to 30 or more years).

Eighty-six of 123 (70%) face-to-face (F2F) and 14 of 30 (46%) distance education (DE) teachers initially volunteered. This sample of 100 changed over the summer between May recruitment and September data collection because of changes in employment status, reassignment, educational leave, or a reconsideration of time commitments. When it came time for data entry, some volunteers were difficult to contact because of the initial busyness of a school year and email was lost to spam blockers. However, several teachers newly hired to positions volunteered and replaced those who withdrew or could not be contacted. Ultimately, 98 teachers volunteered and all 80 who began data entry completed the *Teacher Description of Practice* (TP) project.

The project was reviewed before opening by eight participants to spot inappropriate wording and identify unclear questions. General comments included: “I don’t see anything wrong with the questions. Respondents should not have any problems” (T72); “able to be answered by teachers who teach in small schools” (T92); “I found it very through, well worded, and clear” (T18); “Impressive. I think you are going to get back some very valuable information.” Specifically, one teacher was concerned with the phrase “unique practice” which was clarified to mean unique to a situation as opposed to unique to a teacher. Other issues included how to explain change which may have taken place throughout a teacher’s career, the clarity of listing practices from most to least common and additional roles assumed by teachers in schools, such as school librarian.

Demographics

Demographic data were collected (i.e., Section A) about the 80 teachers who completed the TP project. Volunteers held teaching certificates at levels IV (4% vs. 2% provincial), V (30% vs. 33%), VI (30% vs. 32%), and VII (36% vs. 33%); slightly skewed towards the higher end because NL HS teachers commonly hold additional discipline-specific degrees. Teachers possessed 118 education degrees including 84 undergraduate (72 in secondary methods, 5 in primary methods, and 4 in special education) and 34 graduate (15 in administration, 9 in teaching and learning, and 4 in information technology). In addition, there were 102 discipline-specific degrees including science (28), math (22), social studies (18), English (15), other areas (16) including fine arts, French, music, and PE. Three teachers had a graduate degree in biology, French, or history.

Participant experience was distributed as 10 years or less (38% vs. 36% provincial), 11 to 20 years (37% vs. 35%), and 21 to 30 or more years (25% vs. 29%); relative to the provincial distribution, fewer teachers had 21 to 30 or more years of experience. Volunteers had taught at the same school for 10 or more years (31%), 6 to 10 (18%), 2 to 5 (35%), or less than two years (17%), which suggested a level of familiarity with the student sample. However, although only teachers who taught HS courses participated in the research, the participating teachers taught more broadly than HS with eight also teaching primary, 16 elementary, and 62 intermediate or junior high grades. Assuming a teacher and student remained in the same community from Kindergarten to grade 12, then 78% of participating teachers probably taught participating students before HS.

When participants were asked to identify their career subject area (i.e., the subject in which they had taught most of their courses), the most frequent answers were math (23%), English (21%), science (21%), social studies (13%), physical education (8%), and French (6%). When asked to indicate a second career area, math, English, and science lost 2% while social studies gained 4%.

Two hundred eighty-nine HS classes were taught by participants at the time of the research in levels 1 (22%), 2 (36%), and 3 (42%); these were general (22%),

academic (69%), and advanced (9%) courses. Subject areas were approximately equally represented with math (23%), social studies (23%), English (19%), science (18%), and other subjects (17%) such as PhysEd and TechEd. Social studies was defined to include economics, geography, history, and religion. General, academic, and advanced classes inside subject areas were distributed as math (30%, 38%, 32%), social studies (19%, 65%, 16%), English (31%, 55%, 14%), and science (22%, 55%, 23%). Folk literature, writing, and theatre arts were categorized as advanced subjects. Eleven percent of teachers taught seven or more HS courses per year, 23% taught five or six, 37% taught three or four, and 29% taught one or two. One teacher taught twelve HS courses per year in a multi-course setting.

The five-period per day 14-day cycle was standard among schools because it facilitated the logistics of offering HS DE into multiple sites. Sixty-two percent of teachers reported having four to six periods per 14-day cycle (6 to 10%) for course preparation, 19% claimed no preparation time, and 9% claimed 12 or more periods. Nine teachers who claimed no preparation time stated allotted time was used to fulfill other roles such as administration; 25 teachers (32%) were allocated time to fulfill additional roles. The most popular “other” roles were team coach or sponsor (46%), DE supervisor (29%), school administrator (25%), department head (20%), special needs teacher (18%), technology coordinator (16%), librarian (6%), and guidance councillor (5%). “Committee member” was discovered though open-response suggestions.

Two indices were developed to better characterize teachers: an index of training (TI) and an index of experience (EI). The TI was calculated by dividing the number of courses a teacher was assigned in a degree subject area by the total number assigned. For example, a teacher with a math degree who taught only math courses had an TI of 1.0 and a teacher who taught two math and two science courses had an TI of 0.5. The first pie chart in Figure 5 indicates that 78% of teachers had assignments in which most courses matched their training (i.e.,

0.60<AI<1.00) and at least 10% lacked the background knowledge to teach most of their assigned load (i.e., 0.00<AI<0.19).

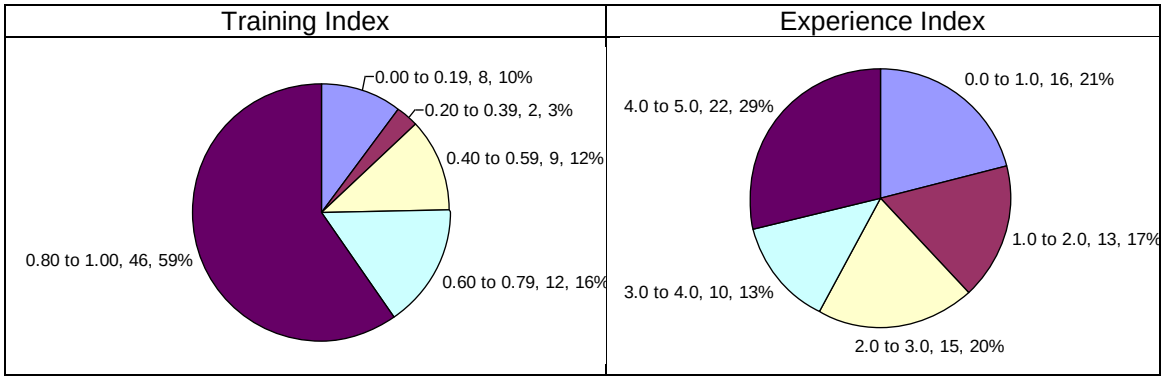


Figure 5. Training and experience indices.
The TI was calculated by dividing the number of courses a teacher was assigned in their degree subject area by the total number of courses assigned. The first chart indicates that 59% of participants were assigned courses which well-matched their training (i.e., 0.80<AI<1.00). The EI was calculated by dividing the total number of times a teacher had taught the assigned courses by the number of assigned courses. The second chart indicates that 29% of courses had been previously taught by the teacher more than five times. The pie also shows that experience was equally distributed.

The EI was calculated by dividing the total number of times a teacher had taught the assigned courses by the number of assigned courses. Twenty-five percent of courses had been previously taught four, five, or more times and 62% had been taught at least twice. However, in 23% of the situations the assigned course was new to the teacher. These indices, used together, enabled the researcher to distinguish between teachers with background knowledge, experience, both, or neither.

2.8 Students

The K-12 student population in NL was 72084 at the time of this research and had declined by 9.3% since 2004 (Newfoundland Labrador, 2009). Enrollment in the Central District (12998), which was equivalent to the Western District but one third that of the Eastern District, had declined by 11.8% since 2004. Almost 27.7% (3607) of these students attended HS and 23.3% (3029) attended intermediate, 21.9% (2847), elementary, and 27% (3520) primary schools. The provincial and

district HS graduation rates for the research year were 89% and 91% respectively with 23% (cf. 18% district) receiving honours, 40% (cf. 35%) academic, and 37% (cf. 47%) general certificates. Hence, although a slightly higher percentage of Central District students graduated, a significantly higher percentage of graduates held general certificates.

The district was divided into western (i.e., 51.3% of district HS students) and eastern (i.e., 48.7%) parts for research purposes. Schools in the western part (i.e., Exploration Phase (EP) and Development Phase (DP) participation) had HS populations of 1, 4, 4, 6, 6, 8, 11, 13, 14, 24, 37, 58, 67, 71, 73, 87, 88, 110, 132, 142, 164, and 500 students with roughly equivalent percentages of students in Levels 1 (31%), 2 (34%), and 3 (35%). One hundred sixty-one of these students (9.8%) represented 285 DE enrolments. Schools in the eastern part, Final Survey (FS) participation only, had HS populations of 48, 49, 77, 90, 112, 140, 308, and 383.

Three hundred twenty of the 1649 (19.4%) HS students attending schools in the western part volunteered to participate after school assemblies were held to explain the research. Confirmation emails to check addresses and establish contact resulted in 151 responses with some students indicating they had recovered research email from spam folders. Telephone calls and schoolwide announcements alleviated most communication problems and subsequent email contained the instruction to check automatic email filters. Fifteen volunteers withdrew during the contact process.

Two weeks after email checks, the volunteer population was stratified based on the researcher's ability to match students with a volunteer teacher for observation purposes, the *Student Journal of Teacher Practice* (SJ) project; 60 matches were randomly selected from the 267 identified. The main stumbling block was that a few students did not know their course numbers and students could not be identified to teachers to solve the problem. A second and third sample (n = 60) were randomly selected from the 260 remaining students to work on the *Student Description of Practice* (SP) and *Student Explanation of Teacher Practice*

(SE) projects. Several non-selected students expressed their desire to participate and an additional 15 were randomly chosen for the SJ project. Hence, 195 of the original 320 (61%) volunteers became participants. Some volunteers withdrew after the website was open, resulting in groups of 69 (SJ), 53 (SP), and 50 (SE) students. Months later, after data analysis, these students were invited to participate in the Development Study (DS) and the first 60 respondents included 31 SJ, 18 SP, and 11 SE students. All participants and non-participants were invited to write the FS. Fifty SJ, 34 SP, and 30 SE students responded as well as six who had not been randomly selected for the EP. The FS was also written by 60 students randomly selected from 80 volunteers who attended schools in the eastern part of the district.

Students who had been assigned the first 12 usernames for each project were asked to critique instructions and questions before data entry was open to all participants; eight SJ, eleven SE, and eight SE responded. SJ students identified a need for an open-response option with the career question to allow for other responses (S004, S005, S007). Other issues included the number of periods per cycle (S005, S007), expansion of the multi-course question to include DE courses (S007), and the lack of a teacher behaviour and/or relationship question (S007). General comments were positive: “Students should have no problem with this site” (S004); “the instructions couldn't be anymore clean then what they are” (S005). The only issue identified by an SP student was unfamiliarity with the term asynchronous. “I like how the questions aren’t very long …, for example how we can make jot notes instead of paragraphs” (S083). An SE student was confused into thinking one question applied to a specific teacher but, in general, he found that “all of the instructions were clearly stated and easy to understand, and everything was laid out nicely” (S166).

Demographics

Demographic data were collected as part of each project to characterize the volunteer population and samples. All Exploration Phase (EP) projects consisted

of the same Section A, so that participants were asked the same set of demographic questions. Most of these were kept for the Development Study (DS); however, many were eventually discarded to reduce Final Survey (FS) participant response time with the understanding that such data would already exist in school district databases.

Student volunteers represented HS levels 1 (EP projects 32%, DS 22%, FS 29%), 2 (EP 24%, DS 28%, FS 24%), 3 (EP 43%, DS 46%, FS 33%), and 4 (EP 1%, DS 4%, FS 1%). Although schools had roughly equivalent grade level populations, a relatively higher percentage of level 3 students participated in projects. Students described general (EP 8%, DS 8%, FS 7%), academic (EP 80%, DS 77%, FS 76%), and advanced (EP 12%, DS 14%, FS 17%) courses in the four major subject areas of English (EP 17%, DS 26%, FS 21%), math (EP 18%, DS 17%, FS 24%), science (EP 21%, DS 20%, FS 29%), and social studies (EP 16%, DS 15%, FS 15%). Other subjects including art, French, music, physical education (PE), and technology education (TE) were also well-represented (EP 28%, DS 22%, FS 8%); the drop in representation from DS to FS represented the instruction to choose a course from one of the four major subject areas. Students identified other (EP 36%, DS 23%), math (EP 24%, DS 28%), science (EP 20%, DS 19%), English (EP 10%, DS 13%), social studies (EP 6%, DS 2%), or “none” (EP 1%, DS 15%) as their favourite subject. There was a significant change from “other” (EP) to “none” (DS) as research was focused on English, math, science, and social studies. Student volunteers achieved grade nine averages in the 80’s or 90’s (EP 59%, DS 64%), 70’s (EP 26%, DS 21%), 60’s (EP 10%, DS 15%), and 50’s (EP 5%, DS 0%).

As part of the demographic section, students were also asked about their motivation for attending school and the most popular EP choices were an interest in academics (EP 55%) and career aspirations (31%) with a few students wanting to spend time with friends (6%), satisfy parents (4%), or participate in sports (2%). The question was changed from dropbox style (i.e., EP single-choice) to checklist style (i.e., DS multiple-choice, FS two of seven). The most popular choices

became to get a grade 12 diploma (DS 57%, FS 49%), academics or liking being a student (DS 50%, FS 14%), friends or social life (DS 48%, FS 46%), career aspirations (DS 46%, FS 29%), interest in a particular subject (DS 24%, FS 29%), extracurricular activities (DS 24%, FS 21 & 10%), and/or satisfying parents (DS 15%). Note that significant differences resulted from expanding or limiting the number of choices. For example, students who wanted to indicate both academics and friends as motivators could do so for the DS. The most popular EP choice (i.e., academics) at 55% became the two DS options: “Academics. I like being a student” (50%) and “Academics. I’m interested in a particular subject” (24%). The most popular DS choice (i.e., to get a grade 12 diploma) was discovered after EP data collection through student focus group discussions. The item “sports” (EP 2%) which became “extracurricular activities (e.g., music, sports),” (DS 24%) which became “sports” (FS 21%) and “extracurricular activities (e.g., music)” (FS 10%) demonstrates the importance of question clarity.

When asked specifically about school extracurricular activities, students indicated that they were uninvolved (EP 44%, DS 30%), involved in gym sports (EP 29%, DS 33%) or music (EP 12%, DS 11%). Suggestions given through EP open-response became DS choices, such as graduation committee (DS 28%), tutoring (28%), student council (13%), drama club (11%), school band or choir (11%), school council (7%), and/or outdoor sports (6%). In contrast, extracurricular activities outside school included hanging with friends (EP 50%, DS 15%), music (EP 17%, DS 17%), sports (EP 13%, DS 6%), surfing the Internet (EP 9%, DS 14%), reading (EP 9%, DS 9%), and/or other (EP 2%, DS 1%). Additional DS choices included watching TV (DS 10%), anything outdoors (8%), art or photography (7%), motorized vehicles (7%), volunteering in the community (5%), and/or “nothing really” (1%). Listing of additional items and the ability to choose as many as necessary resulted in significant changes, such as “nothing really” in school (EP 44%, DS 30%) and “hanging with friends” outside school (EP 50%, DS 15%).

Some students also indicated they were employed on an occasional or part-time basis (EP 43%, DS 44%), year long (EP 24%, DS 19%), and/or for part of the year such as summer (EP 6%, DS 22%). “Part of the year” was better explained in DS instructions. Students indicated that after graduation they wanted to go to university (EP 48%), trades school (27%), work somewhere else (8%), work in their home community (1%), or had no plans (13%). When asked about a possible career, students wanted to be an artist (EP 13%), engineer (11%), medical technician (10%), trades person (10%), teacher (EP 10%, DS 9%), doctor (DS 9%), or nurse (DS 9%).

CHAPTER 3: EXPLORATION PHASE (EP)

This chapter presents the Exploration Phase (EP) of the program of research, the purpose of which was to capture variety in description of practice during course and lesson situations. The *Teacher Description of Practice* (TP), *Student Journal* of *Teacher Practice* (SJ), and *Student Description of Practice* (SP) projects were designed, using the working language of curriculum guides (i.e., content validity), to collect qualitative descriptions using open-ended questionnaires. In addition, projects were piloted or critiqued by 8 to 10 participants before administration to uncover inconsistencies and confusing terminology. Large groups of participants (n = 60 to 80) were used in this qualitative phase to give the description an "honesty, depth, richness, and scope" (Cohen et a., 2000, p. 105), to achieve data saturation, to triangulate themes and to facilitated the development of teacher-student case studies. "Triangulation is a powerful way of demonstrating concurrent validity … if, for example, the outcomes of a questionnaire correspond to those of an observational study" (p. 112). Descriptions were compiled and triangulated across projects to generate theme lists and facilitate comparisons of teacher and student perspectives. The intrinsic value of the qualitative data was discussed in this chapter as groundwork for the DP.

3.1 Administration

An email was sent each participant at project start declaring the website open and supplying a unique project-specific username and password. Participants were given weeks to complete data entry. The TP (n = 80) project was open for 46 days between Sept 2 and Oct 16th, 2008, the SJ (n = 75) project was open for 48 days between Oct 28th and Dec 15th, 2008, and the SP (n = 60) project was open for 24 days between November 12th and December 6th, 2008. Projects were sequenced so that teacher self-descriptions could be analyzed prior to student descriptions of teachers and self-descriptions. The website was actively

monitored to aid and prompt participants and bulk email was used to post clarifications as needed.

Teacher participation was hampered to a degree by the busyness associated with September and the start of a school year but alleviated through assistance provided through email, telephone, online (viz., Virtual Meeting Place), and school visits. The most significant student issue concerned journaling, such as questioning the need to note everything and trusting the value of personal perspective. Most students noted observations in a class notebook and later typed them into the database; daily monitoring of entries permitted the researcher to guide participants when necessary. In the end, SJ students produced 93 journals with 24 students choosing to keep journals on two teachers. The other significant issue was researcher email being misdirected to junk mail folders; however, school-wide announcements resolved the problem without identifying participants. Email reminders such as *One Week Left* were sent to participants as project timelines ended.

Missing participants were defined as those who had agreed and were assigned usernames but did not start their project. Eighteen of 98 teachers went missing after the start of the TP project and later cited changed circumstances, such as being reassigned to teach intermediate level classes, accepting an administrative position, or being at the end of a replacement contract. Six SJ and seven SP students withdrew because of sickness, a lack of time, or loss of interest.

Missing data were defined as missing responses from participants who had started their assigned project. For example, some of the 80 teachers who started the TP project omitted responses to specific questions. However, only five questions had more than three responses missing and only two (viz., Other Long-term Practices, Ineffective Practices) had more than five missing. With respect to students, of the 69 SJ students who completed profiles (viz., Section A), ten did not record observation journals (viz., Section B) and 13 journals had only one or two entries. Of those who completed the summary questions (viz., Section C) only five omitted the response to a question. Of the 53 SP students who began their

project, only one who completed Section A did not continue to Section B; hence n(A) = 53, n(B) = 52, n(C) = 51, and n(D) = 48. Only three of 48 students were missing data and, then, only in one or two questions.

3.2 Response and Data

Exploration Phase (EP) data were exported from the database as TXT files and converted to MS Excel spreadsheets. The most common data conversion issue was participant use of symbols during open-response, which Excel recognized as control characters, for example “=” and “-“ were interpreted as formula indicators. Verified files were then examined to establish consistency across symbols, punctuation, and abbreviations; for example, participant use of (A) 'A' A- A: A, and A. to indicate the first item in a list was changed to A, double spaces were changed to single, contractions were recognized (e.g., “cant” changed to “can’t”), and unique abbreviations were standardized (e.g., “SS” became “Social Studies”). The records were then cleaned to ensure participant anonymity and all references to participants, non-participants, schools, school teams, and communities were eliminated from the text; for example, Cindy Smith became S097.

Response statistics were generated by the researcher to investigate the quantity of participant description and identify under-described situations. Statistics included a count of all words used by respondents in answer to a question, a word to response ratio, the percentage of words which were descriptive in nature (i.e., nouns, adjectives, adverbs), and a descriptive-words to response ratio. For example, as indicated in Table 7, 80 teachers used 3049 words to describe Course Preparation (38.1 words to response ratio) with 59.6% of those words classified as descriptive; the most description of any aggregated teacher response. Hence, Course Preparation was well-described by participants relative to Course Close or Other Long-term Practices, suggesting a need for additional data to more fully describe these situations. Students wrote longer descriptions of

teacher practice (SJ) than self-descriptions (SP) although self-descriptions were generally richer in content. These tables also indicated the relative strength of response lists which could be carried over to the DP.

Table 7

Exploration Phase (EP) Response Statistics (Long-term Situations)

Group	Question	n_r	Words	Words / Response	% D Words	D Words / Response
Teacher Self-description (TP, n = 80)	Preparation	80	3049	38.1	59.6	22.7
	Course Start	79	3870	49.0	53.5	26.2
	Unit Start	80	3149	39.4	50.9	20.1
	Other Long-term	69	2010	29.1	55.3	16.1
	Unit End	80	3054	38.2	56.0	21.4
	Course End	79	3241	41.0	53.4	21.9
	Course Close	78	2579	33.1	53.1	17.6
Student-described Teaching (SJ, n = 69)	Course Start	68	2698	39.7	47.4	17.5
	Unit Start	69	2508	41.8	43.5	18.2
	Unit End	69	2489	41.5	44.4	18.4
Student Self-description (SP, n = 50)	Preparation	50	1109	22.2	46.5	10.3
	Course Start	50	987	19.7	48.1	9.5
	Unit Start	50	1024	20.5	50.6	10.4
	Unit End	50	995	19.9	48.9	9.7
	Course End	49	1074	21.9	50.4	11.0
	Course Close	48	708	14.8	51.1	7.6

Note. Response statistics were generated to investigate the quantity of participant description. Question or situation statistics included the number of respondents (n_r), a count of words used by all respondents (Words), a word to response ratio, the percentage of words which were descriptive in nature (% D Words), and a descriptive-words to response ratio (D Words / Response). For example, 80 teachers used 3049 words to describe Course Preparation for an average of 38.1 words per response, with 59.6% of those words classified as descriptive (i.e., nouns, adjectives, adverbs) and an average of 22.7 descriptive words per response. Note that students who described teachers did so at a similar words-per-response ratio as teachers, which was significantly higher than student self-description.

The statistics listed in Tables 7, 8, and 9 were used to manage exploration and development processes. For example, a high word-per-response and/or descriptive words-per-response ratio was taken as a strong indication of data saturation. Data for situations with less description were reread several times to discover themes. Email conversations with participants (i.e., member checking) explored reasons why few practices were described in some situations and student focus groups were tasked with enriching data sets.

Table 8

EP Response Statistics (Short-term Situations)

Group	Question	n_r	Words	Words / Response	% D Words	D Words / Response
Teacher Self-description (TP, n = 80)	Preparation	80	3616	45.2	53.4	24,1
	Class Start	80	3529	44.1	51.3	22.6
	Main Part	80	3769	47.1	56.5	26.6
	Class End	80	2648	33.1	52.5	17.4
	Special Classes	77	3603	46.8	51.3	24.0
Student-described Teaching (SJ, n = 69)	Preparation	63	1704	27.0	44.4	12.0
	Class Start	68	2146	31.6	45.9	14.5
	Main Part	67	4111	61.4	45.3	27.8
	Class End	66	2457	37.2	44.5	16.6
	Special Classes	66	2023	30.7	43.5	13.3
Student Self-description (SP, n = 50)	Preparation	49	1032	21.1	49.2	10.4
	Class Start	49	956	19.5	47.0	9.2
	Main Part	49	712	14.5	53.9	7.8
	Class End	49	978	20.0	50.7	10.1
	Special Classes	48	828	17.3	47.3	8.2

Note. Response statistics were generated to investigate the quantity of participant description. Question or situation statistics included the number of respondents (n_r), a count of words used by all respondents (Words), a word to response ratio, the percentage of words which were descriptive in nature (% D Words), and a descriptive-words to response ratio (D Words / Response). For example, 49 students used 1032 words to describe Class Preparation for an average of 21.1 words per response, with 49.2% of those words classified as descriptive and an average of 10.4 descriptive words per response. Note that 49 students used only 712 words to describe the Main Part of Class while 80 teachers used 3769. Both teachers and students were instructed that this question was of particular importance.

Descriptions for each question were coded and analyzed to produce word frequency counts, question analysis, concept maps, a list of descriptions of practice, a list of teacher-chosen representative descriptions, and a Venn diagram of subject-specific practice. Data were coded by replacing frequent and common words with unique symbols such as “preparation” > P, “evaluation” > E, and “review” > R. These symbols were easy to spot in the data and allowed the researcher to quickly identify instances in context. The resultant file was reread to identify grammatically equivalent forms of words such as verb tenses and plural nouns. Adjacent codes were recognized as phrases (e.g., E SCH > “evaluation scheme” and P E SCH > “prepare evaluation scheme”) and the coded file was reread to identify equivalent phrases such as P E SCH and R mark SCH. This analysis facilitated text and concept mining (Chapter 2) and resulted in theme lists. Response statistics for the SJ project were based on summary descriptions (n = 116) instead of journals (n = 94), which were examined separately to triangulate

teacher-student data, and to demonstrate the uniqueness of individual perception or "portray to the reader what it is like to be involved in the situation" (Cohen et al, 2000, p. 152). Twenty-four students chose to journal two courses and 22 summaries were submitted instead of journals. Math (29 journals + 30 summaries), social studies (23 + 22), English (18 + 26), and science (14 + 25) were equally represented in the analysis. Most students described courses positively as their favourite subject (25%), or enjoyable (51%), and some described a course they were "stuck with" (16%) or hated (9%). However, it was apparent from reading the journals that a negative feeling about a course did not necessarily mean a student felt the same way towards the teacher. Many (33%) described their current course mark as higher than expected, while most (52%) described it as about what was expected (52%). Only 15% described their mark as lower than expected.

Table 9

EP Response Statistics (Situational Perception)

Group	Question	n	Words	Words / Response	% D Words	D Words / Response
Teacher Self-description (TP, n = 80)	Good Class	80	2807	35.1	52.1	18.3
	Ineffective	72	2430	33.4	54.5	18.2
	X-curricular	78	2582	33.1	56.3	18.6
	Talents	79	3263	41.3	52.9	21.9
Student-described Teaching (SJ, n = 69)	Good Class	65	3074	47.3	48.0	22.7
	Effective	65	2173	33.4	47.4	15.8
	Ineffective	65	2163	33.3	46.9	15.6
	Wish List	65	2319	35.7	48.9	17.5
Teacher-described Learning (TP, n = 80)	Learning	80	2342	29.3	54.7	16.0
	Performance	75	1925	25.7	52.1	13.4
	Development	76	2918	38.4	50.8	19.5
	Wish List	77	2579	33.5	53.6	18.0
Student Self-description (SP, n = 50)	Good Class	49	1045	21.3	52.1	11.1
	Ineffective	48	1038	21.6	53.0	11.4
	X-curricular	49	1014	20.7	52.1	10.8
	Talents	47	978	20.8	50.5	10.5

Note. Response statistics were generated to investigate the quantity of participant description. Question or situation statistics included the number of respondents (n_r), a count of words used by all respondents (Words), a word to response ratio, the percentage of words which were descriptive in nature (% D Words), and a descriptive-words to response ratio (D Words / Response). For example, 65 students used 2313 words to describe changes they would like in teacher practice (viz., Wish List) for an average of 35.7 words per response, with 48.9% of those words classified as descriptive and an average of 17.5 descriptive words per response. Note that 65 students used almost as many words as 77 teachers to describe suggested changes in practice.

Journals were used to create case studies of some of the 34 described courses, including World Geography 3202 by nine journals representing four teachers, Chemistry 2202 and Science 1206 by eight representing five, and English 3201 by seven representing five. In addition, four courses were represented by six journals, one course by five journals, and 25 by four or fewer. Seventy-two percent of students who wrote journals and/or summary descriptions recalled a similar High School (HS) course or material from intermediate grades, while 28% indicated they had never taken a course in the subject. Journals were also used to create case studies of some of the 37 described teachers: T84 by 14 journals representing four courses, T85 by nine, T30 by seven, T02 by five each representing three courses, eight teachers by four journals, and 25 by three or fewer. Of the seven observed online or distance education (DE) teachers, T51 was described by four students. Seventy-six per cent of students had previous classroom experience with their teacher, while 22% were experiencing the teacher for the first time.

TP data (not coded) were given to 16 teachers who worked independently to identify typical and uncommon descriptions of practice, based on their professional experience. The identification of representative practice was entitled the *Teacher Focus* (TF) project. “A good explanation deserves attention from the very people whose behaviour it is about – informants who supplied the original data. …” (Miles & Huberman, 1994, p. 263). For example, four English teachers separately examined the same 20 descriptions of Course Preparation by English teachers and chose descriptions each considered to typify practice. Three categories emerged from this analysis: items consistently flagged in the same way (viz., common), items which were flagged as common by some teachers and rare by others (viz., conflict), and items which were not flagged by any teacher. Most commonly, teachers agreed on descriptions of Unit End and a Good Class, and chose a wider variety of descriptions to represent Other Long-term Practices and an Ineffective Class. These teacher-certified lists were used during the Development Phase (DP) to question student misconceptions.

With respect to students, six online focus groups were used to highlight representative descriptions of practice, solicit feedback on administration, address concerns, and as a form of peer debriefing. Suchman and Jordan (1992) refer to this member check process of establishing relevance, clarifying meaning, and repairing misunderstandings as “the collaborative construction of meaning” (p. 262). Each student group (n = 5 to 8) was led through a discussion of a specific section, for example Student Description of Practice (SP) Group B discussed the open response questions of Section B of the SP project.

3.3 Long-term or Course Situations

Long-term situations included Course Preparation, Start, End, and Close; Unit Start and End; and Other. Questions of Course Preparation and Close, Start and End, and Unit Start and End were situation pairs or brackets designed to capture the context in which short-term or lesson situations could be examined. The question entitled Other Long-term Situations and Practice was intended to capture description of practice which did not fit well inside the bookends, such as multi-course classes and skill development.

Course Preparation

Course Preparation was defined as the time before meeting students or the teacher in the classroom for the first time. This question had a word-per-response ratio of 22.2, the highest of any question answered by students describing their own practice (Table 7). Table 10 lists themes collected from participants’ descriptions of Course Preparation in descending order of frequency. Practices were described by most (>50%, **bold**), many (>25%, ***bold and italic***), some (>10%, *italic*), or a few (<10%, normal) participants and understood as frequent (**bold**), common (***bold and italic***), occasional (*italic*), or rare (normal).

Most teachers (TP project) prepared for their courses by planning, developing, and/or reviewing a course evaluation scheme. Many reviewed long-

term plans and/or a timeline and referred to the curriculum guide, the textbook and/or "authorized" resources: "[I] familiarize myself with each unit, the length of each unit, [and] link the curriculum guide to the textbook" (T35); "[I] review board guidelines regarding unit ordering, weighting, evaluation policy, etc." (T85). Some first-time teachers described a need to review "general and specific curriculum outcomes" (T60) and sought discussions with "more seasoned teachers … to round up evaluation materials" (T96). Experienced teachers described needing "very little planning" (T52) and reflected on previous experiences to consider "changes in approach" (T78) and/or "improve student achievement" (T85): "I'll note what didn't work last year and try to readjust ... then I'll look at different ways of teaching" (T47).

Table 10

Course Preparation Practices

Teacher Practice	Student Practice
developed or reviewed evaluation scheme.	**asked a friend about the course.**
created or reviewed long-term plan.	**asked a friend about the teacher.**
reviewed curriculum guide.	***asked about course difficulty.***
planned or reviewed the course timeline.	***asked friends if they liked the course.***
prepared course overview or outline.	*asked about the course workload.*
gathered resources such as equipment or textbooks.	*asked about the teacher's personality and/or what they were like.*
checked class lists.	***asked about teacher's methods.***
reviewed and/or prepared materials for the first unit.	*nothing - I find out things when I go to CL.*
reviewed course outcomes.	*researched or read the course description.*
discussed the course with other teachers (e.g., evaluation scheme, curriculum changes, unit sequencing).	*asked a teacher about the course.*
designed or planed long-term projects and/or activities.	asked people or a relative about the teacher.
reviewed student background files.	asked a teacher or guidance councillor if I need the course to graduate or for my career.
reflected on what had worked in previous years.	gather supplies such as binders or calculators.
prepared the class environment.	
contacted schools and shared information.	
prepared course shells and homepage.	
posted course welcome and information.	

Note. Teacher practice - Please list your practice associated with **the start of a course before you meet your students** (e.g., planning an evaluation scheme). Student practice - How do you get ready for a new course **before you meet the teacher** for the first time (e.g., ask your friends about the course)?

Practices described by distance education (DE) teachers were categorized as either not specific to DE, or specific to teaching into multiple school sites or through communications technologies. For example, both DE and face-to-face

(F2F) teachers developed evaluation schemes but only DE teachers gathered information about school sites and/or posted teacher profiles.

More than 90% of student descriptions (SP project) described inquiries to a friend about the course and/or the teacher: “I ask my friends [who] have done the course what it is like, if they liked it, and if the teacher is good at teaching” (S126). Many asked about course difficulty while some asked about the workload, teacher’s personality, and/or the effectiveness of their teaching plans” (S081): “I ask … what it is like and how I can prepare for it” (S119); “They said it wasn't that bad, [to] keep focused on the work, and not fall behind” (S137). Some students also read course descriptions from school agendas or websites. Others stated they did nothing but took a “wait-and-see” approach: “I normally go to class, meet the new teacher, sit down, pay attention, and try to figure it out on my own” (S085).

Course Start

Course Start was defined as the time between the first meeting of a teacher and students until they began work in a curriculum unit, or the first few classes of a course. This question had the highest words per response ratio (49.1) of any answered by teachers (Table 7).

Most teachers (Table 11) described managing Course Start by presenting a course overview to introduce units or topics: “If [students] don't know where everything fits in the scheme of things it makes it really hard” (T68). Many explained an evaluation scheme, expectations, “missed tests and assignment policies, late policies, etc.” (T17). Most teachers described wanting to build connections or relationships with students through discussions or “ice breaker” (T27) activities: “I spend time talking … to help them become comfortable with me [and] it allows me to assess who is talkative and who is quiet” (T19). Relationship-building was also described as a means to help students feel important, get comfortable, build self-confidence, and/or “get everyone to contribute to class discussions” (T85). Some assessed student knowledge through discussions, quizzes, and/or writing exercises “to get an idea of how much they might have

retained" (T21). Some teachers described taking a management approach to "etiquette and standards" (T96), "how [they] expect students to behave" (T59), and try to avoid "situations" (T35).

DE teaching practices were frequently described at Course and Class Start and most had counterparts in the F2F environment (e.g., discussion of evaluation schemes). The predominant site issue was staggered student login, which was equivalent to showing up for class on time, and some descriptions suggested the cause was differences in school schedules. Many teachers described efforts to "break down barriers" (T52): "I usually start with an ice breaker (e.g., a funny … picture of me) … to let them see a little bit of my personality" (T47).

Table 11

Course Start Practices

Teacher Practice	Student-described Teacher Practice	Student Practice
introductory discussions and activities.	**distributed course outline.**	***skimmed or looked though the textbook.***
distributed and/or presented a course overview or outline.	**introduced units and/or topics.**	***listened or paid attention in class.***
explained expectations.	***had introductory discussions and/or activities.***	*tried to make a good impression.*
discussed the course evaluation or mark scheme.	***discussed the course evaluation or mark scheme and how to keep marks up.***	*took good notes.*
discussed behaviour expectations and/or class rules.	***reviewed a previous course to refreshed memories.***	*reviewed notes and completed assigned work.*
learned students' names or read the class list.	*started notes right away.*	read the course outline.
discussed work ethic expectations.	began work right away.	gathered supplies and materials.
assessed student prior knowledge and/or abilities.	took attendance but some teachers already knew us.	organized notebook.
played icebreaker games.	asked about summer holidays and/or school events.	talked to or met with classmates.
collected student preference or profile information.	showed work samples and/or discussed expectations.	asked for the course evaluation scheme.
gave a light introductory assignment.	related the course to everyday life.	
gave an orientation to the online environment and resources.	explained CDLI website.	
exchanged photos.	explained the online classroom.	
posted their autobiography.	showed pictures of themselves.	
provided contact information.	asked us to introduce ourselves using the microphone.	
discussed connectivity issues.		

Note. Teacher Practice (TP) - Please list your practice which may be unique to **the first cycle of a course** (e.g., getting to know your students). Student Journal (SJ) - What did your teacher do during the **first few classes of your course** that was special to the start of the course (e.g., they tried to find out our interests)? Student Practice (SP) - What do you do during the **first few classes of a new course** to get the course started (e.g., skim through the textbook)?

Teachers also described providing students with "lots of orientation with the tools of the web environment" (T41) to get them into the course techniques

“downloading files, printing, scanning, drop box, email, and things like that” (T48). DE teachers also described offering advice on “what it takes to be successful” (T48) and stressed the need for students to be independent, attentive, and/or responsible: “Just to alert them to 'how' they will take responsibility: reading their course homepage …, responding to e-mails …, hoping that they become a little more engaged …” (T51).

Most students who described teacher practice (SJ project) noted the distribution of course outlines, introduction of units, and/or explanation of the evaluation scheme: “He gave us an overview of the course and helped us to understand some of the things that we would be doing” (S062 on T23); “[He] started by … saying how we were going to use this class in everyday life” (S022 on T06). Most described teachers relating topics to a previous course or assumed knowledge: “He told us some key things we needed to know before we start” (S051 on T84). Some students suggested that topics for “ice breaker” discussions ranged from introductions to summer holidays, student interests, and/or school events: “He likes to joke around with us which creates a really good teacher-student bond” (S062 on T24). Some teachers were described as wanting to start work “right away” (S043 on T57) and some “introduced the course through notes” (S007 on T18).

Students described DE teachers introducing themselves and explaining how they could be contacted: “He asked us to send pictures so that he could see what we looked like” (S033 on T47). Many were described as starting conversations to get to know students: “The teacher tried to find out what we were interested in, our hobbies, leisure activities, and what we were involved in within school” (S009 on T43). Most teachers explained the website, how software worked, and use of the microphone because, for some students, it was their “first time taking an online course” (S052 on T52).

Many students who described their own practice (SP project) skimmed the textbook to look at pictures, “see what's [going to] show up, what to be prepared for, and take notes” (S137). Many also read the curriculum outline to “learn how

different things are graded" (S118). Many students followed the teacher's introduction to understand "what the course was about" (S122) or "see if the course makes sense" (S102). Some students tried to make a good impression, "start a healthy relationship with the teacher" (S128), or "become one of the students on [the] teacher's good side" (S096); however, many described already knowing the teacher from previous grades or courses.

Unit Start

Courses are divided into curriculum blocks called units (e.g., genetics in Biology 3201), themes or media (e.g., poetry in English 1201), categories (e.g., expressive writing in Writing 2203), components (e.g., relationships in Human Dynamics 2201), sports or dimensions (e.g., psychomotor movement in PE 2100 and 2101), strands (e.g., personal management in Career Development 2201), or topics (e.g., data management in Math 1204). These were given the umbrella term *unit* and Unit Start was defined as the unit introduction or first few classes.

Most teachers (Table 12) described starting a unit by presenting an outline, overview, or introduction for students to get "the idea of the theme" (T38), "an idea of what is to be covered" (T20), "a look in advance at topics" (T21), note important terms, and/or provide a "timeframe for completion." One teacher uniquely described "going over the review sheet to illustrate what will be covered and what is expected" (T84). Many managed student background knowledge by reviewing necessary concepts, showing how it contributed to the unit, and "led [students] into an awareness [of] the cumulative nature … of understanding" (T48). Teachers described starting with activities to capture student attention or insure participation, such as brainstorming, focusing on a real-world context, or relating a "personal story" (T58).

Most students who observed teachers (SJ project) described introductions which ranged from quick overviews to full classes or a number of classes. Teachers asked if students "knew anything" (S034 on T56) about a topic or if it was

"covered in the previous course" (S009 on T47): "He has asked us questions about what we thought [the unit] was about or if we enjoyed this sort of thing" (S061 on T30); "It is fun to feel you are getting a grasp of something that you just started!" (S033 on T47). However, most students observed automatic review without discussion: "She starts with simpler things and tries to bring us [back] to when we did something like it before" (S003 on T81).

Table 12

Unit Start Practices

Teacher Practice	Student-described Teacher Practice	Student Practice
gave a unit outline, overview, or introduction. ***reviewed expected background or prior knowledge.*** ***distributed and discussed the unit objectives.*** ***built student interest through activities, games, stories, questions, and/or brainstorming.*** ***related unit topics to student interests and/or the world outside school.*** *evaluated or assessed previous knowledge.* *discussed evaluation, expectations, and work ethic.* *related topics to student interests and noted personal responses.* *related topics to the world outside school and/or personal stories.* *placed the unit in context.* checked the curriculum guide and/or with other teachers (e.g., timelines, sequence, required coverage). clarified unit definitions or terms. depended on the student dynamics. incorporated and accommodated different learning styles. checked resources (e.g., materials, textbooks).	**introduced or gave an overview of unit topics and/or main ideas.** **evaluated student interest in and/or knowledge of unit topics.** ***reviewed specific terms and/or topics of a previous course.*** ***handed out, gave, or wrote notes.*** ***started reading textbook.*** ***assigned and/or did examples.*** *nothing special - started the first lesson right away.* *talked about assignments, expectations and timeline.* *related topics to the world outside school, life, news and/or famous people.* *built student comfort with unit topics.* built interest through an activity, videos, and/or brain teasers. handed out unit objectives. gave keywords or definitions.	**started a new notebook, section, page, or binder partition.** ***listened or paid attention in class to the unit introduction and/or outline.*** *took jot notes to understand the unit.* *read or skimmed the textbook.* *highlighted in the textbook or used sticky notes to mark what unit was about.* *wrote key terms or definitions in my notebook.* completed and/or organized work from the previous unit (e.g., papers, tests). went to Google or CDLI to get more information.

Note. Teacher Practice (TP) - Please list your practice which may be unique to the **first few classes of a new unit** (e.g., selecting topics relevant to student experiences). Student Journal (SJ) - What does your teacher do during the **first few classes of a unit** that is special to the start of a unit (e.g., they tried to find out how much we already knew about the topics)? Student Practice (SP) - What do you usually do during the **first few classes of a new unit** to get a unit started (e.g., start a new section in your notebook)?

Many students observed teachers reading the textbook, doing examples, and/or asking students to write notes: "He would … explain what he has writing and then continue writing till that class was over" (S076 on T89). Hence, some

students described Unit Start as “nothing special” or “pretty much the same as the whole unit” (S037 on T71): “He just goes right into the work” (S006 on T47).

Most students described their own practice of starting a new notebook or page to mark the beginning of a unit. Students variously “turn to a fresh page,” “skip a couple of pages,” or “use tabs to organize” units, and/or “mark where the unit begins,” “make sure the title is visible and clear,” place “the unit number and name in the top margin,” and/or write the unit objectives. S123 wrote “new test starts here” on top of the first page of the new unit. Many listened to the teacher’s introduction: “I pay close attention … to know what we are expected to already know, what we are going to learn to try, and relate it to things I know already” (S082). Unit Start was described as the best time to learn which topics were most important: “I pay extra close attention at the beginning of the new unit because that is when you learn the most important things” (S081). Some students described reading ahead in the textbook to understand “what to expect in upcoming classes” (S083) or “the notes that were given” (S112): “[I] jot note what I understood and write questions on what I didn't understand” (S094).

Unit End

Unit End was defined as the last classes of a unit when a teacher drew student attention away from new learning and towards preparation for evaluation. Approximately 50% of teachers, predominantly math and science, described evaluating students through a unit test “to reflect on how well they understood the material before the more heavily weighted final” (T92). Alternatively, 50% described a unit-long or end project, assignment, writing piece, or skill demonstration.

Many teachers (Table 13) preceded tests or projects by leading a review class “to summarize what was taught … in the unit” (T71). Some teachers expected students to lead the review by asking questions and setting the agenda: “The very last class is an open-ended class where kids come and say ‘Sir. How do you do this?’ … I find that kids get more out of it because they're coming with

relevant issues" (T47). A few teachers emphasized that review should be a frequent self-regulating practice: "I encourage the kids to review everything once a week … [so] after six weeks you're after reviewing the topic six times" (T48). Many described the unit test during review classes: "I discuss the format … [because] studying for multiple choice is different than studying for a long answer exam" (T74). DE teachers described many of the same practices, however also reminded students to access whiteboards and listen to class recordings.

Table 13

Unit End Practices

Teacher Practice	Student-described Teacher Practice	Student Practice
held a review class.	**held a review class.**	***studied, reviewed, reread, and/or memorized notes.***
held a teacher-led review class.	***held a teacher-led review class.***	***rewrote notes, formulas, and/or definitions.***
gave a unit or chapter test.	***held a student-led review class.***	*completed all review assignments and sheets.*
reviewed concepts, topics, and/or terminology.	***reviewed assignment or practice questions.***	*read or skimmed important sections in the textbook.*
gave a review assignment or worksheet.	*handed out a review sheet or study guide.*	*made sure I had all unit notes and handouts to study.*
gave an evaluation other than a test.	*reviewed the major topics.*	*asked the teacher to do example problems.*
played review games such as Jeopardy or trivia.	*discussed the test format.*	reviewed topics in class.
gave a unit assignment, writing piece, or project.	used a review activity or game.	reviewed and/or discussed topics with a friend.
held a student-led review class.	gave a unit assignment instead.	wrote a unit review.
gave students a sample test.	nothing special - we finished up and moved on.	asked for a review sheet.
handed out a study guide.	gave an in-class open book assignment as review for the test.	reviewed key topics and definitions.
had a pre-evaluation evaluation.	gave review notes.	practiced sample questions given by the teacher.
gave students notice.	advised students that study was their responsibility.	read the course outcomes.
held an after-school tutorial.	warned students that unit end was near and/or gave notice of a test.	nothing - I get it by listening.
advised students to review on their own each evening.	used videos for review.	
reviewed through group work.	used previous tests as examples.	
reviewed connecting to introduction.	gave out a self-test to complete.	
made sure students had all notes.	held a study class for one-on-one questions.	
the type of evaluation type depends on the nature of the unit.	gave time to study with friends.	
tested skills development.	posted questions and polled for answers.	
advised students to review recorded classes.		

Note. Teacher Practice - Please list your practice which may be unique to the **last few classes of a unit** (e.g., reviewing important concepts). Student Journal - What does your teacher do during the **last few classes of a unit** that is special to the end of a unit (e.g., review for the unit test)? Student Practice - What do you usually do during the **last few classes of a unit** to get ready for the unit test or presentation (e.g., rewrite study notes)?

A significantly higher proportion of students than teachers described units ending in tests as opposed to alternative forms of evaluation. Most students described the teacher managing a review class to "go over the major topics" (S019)

and continuing until students ran out of questions: “A massive amount of review [which] gets great feedback because [students] can become comfortable with topics they may have forgotten” (S009). However, some students described teacher review as too managed: “I wish we had more of a discussed review, because that's how I learn.” Many described being given a review assignment or practice questions and some received study guides: “We go over … what the test will be (matching, multiple choice, essay question, short answers) as well as do [examples] that will help us to understand the questions” (S052).

Many students who described their own Unit End practice described first making sure they had all the notes: “Make sure I have everything for studying, read it all over, keep looking it over, and write over some stuff” (S110). They then studied, reviewed, reread, rewrote, reread, and/or memorized notes to refresh their memory (S137) while some also “answered questions that were given in class” (S085). In a specific question about how students use notes, answered by all Exploration Phase (EP) students (n=171), the most popular choices were to “rewrite notes or create a saying” (40%) and to “put notes in a logical order or sequence” (25%). Some students also described completing review assignments, reading the textbook, and/or asking questions at Unit End: “I read over the whole section in the text twice and then read over my notes” (S081).

Course End

Most high school (HS) courses in Newfoundland Labrador (NL)end in the month of June, however some finish at midterm by doubling the scheduled time in each cycle. This facilitates the completion of a course and its prerequisite in the same year. Course End was defined as the last cycle or few classes of a course after completing the required units.

For most teachers (Table 14), Course End was a time to evaluate student accomplishment of curriculum outcomes though an examination, especially for Level III or exit courses. Concurrent with concerns about the exam, some teachers described a need to finish the last unit, plan the remaining time, and/or deal with

missing assignments: “Frequently you're finishing the course not long before the [exam]” (T48); “Students can hand in assignments on the last day of classes” (T58). Most prepared students for the exam by using days or weeks to review the course, depending on whether the exam was public, comprehensive, on the second half, or on the final chapter: “I schedule my year to save two weeks to prepare for the final” (T48).

Table 14

Course End Practices

Teacher Practice	Student Practice
held a comprehensive or major course review.	**studied all notes and/or the textbook.**
set after-school tutorials.	***asked the teacher questions about specific topics and/or unfamiliar notes.***
went over and/or posted old exams.	***reviewed previous tests and/or assignments.***
worked with students to develop test-taking skills.	*reviewed in class and listened to the teacher.*
reminded students to hand in assignments or work.	*organized my time by making a schedule and/or starting early.*
gave an extra-credit or alternate assignment opportunity.	*did the same as for the unit test just more intense.*
worked with students to develop time management skills such as a timeline for unit review.	*stayed after school for extra help.*
dealt with student concerns.	*studied with a friend.*
asked for student reflections or suggestions on the course (e.g., what was interesting? enjoyable?).	got the correct answers for tests and quizzes.
completed test and/or activities of the last unit.	made my own review guide, test, and/or jot notes.
corrected the final exam.	asked for and completed extra assignments.
corrected the final assignment, project, or performance.	asked for a study guide or about important sections or terms.
had a course exam before the public exam.	tried to relax while studying (e.g., played music, took breaks).
provided students with final mark.	
handed out study guides.	
handed out review sheets.	
developed the course exam.	
encouraged students to view learning objects.	
said goodbye and thanked students.	
developed a supplementary exam.	
nothing - that I can think of.	

Note. Teacher Practice - Please list your practice which may be unique to the **last cycle of a course** (e.g., planning extra credit or "last chance" opportunities). Student Practice - What do you do during the **last few classes of a course** to get ready for the final exam (e.g., ask for a makeup assignment)?

The review was variously described as integrating concepts from different units, highlighting important skills and topics, and re-examining material “students may have had trouble with throughout the year” (T91): “A time for review of the things you've been trying to emphasize all year long; to strip away the extraneous and point out the things kids need to know; to focus on the skills that are going to be the most important” (T30). Many teachers described a teacher-led review with teachers pointing to topics while a few described student-led “question periods

where students come prepared to ask questions on material that they may still find a struggle" (T64). Some teachers used "old" exams to help students develop test-taking skills such as reading for information and choice: "I print off old exams … [and] students are given an opportunity to … figure out the basic format as well as the type of questions they will be asked" (T35). Many described supplementing review classes with after-school tutorials.

Most students studied for a final exam at Course End. Most studied notes and the textbook, many reviewed unit assignments and tests to "see where mistakes were made" (S118), and some asked for study guides and "sample tests from previous years" (S095). Some students described gathering and organizing these materials: "[I] use a full day or two after school to completely re-organize [and] make sure I have the complete set of notes" (S096). Many asked the teacher questions if they were unsure of anything: "[I] write a list of questions … and get the correct answers for everything" (S094). Some sought extra help from friends to ensure they had not missed something important and others planned study schedules: "I try to start studying a month before … rather than cramming" (S122).

Course Close

Course Close was defined for teachers as the time between the last lesson and the start of holidays or the next semester. It was defined for students as the time between the final exam and the start of holidays because a separate question was asked about Course Exam Preparation.

Grading final exams or course projects was the focus of almost all teachers at Course Close (Table 15) although some also described supervising exam writing. Most teachers described using the time to ensure "all missing assessments were handed in" (T15) and late work corrected. Some teachers described being available to students for "last minute" questions and specific concerns: "I've had students come in to go over the final exam … when we do they've probably learned more about the content" (T47).

After the exam, teachers described analyzing "course results such as overall averages, means, etc." (T60) or "re-assessing the final exam through item analysis … [and] student misunderstandings" (T74-science). Most described reflecting on the evaluation scheme and if it "truly represented what a student mastered in a course" (T85), and adjusted marks if warranted: "Soul searching about students who are on the edge of success and failure, [and] what to do with the kids who struggled" (T30); "If I have a student who … really pulled it together later I might re-evaluate his mark based upon improved performance" (T48).

Table 15

Course Close Practices

Teacher Practice	Student Practice
graded course exams and/or projects.	**saved my notes for next year.**
correct late assignments.	***saved my notes for a course.***
reflected on the course and/or practice.	***threw away or destroyed notes.***
reflected on the evaluation scheme and/or student marks and adjusting if warranted by student improvement.	***nothing - really.***
supervising exams	***saved my notes for a friend or relative.***
organized and/or ordered resources for next year.	*burnt my notes.*
reflected on course units, topics, and/or concepts.	*attended a party or celebration.*
submitted marks or progress reports.	*threw away notes if I didn't need them.*
corrected the final exam or project.	relaxed and rested.
made myself available to deal with student concerns.	hoped or prayed for a good mark.
nothing – waited: "After exam, it's done."	reviewed exam questions I had trouble with.
performed item analysis on final exam results.	
reflected on the course timeline and/or outline.	
thought of holidays and recovery time.	
thanked school teams for their support.	
continued ongoing reflection on effectiveness.	
prepared a supplementary exam.	
attended year-end department meetings or professional development.	

Note. Teacher Practice - Please list your practice associated with **the end of a course after you have finished teaching students** (e.g., re-evaluating course resources). Student Practice - Is there anything special you do at the **end of a course after the exam is over** (e.g., save notes for next year)?

Most teachers reflected on course content, their practice, and/or the timeline: "[I] look back to see which activities worked well and which were ones I may not use again" (T20); "[I] review concepts that students struggled with and look for ways to improve teaching" (T99). Some teachers described such reflection as an ongoing rather than a year-end process. Many also considered course resource

needs (e.g., chemicals, videos). Uniquely, DE teachers described reflecting on the support of F2F teachers, the "local teaching staff" (T39), and thanking them.

Most students described the time after exam writing as a time to organize, weed, and/or relax. Many saved notes for a specific course, friend, or relative: "I keep the notes if I have another level of that course to do or if someone I know … wants to read through them" (S112). Physics, chemistry, and biology were specifically mentioned and valued: "I save all of my notes from 1st level chemistry for when I am doing 3rd level chemistry" (S095). Many students also threw away or destroyed notes: "[I] burn all the notes and exercise books as soon as I know I passed and won't need them for the following year" (S093). Many indicated they did "nothing" after the exam, while some relaxed, celebrated, "got ready for the summer, [or] wondered about exam marks" (S096).

Other Long-term Situations and Practices

Other long-term situations and practices are those which extend throughout the year across unit boundaries. For example, 31% of student participants (n = 171) described attending multi-course classes and had to develop practices to accommodate these long-term "normal" situations. Fourteen percent were F2F multi-course situations, nine percent were F2F classes with DE students on the side, and eight percent had both multi-course situations and DE students.

Long-term teacher practices were categorized (Table 16) as relating to course resources, student skill development, or other aspects. Resources included both people such as guest speakers and materials such as videos or handouts: "When free time arises, I like to check out web resources to look for videos and simulations that may help get abstract ideas across to students" (T41); "[I have] scheduled guest speakers from post-secondary schools, colleges, the Armed Forces, Coast Guard, etc." (T72). However, most teacher descriptions suggested inviting guest speakers was a to-do list item rather than something already accomplished. As examples of long-term practices categorized as "other aspects,"

a few teachers described managing the course timeline, getting to know parents, or providing course guidance.

Many teachers listed efforts in student skill development. Some described creative writing practice to have students "generate longer, more developed answers" (T14). Some described "developing problem solving, critical thinking, and life application" (T18) skills so students could learn to "view things analytically, question [scenarios], and not take things at face value" (T31). A few teachers claimed to promote organizational, study, and/or test-taking skills: "We coach writing exams all year long" (T21). Some described efforts to build good teacher-student and teacher-class relationships based on mutual respect: "I find that building a rapport with my students is extremely important in getting [them] to accept what I am trying to get across" (T86); "Showing respect for other peoples' opinions … like when I teach World Religion, tolerance" (T31). A few described efforts to promote student self-confidence and "life long learning" (T08): "Presentations to help them with their self-esteem" (T74); "I try to help them become aware of doing things on an ongoing basis" (T48).

Table 16

Other Long-term or Course Practices

Course Resources	Student Skill Development	Other
gathered and used course resources.	***promoted learning skills such as problem solving and/or study.***	promoted curriculum connections to culture or the environment.
found and scheduled guest speakers.	*promoted long-term preparation and administrative practices such as making a timeline.*	nothing - I can't think of any.
gathered resources such as videos.	*promoted student awareness of others and/or self-confidence.*	managed curriculum coverage and timeline.
planed a field trip and booked facilities if necessary.	problem solving skills.	provided course selection or guidance services to students.
planed special projects such as multimedia presentations.	awareness and/or respect for others.	worked collaboratively with other teachers.
planned events such as a science fair, Mole Day, Math Day.	writing and expression skills.	varied - by class, course, or topic.
scheduled rooms for activities.	self-confidence and focus.	developed new evaluation items.
	performance and test writing skills.	built better relationships with parents.
	organization and/or study skills.	availed of school district support and personnel.
	subject-specific and/or technical skills (e.g., laboratory skills)	refreshed my subject area expertise or examined external data.
	group work or collaboration skills.	investigated cross-curricular connections.
		checked student access to online resources and recorded content.

Note. All data originates from a Teacher Practice question - Please list **other practices** you have which may be **long-term in nature** but not particularly associated with one of the aforementioned timeframes (e.g., scheduling guest speakers).

Only sixty-nine of eighty (86.3%) teachers responded to this question and hence, it had the most missing responses of any in the Teacher Description of Practice (TP) project (Table 7). Email conversations revealed some struggled because the question went beyond units, course objectives, and "outside the box."

3.4 Short-term or Lesson Situations

Short-term or lesson situations included Class Preparation, Class Start, the Main Part of Class, Class End, and Special Classes. Class Preparation included preparation by participants which took place outside the school, such as homework. Class Start and Class End were defined as approximately the first ten minutes and last ten minutes respectively. The Main Part of Class was that time on task when participants focused on curriculum objectives and outcomes. Special Classes were those that did not follow normal routines.

Class Preparation

Class Preparation was defined as participant practice outside class time (e.g., after school) to complete work or get ready for the next class. This was the homework question. Preparation time given during classes and study periods was addressed in the Main Part of Class. Students who described teacher practice were asked to note teacher comments about their preparation. This proved to be unsuccessful as the question had the lowest (27.0) words per response ratio of any answered by student observers (Table 8). The question was reframed for the *Development Study (DS)* as evidence of Teacher Preparedness.

Teachers (TP project) described the amount of time taken to prepare lessons as dependent on experience and the immediacy of other duties (e.g., school administration): "Planning is a huge task [because] I am a Principal teaching 18 different courses in multi-grade situations" (T90); "Very little [because] I've been teaching the course for so long I know what the next session is" (T52). Most

teachers (Table 17) described planning a strategy, instructional approach, class outline, or order of events: “[I] look at the group as a whole and their academic ability” (T62); “[I] consider individual differences, plan minimal down-time, and allow time for student-centered activities” (T94). Many reviewed their previous lesson and what had been accomplished, needed to be reviewed, or had been omitted: “[I] constantly look at my outline … what I got through and what I didn't get through” (T17); “If I finished up or if I need to … spend a little bit of time and polish it” (T47). Teachers also described correcting student work in an effort to keep “up-to-date” (T63) and return evaluations in a timely manner.

Table 17

Class or Lesson Preparation Practices

Teacher Practice	Student-described Teacher Practice	Student Practice
photocopying.	***I could not answer the question.***	**completed assigned homework.**
planed a teaching approach or strategy.	***notes were ready.***	***reviewed notes of what was covered in class that day.***
prepared notes and/or slides.	***had a lesson plan every day.***	***long-term work or study.***
prepared assignments and/or activities.	*photocopies were ready to go.*	*completed assigned readings.*
prepared materials and/or equipment.	*knew the plan for the next class.*	*packed my books to bring to school.*
reviewed or checked next lesson.	*had assignments or homework ready.*	*worked on unit assignments.*
reflected and continued from the last class.	*appeared to be unprepared for class.*	*studied for tests.*
prepared assignments.	*they haven't said anything in class.*	took a break after school or in the evening.
gathered new resources.	appeared to be knowledgeable.	read ahead of the teacher.
booked and/or set up the projector.	something was written or posted before class.	packed my books to take home.
read the curriculum objectives.	used gathered websites and/or videos.	nothing at all.
prepared a class activity.	the equipment was ready before we arrived.	made up practice questions.
did long-range preparation.	he said he was.	checked the schedule for next day.
changed the planned lesson based on student interest and/or news.		I'm employed but did my homework after.
read the textbook section.		
corrected assignments.		
nothing - I've been teaching so long.		
last-minute preparation checks.		
arranged the classroom.		
looked at my schedule.		

Note. Teacher Practice - Please list your **preparation practice** before the teaching of a typical class (e.g., planning delivery approaches, photocopying). Student Journal - What does your teacher do **to prepare** for teaching class? (e.g., planned an in-class activity). Student Practice - What do you do **after school, in the evening, or the next morning** to get ready for classes the next day (e.g., assigned readings)?

Many described preparing notes, slides, activities, and/or assignments: “Quick look at outcomes … [and] build on notes from previous years” (T76); “Ensure notes are prepared and … cover the material” (T43); “[I] highlight important

points based on curriculum guide" (T35). Some teachers described preparing computers or video equipment and gathering supplies such as graph paper, basketballs, calculators, and chemicals: "I use [a laptop] to access course notes online" (T71); "I like to see if any recent music relates to the content" (T41). The practice listed by most teachers was photocopying: "[It] would be done in the morning, recess, lunch time, and after school for the next day" (T82). DE teachers described equivalent practices (e.g., locating resources) and benefits of working digitally: "I have a digital record of [where I left off and] I go through a PDF copy of last day's notes" (T47).

Thirty-three percent of students who observed teachers (SJ project) felt they could not describe teacher preparation: "I have not heard this teacher mention what he does to prepare" (S009 on T47); "It's an online class so I don't really know what he does" (S006 on T49).

Many students observed that teachers had notes or a lesson plan ready every day: "I think he writes his notes in an exercise book and copies [them] on the board for us" (S037 on T71); "He always [has] his lesson plan book out … and looks at it first before he starts" (S067 on T84). Some believed gathered resources, photocopies, and assignments were evidence of being prepared: "He goes online and looks for interesting things" (S036 on T19); "He has assignments … printed off before class" (S044 on T84). A teacher was also considered to be prepared when the equipment was set up and the class started right away: "In the gym, he sets up the equipment before we get there … In the classroom, … he'll set up the overhead projector" (S069 on T23).

Some students believed a knowledgeable teacher was prepared: "[T24] knows what he's talking about and has obviously planned his [choice of] problems 99% of the time" (S062 on T24); "I've heard him say he reads [the section] over so he knows what's important" (S037 on T71). Some noticed teachers who could describe their next class: "[He] goes through the topic briefly so we know what we are going to learn" (S030 on T84); "He always tells us a class in advance if we are doing an activity" (S017 on T30).

Most students who described their own practice (SP project) ensured they took the correct books home: “I pack up my books I'll need … [and] make sure I know what's for homework” (S096). Many described an after-school activity, break, or employment before homework: “Afternoons are for myself unless the homework will take a long time” (S093); “I’ll do something relaxing or fun” (S122); “I usually work until nine so I really don't get a chance to do anything [until] I get home” (S121). Some described dividing homework into after-school, after-supper, and periods: “Readings after school, shortly after supper I do the writing, [and] evenings I study and review what was done that day” (S132).

Most students described reading notes and completing work with a short-term perspective to understand current topics: “I go over the material covered that day and make sure I understand it” (S083); “I try to read ahead so that the next class will not be confusing and I understand the concepts being taught” (S082). Only a few students mentioned long-term study or assignments.

Class Start

Class Start was defined as the first ten minutes of a lesson from the entrance of the teacher or first student to when the teacher introduced new topics or concepts. Many teachers described it as brief, short, quick or “not a major production” (T09) as they tried to get to the day’s lesson right away.

Many teachers (Table 18) described starting class with an “icebreaker,” “rapport-builder” (T89), or “two or three minutes of non-course related conversation” (T38), such as “sport scores from previous night [and] give students an opportunity to tell their story” (T36). Most lead a five-minute review of last class which many described as a check on student understanding: “I ask students what we had covered … and expect all students to be able to answer” (T85); “[I] pretend I don't know what I'm doing and have them tell me what I want them to know” (T14); “If it ends up being monologue I'll move on” (T31).

Many teachers managed homework, collected assignments, and/or “make announcements regarding [test or due] dates” (T40). Many asked and answered

questions: “If [students] had a problem … or were confused” (T61). Many teachers present the lesson plan to “get [students’] attention focussed on the task” (T68): “Students like to have a framework or general idea of what the class will entail [and] they should be able to tell … when the class is winding down” (T82). In multi-course classes, teachers may “set work for one group, … assign questions, and then begin work with another group” (T90). Distance education (DE) teachers described waiting for students to show up for class or log in from multiple sites, assigning software privileges, and performed audio checks.

Table 18

Lesson or Class Start Practices

Teacher Practice	Student-described Teacher Practice	Student Practice
held a quick review.	**reviewed or reminded us of last class.**	**organized books and materials.**
checked student understanding of the last class.	***took class attendance.***	**listened to teacher.**
welcomed students and/or got their attention.	***checked or collected homework and assignments.***	***listened to or asked about the teacher’s plan.***
presented the plan for today.	***welcomed students maybe by telling jokes or conversation.***	*talked to friends.*
checked or collected homework or assignments.	*presented the lesson overview or the plan for the day.*	*waited for the teacher to start.*
took class attendance.	*announced due dates.*	*asked about or passed in homework.*
welcomed students maybe with an off-topic conversation.	*introduced a new topic and/or assigned work.*	*wrote notes.*
had a warm-up activity for new topic.	*had a warm-up activity for new topic.*	*listened to attendance.*
reviewed by questioning students.	*wasted no time and started right away.*	got my notebook organized.
introduced the new topic.	got student attention and settled the class.	nothing - daydreamed.
answer student questions about homework and assignments.	answered questions about homework and assignments.	asked the teacher a question.
had a review activity.	nothing different from the Main Part of Class.	read or reviewed assigned work.
reviewed by discussion.	does not often review.	listened to the teacher settle class.
got students attention and settled the class.	set up the projector.	found a good seat.
checked for student materials.	played music.	depended on the teacher.
made announcements & due dates.	left class to do something.	depended on the class.
waited for students to arrive.	returned assignments.	
checked class access.	showed up late.	
handed out materials for class.		
asked students to open textbooks.		
handed out notes to students absent the previous class.		

Note. Teacher Practice - Please list practice which may be unique to the **first ten minutes** of a typical class (e.g., reviewing important concepts from the previous class). Student Journal - What does your teacher do during the **first ten minutes** of most classes that is different from the rest of class time (e.g., review of last class)? Student Practice - What do you do during **the first ten minutes** of most classes (e.g., listen to the teacher's reason why the class is important)?

Many students observed teachers welcoming students, telling jokes, and starting casual conversations at Class Start: “We joke around for a few minutes so we … can focus for the rest of the class” (S062 on T24); “He usually tells us a story

about something that happened to him [and] most of the time it has something to do with the unit" (S005 on T51). Proportionately, more students than teachers recalled attendance and the teacher having to settle the class: "(T57) usually gets us to stop talking so he can tell us what we will be doing" (S018 on T57).

Most students experienced teachers reviewing the previous class: "[He] goes through last [class] briefly … a quick review to refresh our memories" (S030 on T84); "[He] asks if we have questions about the previous class" (S050 on T76). Many observed teachers checking homework and/or collecting assignments: "First he may check homework, tally it, go to the board, and ask us if there were any problems" (S044 on T85). Proportionately fewer students than teachers recalled the teacher explaining a lesson plan: "We talk about what we're going to do - whether it's the same thing or a new topic" (S003 on T81); "It follows the same pattern - he introduces new topics, reads and discusses them, then assigns questions … we always know what to expect" (S053 on T06).

At Class Start, some students described finding a good seat, talking to friends, listening for attendance, and/or waiting for the teacher to start: "I usually talk to my best friend but if my favourite teacher comes in, then I'll listen" (S081); "In some classes the teacher tries to get students to settle down so I wait in my seat and talk to the person near me" (S096). Most unpack and organize materials: "I get myself organized … so I do not have to pick through my book bag during the class" (S082); "[I] prepare my supplies (e.g., text books, pencils) … [and] a new page in my exercise" (S132); "[I] open my notebook to a new page and date it" (S087). Most students listened to the teacher's explanation "of what was going to be done in class" (S122) and many asked questions.

The Main Part of Class

The Main Part of Class was defined as time between the Class Start and End, topic introduction and summary, or consideration of new ideas and the impending bell. It was the time on task when participants focused on objectives and outcomes. Some teachers believed their practice depended on the students,

topic, or purpose: “I may want to learn what students are thinking [or] creativity may be the focus” (T59); “Teacher-led - I don't consider myself a facilitator however I'm conscious … [of] how kids feel … [so] I try to mix things up” (T30). This question had the highest (61.4) words per response ratio of any Student Journal (SJ) project response and the lowest (14.5) words per response ratio of any Student Description of Practice (SP) project response (Table 8).

Many teachers described a similar sequence of practice for the Main Part of Class: an explanation with summarizing notes, visuals to reinforce concepts, a teacher-led discussion to question students, individual or group guided practice, and circulation to monitor progress: “Chalk-n-talk at the beginning then questioning to keep students on track, individual seat work [and] circulating” (T26).

Some teachers (Table 19) started new topics by moving from a lesson plan into questioning or an introductory activity (e.g., discovery of need): “[I] start by asking what they know about a topic - probing, clarifying, elaborating” (T17); “[I] ask for input … and let them see what they offered may be related … to the topic/lesson” (T51). Most teachers described a lecture to introduce new material: “Lecture for 10-15 minutes … a Johnny Carson monologue” (T56); “My main approach is chalk-and-talk even though I'm [a DE teacher]” (T48).

Many teachers used textbooks, diagrams, videos, and/or resources to supplement explanations: “I refer to the textbook when appropriate but make sure each student has a good set of class notes” (T85); “I create 'fresh' drawings to keep students on task as I talk” (T51). Most summarized during or after the explanation with notes: “I like to explain when reading from notes” (T61); “I write notes … [and] dictate important points” (T71); “Some days’ notes occupy a class and … you have to be ‘buddy up front’” (T21). Proportionately more F2F teachers described using Internet resources while DE teachers relied on developed content.

Most teachers led discussions, asked and answered questions, and gave examples during their explanation to ensure students understood the material: “[I] pull in as many people as possible” (T02); “I make sure students feel free to ask questions any time” (T85). Some discouraged early discussion: “I find it easier to

do all the talking [first to] cover everything [because] when the kids start discussions we can get off on a tangent" (T22); "After each section of notes I clarify … by using examples they would be familiar with" (T92).

Table 19

Practices During the Main Part of the Lesson or Class

Teacher Practice	Student-described Teacher Practice	Student Practice
gave notes on the topic.	**gave notes on the topic.**	**asked questions.**
drew diagrams.	**questioned student understanding.**	***paid close attention to explanations.***
lectured to introduce topic.	***drew diagrams on the board.***	***asked questions to understand.***
tried resource-based teaching (e.g., video, websites).	***read notes to us like a lecture.***	***copied teacher notes and/or made my own notes.***
held a discussion on the topic.	***did questions and examples.***	*paid attention to try to understand.*
gave individual seatwork or guided practice.	***assigned individual seatwork or guided practice.***	*made my own notes.*
did questions and examples.	*lectured to introduce the topic.*	*asked questions of a friend.*
used visuals in the lecture.	*posted or handed out notes.*	*completed requested examples.*
questioned student understanding after the lecture.	*circulated among us to monitor seatwork or group work.*	*asked questions after class.*
set a hands-on or resource-based activity.	*used the textbook.*	reread my notes.
set a group or pair activity.	*related the topic to his experiences outside school and/or current events.*	nothing or I just sat there.
related to the topic to my experience in life or events outside school.	*held a discussion on the topic.*	checked answers.
depended on students and the class.	answered student questions.	looked at diagrams or visuals.
circulated to monitor seatwork or group work.	assigned group or team work.	related information to everyday common things.
help students develop learning or relationship skills.	used visuals in lecture.	borrowed extra resources.
used the textbook in the lecture.	developed a positive environment.	
used the Internet in the lecture.	assigned an individual hands-on activity.	
assigned a research or discovery learning activity.	questioned students before the lecture to determine background.	
questioned students before the lecture to determine background.	helped students develop learning skills.	
demonstration using a model.	did a demonstration and maybe used a model.	
assigned a hands-on activity.	assigned a research activity.	
developed a positive environment.	held a private chat.	
distributed class notes.	shared an application.	
attended to special needs.	depended on the topic.	

Note. Teacher Practice - Please list practice, approaches, and strategies you commonly use **during a typical class** (e.g., drawing diagrams to explain concepts, helping students recognize their abilities). Student Journal - **During the main part of a class** teachers may do a variety of things to teach students (e.g., write notes, draw diagrams, ask questions). What did your teacher do? Student Practice - What do you do **during classes** to try to understand what is important for that class (e.g., ask questions)?

Many teachers followed discussion with individual (50%) or group seatwork (25%), or activities (25%), to reinforce new concepts and practice skills. Some "walked around" to monitor progress, prompt participation, or answer questions: "[I] have them go off to do something … - create a visual, research, something hands-

on” (T31); “After a time, I come back to the board and address [common] problems” (T09).

Uniquely, DE teachers described being able to provide students with anonymity through text and voice, and believed this led to increased participation, decreased embarrassment, and/or fewer misconceptions: “Students are less inhibited ... [and] don't have to worry [about peer pressure] … [so] I don't have to force as many to contribute” (T47); “I try to question every student … [and] everyone can respond [because] no one can see the answers of others” (T40); “Students [can] answer privately … with no [open] acknowledgement of incorrect answers” (T43).

The most common teacher practice noticed by students was explaining, presenting, reading, writing, handing out, posting, or giving notes. Many students perceived teacher explanations of topics to be explanations of notes: “Every ‘half-a-board’ he stops to explain notes” (S035 on T84); “[He] explains notes and makes sure there is a general understanding” (S078 on T89); “[He] reads them and gets us to write down key points” (S030 on T84). Some also described teachers using the textbook: “[He] will skim the text, emphasize main points, and explain everything … according to the outcomes” (S022). Many teachers were observed using diagrams and/or examples: “He writes notes and draws diagrams so we can visualize what is happening” (S025 on T84); “[He] uses examples students can relate to and are often funny” (S035 on T84). One teacher was described encouraging students to replace notes with understanding: “His whiteboard is … just workings. He mentioned that taking notes was a waste of time and we didn't need them” (S033 on T47).

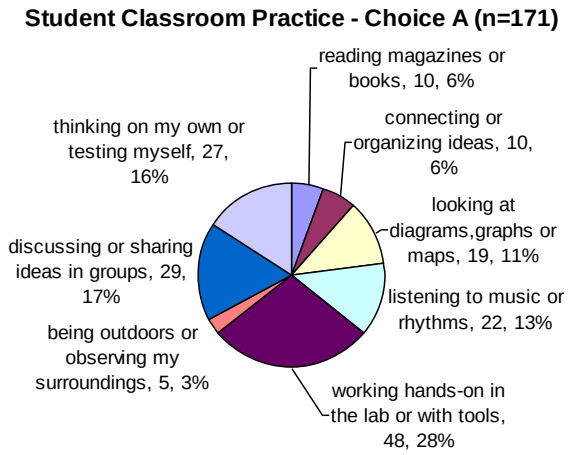
Most students described teachers managing understanding through questions: “He's always asking if we understand … to understand what we are thinking and misunderstanding” (S045 on T57); “He asks people to give him answers so the class can flow well and he knows who is paying attention” (S009 on T47). Many described teachers assigning questions for practice: “He does examples, … gets us to help solve them, … gets us to do a couple on our own,

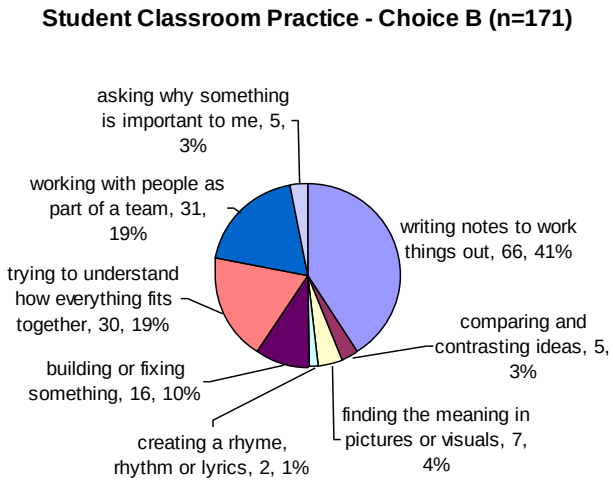
and corrects them" (S006 on T49). A few DE teachers were described using private chat or text to protect student anonymity or prevent copying "someone's answer" (S033 on T46).

Many students described listening or paying attention as the most important practice. It helped them "understand what [the teacher] was saying" (S105), to "think about why it is important" (S136), and/or "grasp the concepts" (S082): "I just sit there and take in all the information" (S084). Some students realized teachers highlighted important information: "If a teacher repeats [something] more than once it tends to be important" (S132); "[He] normally speaks louder when it's important" (S085). Many copied or made notes: "[I] write [whatever] is on the board unless it isn't necessary" (S093); "[I] make a few notes of my own to grasp concepts" (S090).

Many students described asking questions: "Anything I do not understand I make sure is completely clear" (S082); "I ask if I am stuck or don't understand the concept" (S123). Some preferred to let classmates ask the questions: "Most of the time I sit back and listen to what everyone else is asking" (S121). Others preferred to ask classmates "if the teacher is busy" (S130) or they are "too scared" (S081). Some students described persisting to ensure their questions were answered: "If … I didn't get to ask during class I stay back and ask then" (S095).

All students who participated in the Exploration Phase (EP) of the research program (n = 172; including SP, SJ, and other projects) were asked to indicate (i.e., one of eight for three sets) their preferred learning practice (Figure 6). Forced-choice indications of practice were understood as different from open-response descriptions of managed classrooms (Table 19); however, the comparison was interesting. Many students preferred to write notes to work things out (Set B, 41%) and/or work hands on (Set A, 28%) as their learning practice. Some preferred to solve brain teasers or problems (Set C, 23%), try to understand how everything fit together (Set B, 19%), work as part of a team (Set B, 19%), discuss or share ideas in groups (Set A, 17%), think on their own or test themselves (Set A, 16%), and/or teach someone else (Set C, 16%). They rarely chose to create a rhyme (Set B, 1%), be outdoors (Set A, 3%), or ask why something was important (Set B, 3%).





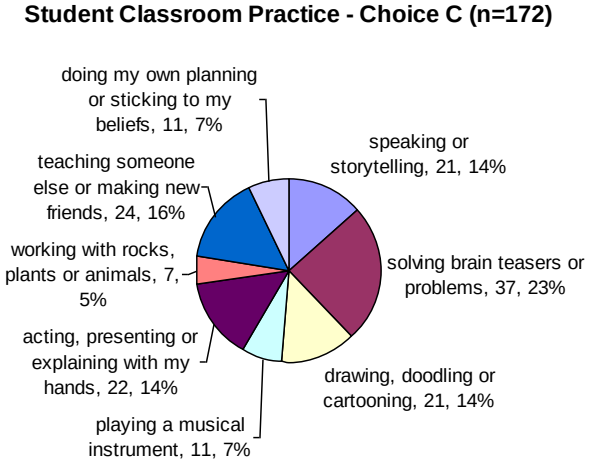


Figure 6. Student-preferred learning practice.
Students who completed the Exploration Phase (n = 172) were asked to indicate their preferred learning practice during the Main Part of Class by thrice choosing one of eight multiple-intelligence style responses. The most popular choices for preferred practice were writing notes, working hands-on, and solving brain teasers or problems. The least preferred practices were to create music, be outdoors and reflect on meaning.

When specifically asked about group work (i.e., chose one of eight), many students preferred to help organize the group (27%) and some liked taking notes and writing the report (17%), finishing their part alone and then sharing it (15%), collecting and analyzing data (13%), doing something that involved moving around (13%), or creating graphs or slides (10%). Only a few preferred to add music to the presentation (4%) or link the presentation to nature (1%). Students also suggested in open-response that they liked to "talk things through" (S051), "listen to the rest of the group" (S201), "add ideas or suggestions" (S093), "make it interesting" (S128), or "do whatever no one else wants to do" (S122).

When specifically asked what they did in class when they were bored (i.e., choose one of eight), many students indicated they preferred to doodle or make sketches (41%) while some talked quietly to friends (20%) or gazed out the window (10%). Only a few indicated they tried to figure out what was important (9%), write ideas or stories (7%), hummed or listened to music (5%), moved around in their seat (5%), or solved puzzles or problems (3%). Students suggested in open-response that they also liked to work on "review sheets for the next test" (S044), "think about upcoming projects" (S053), "catch up with work in other subjects" (S083), or "ask to go get a drink" (S075).

Class End

Class End was defined as the last ten minutes of a lesson or the time after the teacher had decided not to introduce or further explore curriculum topics. Some participants described "utilizing every second" (T36) and/or working until the bell but, "sometimes the bell is on you before you realize" (T14). Others stated that practice depended "on the first 50 minutes" (T39): "A lot of factors impinge on the last ten minutes" (T30). Most DE teachers described a confused Class End because some students logged out early, school schedules were unsynchronized, or they taught in both Newfoundland and Labrador time zones.

Teachers commonly described students (Table 20) working on assigned work when they realized class end was near. Many answered questions privately,

encouraged question completion, and/or assigned unfinished work as homework. Most teachers took control by reviewing the lesson to “highlight important concepts” (T94), “undo misconceptions” (T63), and/or “tie everything together” (T09). Many described this review as a monologue but some described it as a question period.

Table 20

Lesson or Class End Practices

Teacher Practice	Student-described Teacher Practice	Student Practice
reviewed or summarized lesson.	**reminded the class of upcoming due dates.**	**wrote down homework.**
assigned homework.	**assigned seatwork or homework.**	***finished assigned seatwork or started homework.***
reminded the class of upcoming due dates.	***outlined or discussed the next class.***	***put away books.***
outlined or discussed next class.	***assigned seatwork or homework with time to work on it.***	*talked to friends.*
encouraged students to complete guided practice or seatwork.	***had a lesson review or summary.***	*discussed the next lesson with the teacher.*
reviewed by answering student questions.	*gave free time and/or had an off-topic discussion.*	*reviewed and/or listened to teacher give a review of the lesson.*
finished or clued up notes.	*encouraged students to complete guided practice or seatwork.*	*prepared for my next course.*
worked until the bell rang.	*nothing special or different than the Main Part of Class.*	*waited for the bell.*
it depended on the class.	*reviewed the lesson by answering student questions.*	clued up or made sure all notes were copied.
corrected seatwork.	finished or clued up notes.	nothing special or different than the Main Part of Class.
circulated to check seatwork.	worked until the bell rang.	asked the teacher questions about the topic or lesson.
discussed unit assignments.	corrected seatwork.	listened to the teacher review of topic or lesson.
gave students free time and/or had an off-topic discussion.	praised the class and/or said good-bye.	reviewed the topic on my own.
reminded students of things to think about at home (theme, news).	gave time to work on unit assignments.	stayed behind after the bell.
questioned student understanding.	put away materials.	
helped students to develop learning and/or study skills.	talked about things to think about.	
assigned unfinished seatwork as homework.	helped students develop learning skills.	
updated my agenda or the course website calendar.	prepared for their next course during seatwork.	
held fun activities.	let students pack their books.	
let students pack their books.	it depended on the class.	
praised the class and/or said good-bye.		
reminded individuals of assignments and due dates.		
set the lesson in a unit context.		
changed my plan for the next lesson.		
collected homework or assignments.		
brought groups together.		
lost students early.		
changed the class environment.		
returned corrected assignments.		

Note. Teacher Practice - Please list practice which may be unique to the **last ten minutes** of a typical class (e.g., discussing deadlines for upcoming assignments). Student Journal - What does your teacher do during **the last ten minutes** of most classes that was different from the rest of class time (e.g., discusses deadlines for upcoming assignments)? Student Practice - What do you do during **the last ten minutes** of most classes (e.g., write down homework the teacher expects done)?

A few teachers asked students to review the lesson: “[Study is] necessary to learn, you've got to make sure you do it as you go” (T48). Many outlined the next class and reminded students of upcoming due dates “like the date of the next exam” (T91). A few teachers concluded by engaging students in off-topic conversations. PhysEd teachers allowed time for students to change clothes if necessary.

Most students described teachers assigning unfinished seatwork for homework: “He assigns questions … with about 15 minutes left” (S035 on T84). Many described a review of “what we learned in class” (S047 on T51) and/or a discussion of the next class “so [students] know where we are picking it up” (S051 on T84). Proportionately fewer students described teachers summarizing the lesson and more described continuing work, free time, or off-topic conversations: “[He] usually works until the bell … then reminds us of assignments or tests” (S012 on T24); “He might remind us of a test coming up or [an] assignment that is due” (S017 on T30). Some students witnessed a break at Class End and an opportunity to chat with friends if they had “been quiet or worked hard” (S034 on T56). One wrote that a DE teacher reminded them to watch recorded classes.

Most students who described their own practice noted homework: “I open my agenda and write in my homework … it keeps me organized!” (S115). Many described their effort to finish seatwork instead of having to take it home, so they could “do more things after school” (S113). Some finished copying notes “the teacher put on the board” (S095) but only two of 49 students described listening to a teacher summary. Some talked to friends and/or waited for the bell: “I have assigned work or the teacher is writing notes but I usually look at the clock and wait for class to be over” (S102). Many described putting away books, some with five to ten minutes left in class.

Special Classes and Study Periods

A “special class” or lesson was defined as one which was different from a regular class (viz., Main Part of Class) with an unusual start, end, and/or requiring preparation. Many teachers (Table 21) described not having special classes because they were not required, “time constraints” (T09), or an “overcrowded curriculum” (T36); or because they taught Language Arts, math, or in a “small school” (T53): “As a Language Arts teacher … the closest thing would be writing or research using computers” (T19). No DE teacher described a special or non-routine practice: “Not really applicable … or that I have encountered in the online environment” (T51).

In contrast, some teachers described activities such as “presentations in the gym if they're role playing” (T70), “Internet scavenger hunts” (T22), biographical research, science labs, writer’s workshops and “checking with peers” (T34), “script analysis” for plays (T14), speak-offs, speeches, “Art in the Art room” (T54), examining “artefacts (e.g., blacksmith gear)” (T38), and math games or manipulatives: “Mole Day!!! Students decorate mole cookies, sing mole songs, and play mole games” (T43). A few teachers described PhysEd trips to the “golf course, YMCA, school parking lot, [or] ‘in the woods’ snowshoeing, skiing, orienteering, skating, curling” (T08). Some described the need for themselves and/or students to prepare resources, materials, supplies, equipment, costumes, clothing, etc.

Science labs were the only subject-specific special classes described by a significant number of teachers: “A great deal of work has to be done … to have a smooth lab” (T74); “I check all materials [and] complete the lab myself to look for inconsistencies” (T82). Teachers managed labs by grouping students, ensuring the lab had been read, and explaining investigative, data analysis, and clean-up procedures: “Students would have been introduced to … expectations in terms of safety, proper etiquette, and overall responsible behaviour prior to entering the labs” (T82). For DE courses, “CDLI has hired an itinerant science teacher to assist getting labs done” (T48) however many “activities are [still] supervised by a local teacher [and] often outside of class time” (T39).

Table 21

Practice During a Special Lesson or Class

Teacher Practice	Student-described Teacher Practice	Student Practice
gathered and/or prepared materials.	**"there are no special classes in this course."**	**read the instructions.**
scheduled rooms and/or booked equipment.	*collect permission slips for trips.*	***read the instructions before the special class.***
"there are no special classes in this course."	*explained the lab or assignment during class.*	***listened to the teacher and/or asked questions.***
discussed or reviewed lab safety.	*"there are no special classes* ***because it's a*** *DE course."*	*finished assigned questions*
explained the activity during class.	*monitored student behaviour.*	*wrote-up something to prepare for the activity.*
arranged student supervision at school sites.	*answered student questions.*	*tried to understand the activity.*
reminded students to be prepared.	*prepared science lab equipment.*	*"there are no special classes in this course."*
monitored student Internet use.	assigned an in-class assignment.	*did the activity.*
"routine practice is special."	read safety rules and/or demonstrated lab safety.	*"we have asynchronous classes."*
dry run of an activity or lab.	worked on their own.	got materials ready.
monitored asynchronous classes.	nothing extra or different from a regular class.	got prepared.
ensured students saved their files.	explained an in-class assignment.	read instructions.
worked with students to analyze the results of experiments.		nothing extra or different than a regular class.
held writers' workshops.		finished the activity after class.
had trivia games or quizzes.		
collected permission slips.		
arranged a guest speaker.		
arranged to do art in the school.		
arranged speak offs or speeches.		
organized special days such as Mole Day.		
led sports field trips (e.g., skiing, hockey games).		
set a reading period in library.		
developed a "Plan B."		
collaborated with colleagues.		
tutored students after school.		

Note. Teacher Practice - Please list your practice associated with **special classes** such as science labs (e.g., checking science lab supplies, scheduling computer lab time). Student Journal - What does your teacher do during **special classes** such as labs, library periods, or field trips that is different from regular classes (e.g., collect permission slips before we can go on a field trip)? Student Practice - What do you do during **special classes** such as science labs (e.g., read the lab before classes)? If you are taking DE courses, please also explain what you do during asynchronous classes.

The data, email, and focus group conversations indicated many teachers thought of study periods as special classes however, study periods were understood by the researcher as routine practice in alternate locations. For example, some teachers used the library or computer lab as "a different teaching environment" (T30), "to get them out of the classroom, [or] to change the setting" (T31). Many described "Internet research" or projects as special or "hands-on" but others questioned the learning which took place. Alternatively, teachers described

monitored seatwork on assigned review, worksheets, questions, and/or examples: “I … assist where needed, [and] guide them to look for information” (T19).

DE courses were described as having three or four study periods (i.e., asynchronous classes) per cycle for independent study or to complete assigned work: “We're hoping that the schools themselves do the monitoring [but] … I do make the time available if they have questions” (T52).

Seventy-two percent (48 of 66) of students who observed teachers agreed that there were no Special Classes in their courses: “The teacher doesn't usually do anything that's different from regular classes” (S016 on T14); “I haven't had a class where we went anywhere or did anything special” (S050 on T78). Many students who described DE classes also denied having a special class: “It's an online class so we really don't have special classes” (S006 on T49); “Not applicable since we are online for the math course” (S052 on T52).

Only eight of 22 students who described science courses described having a lab by mid-November: “Classes in the labs are usually different … [because] we experience things using our hands which makes it a little more fun” (S043 on T57). Students described the teacher preparing equipment, discussing what students might learn, and/or joining experiments as a fellow researcher: “He gives us the materials and explains the procedure and safety” (S078 on T89).

Some students did describe study periods in the library or computer lab for work on assignments: “He'll review what we're supposed to be doing and leave us to do our work (S062 on T23); “We usually bring work with us and he makes sure the class stays quiet” (S051 on T84). Students in asynchronous DE classes also described completing assignments: “He gives us offline classes to work on assignments” (S041 on T51); “We can ask her any questions … to make sure we are on the correct path” (S024 on T43).

Fifteen percent of students who described their own practice stated, “I don't really have any special classes” (S126). A few suggested “I actually do nothing to get prepared for a special class [because] I'm just happy not to be doing the same old classroom work” (S084). Most students equated special classes with science

labs and described preparing by reading instructions, listening to the teacher, asking questions, and/or gathering materials: “Read the lab, ask the teacher to explain something a little better, [and] read every step carefully to ensure the correct procedure is done” (S132); “I always have pre-lab write ups done [and] make sure that I understand what is expected” (S082). No student description suggested the existence of study periods by using the words “library” or “computer lab” and it appeared no student considered these to be special classes. However, two students, probably because of prompting, described doing assigned work during asynchronous classes: “If offline, we usually have assignments to do” (S114).

3.5 Situational Perception

Participants were asked to reflect on and describe their perceptions of a good class, effective practice, ineffective practice, general or cross-curricular practice, personal strengths, and suggested changes. In addition, teachers described student practice and students described teacher practice. Students were also asked to indicate how often teachers inquired about their preferred practices. Forty-eight percent (83 of 171) indicated that no teacher had ever asked about their best way of learning and an additional 29% chose “yes, but not this year.” Hence, 77% had not been asked by their current teachers. Ten percent chose “yes, in one course this year,” 10% chose “yes, in some of my courses this year,” and only 3% (5 of 171) indicated that most of their current teachers had asked about their learning preference.

Satisfaction: A Good Learning Class

Teachers (TP project) were asked how they judged the success or effectiveness of a typical (viz., not special) class. Students who observed teachers (SJ project) were asked to note teacher comments about a “good class” and to give their evaluation of the same class. Students who described their own practice

(SP project) were asked to describe a good “learning” class, thereby leading respondents to focus on cognitive aspects.

Most teachers judged effectiveness based on student participation and reaction. Many (Table 22) based their judgement on comments: “My students have no problem speaking to me and would indicate if they understood or were struggling” (T82); “I asked [for] feedback - did they like it, were they confused” (T53). Some teachers described using eye contact or facial expressions: “I can tell from the look on their faces … if they're not interacting with me” (T14); “When I don't get a puzzled look … [or] when they're nodding that they understand” (T34). A few distance education (DE) teachers lamented not being able to see facial expressions: “It's a lot more difficult to judge … [when] you can't see their faces, you don't know if they're confused” (T52).

Teachers felt they had a good class when students appeared to be engaged or interactive: “If I don't get involvement then it didn't work” (T48); “The amount of time and the intensity … on task is a good indicator” (T58). Some qualified engagement based on the topic: “Some students are more interested in certain classes [and] want to pay more attention” (T87); “You get things that are less exciting and then they tend to live in their own world” (T54). Some teachers described success as beyond engagement: “[When] they are excited, work hard, and talk a lot … about what they did” (T60); “When the bell rings [and] … they were so involved they didn't notice the time” (T62).

Many teachers described student participation in discussions “on topic or related topics” (T22) or being “not afraid to speak up” (T99) as the best way to determine success: “Effectiveness arises for me when students are … involved in the discussions or activities” (T84) and when they relate new concepts to their own experiences or “everyday life” (T89). Many felt student ability to answer questions was very important: “If they give me the knowledge and answers I look for, then I know the material is sinking in” (T92); “When I call upon students to summarize a lesson and they can do it” (T48). However, some teachers reserved judgment until

the following class and “homework or assignment expectations are met” (T63): “When I review at beginning of class [and] they can remember the concept” (T04).

Table 22

Perceptions of a Good Class or Lesson

Teacher Practice	Student-described Teacher Practice	Student Practice
student comments or feedback indicated if it was.	**Student-described teacher statement or indication - Yes (75%), Maybe (5%), No (20%).**	***more teacher focus on discussions or explanations.***
students answered questions to confirm understanding.	**we covered the planned material.**	***more help understanding the topic.***
students appeared engaged, participative, or interactive.	***teacher felt we understood.***	*more visuals or diagrams.*
students asked questions.	***teacher believed we were engaged.***	*better, more, or fewer notes.*
students had fun, were excited or enthusiastic.	***no behaviour or discipline issues.***	*fewer behaviour or discipline issues.*
observations during seatwork.	*class was productive or work was completed.*	*more explanation with notes.*
students participated in discussions.	class was fun.	*More explanation than notes.*
students completed guided practice assignment or questions.	we have a small class size.	*relevant examples or stories.*
student facial expressions and/or body language.	we had good class discussions.	*more examples or demonstrations.*
students did well on later evaluations.	we like each other.	more variety in teaching approach.
the material was covered and planned goals were met.	we practiced teamwork.	a more dynamic teacher.
no student behaviour or discipline issues.	everyone showed.	more repetition of important terms.
students recalled concepts.	trouble students were absent.	every class was a good class.
students found the topic relevant.	**If the teacher felt it was a good class, did you? Yes (95), No (5).**	
a feeling or sense of accomplishment.	**we understood the topic.**	
students had homework done or attempted.	***no behaviour or discipline issues.***	
students asked for an assignment.	*class was productive and work was completed.*	
	class was fun.	
	class was interesting.	
	the teacher explained topic well.	
	the teacher was engaged.	
	the teacher didn’t rush through topic.	
	an scheduled activity went ahead.	
	my favourite subject	

Note. Teacher Practice - Please describe how you **judge the success or effectiveness** of a typical class (e.g., students ask a variety of questions). Student Journal - Has your teacher ever called a class **a good class**? Why do you think he believed it was a good class? Was it a good class for you? Why? Student Practice - When is a class **a good learning class** (e.g., when the teacher writes tons of notes on the board)?

Only 10% of the teachers described basing their perception of effectiveness on their own performance: “We accomplished most of the [goals I set for the class], or at least some of them” (T21). Just as many mentioned class management issues: “Little or no behaviour problems, so I'm not wasting time” (T21); “[I] don't have to be speaking over them” (T13); “The number of negative disruptions is at a minimum” (T84).

Seventy-five percent of students who observed teachers, and 90% of those who observed DE teachers, noted them praising the class or referring to it as good: “[T51] usually says ‘Well, this has been a good class b'ys’" (S047 on T51). Most students felt the teacher was happy because the planned material was covered: “We were productive and [finished] what was needed to be done and maybe even more” (S044 on T85). Others believed the teacher liked it when students were attentive and “the class flowed well” (S009 on T47): “Everyone was paying attention and there weren't questions about assignments to slow us down and put us behind” (S064 on T39); “There were no interruptions from the slackers” (S048 on T06). Many students attributed teacher satisfaction to perceived understanding: “Maybe we didn't get a lot covered but that’s not important to him if we understood the material” (S030 on T84); “Everyone answered questions when he wanted them to answer [and] this made him very pleased” (S033 on T47).

Ninety-five percent of students who observed indications of teacher satisfaction were satisfied themselves, and frequently because they felt they learned something: “A good class is when I really learn and I’m interested in what we are doing” (S023 on T55); “When I understand the material … the next day I will be able to learn [something] new on the topic” (S030 on T84). A few mentioned both learning and teacher monitoring: “She ensures that all students understand the material before moving on to another topic and it is not rushed” (S024 on T43). Some students defined a class as one in which they could complete assigned work: “I got my work done and I didn't have to do any at home” (S016 on T14); “When the period moves along faster and creates no homework” (S061 on T30); “I didn't find the class dragged out … because no one was listening” (S050 on T76).

Many students who described their own practice felt a good learning class focused on teacher explanations and class discussions because students heard “what the teacher had to say as well as the students” (S096) or it helped some remember new ideas (S109). Some students suggested more explanation with notes, or than notes, made for a better class: “The teacher writes notes … discusses things, and lets the class get involved” (S085); “When teachers write

tons of notes … [it] is not learning. A good learning class would be a full of discussion" (S121).

For some students, more diagrams, examples, or "drawings or telling stories" (S137) were important: "Good diagrams makes it easier to learn" (S119); "When the teacher connects a topic to life and uses comparisons to everyday situations" (S093). Others liked opportunities for participation, "like labs or experiments" (S086): "When he or she demonstrates it … [and the class] was more hands on" (S105). Ultimately, a good learning class may be one from which students developed a greater understanding of the material: "When I can leave the class and reiterate what the teacher said in my own words … if the teacher gets the point across, that is the main thing" (S084).

Effective Practice

Effective teacher practice was defined for students as teacher efforts to maximize learning, given individuals' knowledge of what approaches or strategies "worked best." This placed the onus of choosing student-appropriate strategies on teachers as professional employees. Effective student practice was defined for teachers as self-directed behaviours which facilitated learning or understanding (viz., learning practices) and demonstrated curriculum outcomes (viz., performance practices). Teacher description of performance practice had the lowest (25.7) words per response ratio of any Teacher Description of Practice (TP) project question (Table 9). This was interesting given that many described constantly monitoring student progress.

All EP students (n=172) were asked to describe effective teaching practice and 136 (79%) offered 215 suggestions and the word *some* was emphasized in many descriptions. Many students (Table 23) believed *some* teachers varied their approach "so that everyone was learning" (S082) or "each [student] … at some point could learn their best way" (S042): "The more ways they teach, the more students they are able to connect with and help understand the topic" (S035); "The good ones … focus on a topic and teach … in ways that are exciting" (S077).

In contrast, many students suggested that *some* teachers were "set in their ways" (S077) or "just [taught] in a way they thought my classmates and I would understand … the way that worked for them when they were our age" (S064): "Teachers … teach the way they want to teach and ignore suggestions" (S099). Students believed that learning may or may not depend on the teacher: "Some are very slack with how they teach and some are very good at what they do" (S170); "Most teachers do the same - read out of our book and write down notes for us to copy" (S161).

Table 23

Perceptions of Effective Practice

Student-described Teacher Practice	Teacher-described Student Learning Practice	Teacher-described Student Performance Practice
explained and/or discussed lesson.	**note-taking practice.**	***reviewed or revised their notes.***
nothing – "teachers teach classes their own way."	***organization and/or preparation of lists, journals, agendas.***	***asked and/or answered questions.***
gave extra individual one-on-one help.	***copying practice or taking notes.***	***participated in class discussions.***
gave a second explanation after we copied notes.	*created or took their own jot notes.*	*rewrote their notes.*
a variety of things were done.	*created visuals or drawings.*	*gathered resources and practiced.*
they adjusted their approach to help everyone.	*listened or paid attention.*	*worked with a partner or group.*
did example questions.	*participated.*	*teacher did not have to answer the question.*
explained the lesson before notes.	*rewrote notes.*	*responded to questions in class.*
gave or wrote notes.	*asked questions.*	*summarized their notes.*
used visuals or videos.	*worked with a partner or group.*	*reviewed their notes.*
offered after-school help or tutorials.	*memorization devices such as mnemonics, rhymes.*	asked questions in class.
related the lesson to familiar situations outside school.	*completed assigned questions for extra practice.*	attended tutorials for extra help.
gave guided practice.	highlighted important points in text.	volunteered and wrote examples on the whiteboard.
taught learning skills.	reviewed notes.	participated in class discussions.
offered review classes and/or sheets.	added definitions or terms to notes.	comments and/or body language.
the teacher never asked what worked for the student.	asked for extra or after-school help.	did well on a summative evaluation.
discussed the lesson.	"students have no learning practice."	took their own notes.
assigned group work.	demonstrated mastery learning and independence or autonomy.	made journal entries.
organized or simplified information.	completed homework.	completed homework in-class.
lightened the mood with stories.	"I cannot observe my students."	used proper techniques and/or terms.
answered student questions.	"the relationship was a factor."	helped or tutored classmates.
described the lesson objective.	chose a good seat.	same as Learning Practice.
read from the textbook.	"there were too many to list."	read ahead of their teacher.
		corrected teacher mistakes.

Note. All Student EP Projects - What do teachers usually do to help you learn in the ways you believe you learn best? Teacher Practice - Please list academic practice which you have observed your students using during a course, unit, typical, and/or special class **to facilitate their own learning** (e.g., some students draw concept maps). Teacher Practice - Please list academic practice which you have observed your students using during a course, unit, typical, and/or special class **in preparation to demonstrate achievement of curriculum outcomes** (e.g., summary notes of the unit).

Most students (Table 23) believed teachers were more effective when they took time to discuss a lesson so that ideas “made sense” (S078): “Take the time to explain things clearly so that we can understand better” (S044). Relating new concepts to familiar situations was effective: “Relating concepts to every day experiences helps me connect to what I am trying to learn” (S095). Good relatable examples were also believed to be an effective way to learn: “First they'll show me how to answer a problem [and], if I don't understand, then they'll give me a similar problem” (S022).

Some attributed teaching effectiveness to learning management and timing explanations to occur before and/or after but not during the copying of notes: “I learn best when teachers first write notes and then explain” (S060); “[Teachers should] take the time afterwards to explain … in a simpler way and have the class discuss it” (S037). Some students suggested “one-on-one time for extra help” (S119) was effective “to make sure you [understood] what you're learning” (S016): “When [teachers] … help you and help you until you get it, [and] they don't give up!!” (S065).

In describing student-initiated Learning Practices (Table 23), most teachers also qualified their description with “some students.” Instead of student-led practices, many described reactions to teacher practice: “Some write every single word you put on the board even if it makes no sense” (T21); “Some are note-takers and need that” (T38). However, many also indicated *some* students decided which parts of discussions or notes were important and took jot notes “without being prompted” (T22) “to help them remember a concept” (T29). Some teachers noticed students autonomously augmented teacher notes with “their own notes on what they had read” (T99) or with “vocabulary/grammar lists” (T33): “If there are words they are unsure of, then they find the meaning and write a definition” (T64). Some students were observed “highlighting important information” (T04), drawing diagrams to visualize concepts, or developing “rhyme schemes to remember particular terms” (T64).

Many teachers noticed student organization and preparation of lists, journals, and/or agendas: “Many top students tend to be organized, … get things started and submitted early, and [are] always on time (T41); “The best students … have been good time managers, good organizers, and they plot out how they are going to learn” (T47). Some teachers described student participation, active listening, paying attention, staying on task, and/or asking questions as learning practice: “I do have students who will specifically ask questions [and] ask if I could do that one more time” (T48); “They'll come to see me if they miss something [and ask], ‘Can I talk to you about that?’" (T70). Some described students doing “more practice exercises than [were] assigned” (T72) and/or “going around to help each other with seat work” (T26). Some noticed students working independently: “If they're finished assigned work, they'll work on something else. They don't wait to be told what to do … [or] need to be supervised to be kept on task” (T90).

Many teachers described student-initiated Performance Practices (Table 23) by *some* eager students as a want or need to contribute to discussions, “engage you in conversation” (T38), and/or answer questions: “Some will spontaneously make comments to add to what I'm saying [demonstrating] they know something extra” (T06); “I have students who will say, ‘So let me see if I get this right sir’ and they'll summarize for me” (T48). Some students were described as willing to help or correct the teacher: “When I'm doing an example they'll … talk me through” (T76); “I will intentionally make a mistake at least once every two classes” (T48). Other teachers noted unprompted voluntarism “to come to the board and work it out themselves” (T81) or “answer for somebody else” (T71).

The correct use of language, vocabulary, and techniques was also understood as a performance; for example, “using the proper terminology (e.g., quanta not things, velocity not speed)” (T48). Student willingness to explain concepts to their classmates “of their own accord” (T21), sometimes using new terminology, was believed to require a level of understanding. One teacher envisioned student self-talk: “I can help somebody else because I know that” (T70). Teachers noted *some* students worked ahead of them: “In math the other day,

some [students] saw the light at the end of the tunnel before I got [there]" (T32); "Some students make a list of questions … to bring up for me to answer" (T34).

Ineffective Practice

An ineffective practice was defined for teachers as one which never appeared to facilitate learning. The word "never" bothered some teachers and 26% were unsure if any practice could be considered completely ineffective: "I even asked my students … can't think of anything" (T55). One teacher reinterpreted "never facilitated" to mean blocked: "I can honestly say that I have not used a teaching practice which inhibited student learning" (T15). Some argued that effectiveness or ineffectiveness "depended on the class, their strengths and abilities" (T13) and that every practice worked for some students; however, most believed "some techniques are better than others" (T71).

Teacher suggestions (Table 24) of social practices to be avoided were humiliation, being a disciplinarian, and not addressing issues as they arose: "Trying to illustrate how a question is not to be done by picking on a student's wrong response only serves to put a wedge between you and that student" (T82); "Asking students that are struggling to give answers aloud … would make them feel uncomfortable and they may lose respect for the teacher" (T99).

Some teachers believed frequent submission of homework, rigid due dates, and allowing too much time was ineffective: "Asking kids to submit daily practice questions became overwhelming for me and impractical for them" (T48); "Being too rigid on due dates … [shows a] lack of understanding [because] … some [reasons] are legit" (T38). Some believed asking students to recall information from previous courses or even classes automatically resulted in statements like "'Miss, you didn't teach that to us'" (T67).

Lecturing for long periods of time was described as an ineffective management which "rarely stimulated personal growth" (T79): "The lecture thing (i.e., the lecture - give notes - be quiet - do your assigned work)" (T56); "Teaching for 50 minutes and asking very few questions … because you're trying to get a

topic covered … doesn't work" (T52). Note-taking without explanations was described as ineffective: "Writing notes off the board doesn't work because they're not listening to what I'm saying" (T81); "Writing terms in an exercise book - you can't learn irony that way" (T34). Student-developed lessons can result in a "less than thorough coverage of the topic, class time being lost, [and] student apathy/anxiety" (T51).

Many teachers described group work as ineffective: "Some students don't work well in groups - too social" (T54); "Activities can be a flop if not well organized (e.g., group composition, guidelines, roles)" (T07). Internet research projects were described as "a figurative cut and paste and students just don't process what they read" (T22). Some teachers also described independent or unstructured activities as ineffective: "Students don't explore but mess around" (T67); "I have learned that few students have the maturity and self-discipline to handle freedom" (T68) or work autonomously. Peer assessment can result in "conflicts" (T51).

DE teachers questioned the effectiveness of explaining topics which required a hands-on approach: "Some topics are not geared towards online stuff (e.g., standing waves) … [and] experiencing [it] works a whole lot better" (T48). Online or breakout groups were described as "time consuming" (T40) and slowing the pace of work.

An ineffective practice was defined for students who observed teachers as something the teacher did which caused confusion or did not result in learning. Fifty-four percent stated or suggested such ineffective practice did not happen: "This teacher has a very clear way of teaching [with] methods [that] are basic and never complicated" (S035 on T85); "This teacher seems to teach the way that I need to learn [and] I always understand what he is trying to say" (S060 on T84). However, many students did list ineffective practices and the most frequently identified was moving through explanations or covering too much new material too quickly: "My teacher confuses me when he goes through too much in one day" (S022 on T06); "[He] sometimes quickly reads over a topic, gives us a few notes … [but] does not explain it clearly" (S019 on T71); "He doesn't spend enough time

explaining and doing examples" (S006 on T47). Most students in DE courses also pointed to the fast pace of classes.

Table 24

Perceptions of Ineffective Practice

Teacher Practice	Student-described Teacher Practice	Student Practice
group work, working in pairs or breakout rooms.	**nothing – it hasn't happened.**	**groups, partners or working with others.**
it depends on the class and/or individuals.	***trouble with explanations.***	***too much talking or noise in class makes it confusing.***
I'm not sure.	***vocabulary problems.***	*notes that are unnecessary or complicated.*
just lecturing or "chalk and talk."	*explained the topic too fast.*	*teacher moving through material too quick to answer student questions.*
independent or unstructured activities, or too much freedom.	*assignment instructions unclear.*	*lots of notes but no discussion.*
asking students to read the textbook or web pages on their own.	teacher assumed knowledge.	heavy workload.
aspects of copying notes.	too many methods to solve the same problem.	assignments that must be handed in before the end of class.
specific choices of topics or labs in the curriculum guide.	number of unexplained notes.	when a teacher explains the simple but not the complex stuff.
rushing through explanations.	too much "new" at one time.	not enough examples in class.
daily homework.	test did not reflect what was covered or practiced.	too many people in class.
pointing out individuals.	an explanation helped cause more confusion.	worksheets unrelated to classes.
keeping students after school.	boring and/or dragged out class.	distance education courses.
inflexible assignment dates.	teacher wanders off the topic.	when something goes against my beliefs.
being stern or a disciplinarian.	a different explanation next class.	
posting student work.	too few notes and/or examples.	
class competitions.	questions were corrected in class too quickly.	
pretending to know the answer.	students can't see the text and must listen.	
research assignments because students just "cut and paste."	there was no purpose to the activity.	
science labs.	answers were posted online before there was time to do the assignment.	
student-determined grades.	the whole online thing.	
entire-class projects.	confused by a substitute teacher.	
too much review time.		
unfamiliar activities.		
asking students to talk about themselves.		
waiting for voluntary responses.		
ignoring management issues.		
asking students to recall work from previous courses.		

Note. Teacher Practice - Please list teaching practice you have tried but which have never appeared to facilitate student learning (e.g., publicizing student class rankings). Student Journal - What has your teacher done that **confused you, didn't work for you**, or you felt you didn't learn anything when they did it (e.g., when they gave the meaning for something and I thought it meant something different)? Student Practice - What **doesn't work for you** in the classroom or seems to be confusing (e.g., groups - I always end up doing all the work!)?

Many students suggested that vocabulary could be a problem: "Sometimes he uses … a word in his vocab that wasn't in mine [so] I had to write it down and study what it meant" (S033 on T47). Some suggested teachers assumed too much about student background knowledge: "He teaches us something I have no idea about and I get lost" (S038 on T84). Others noted explanations which were

different on the second day: “Occasionally she will explain things one way and then, at a different time, explain them a different way” (S009 on T43); “He used a completely different method … and didn't explain it so we were kind of stuck” (S052 on T52).

Some students identified assignments with unclear or changed instructions: “Just the way it was written confused me” (S016 on T14); “He told the class to write a journal … however, when I passed it in he said it had to be written [a certain way] … [and] my classmates were unaware of this” (S024 on T93). Some described problems with tests: “The teacher put things that we didn’t learn [about] on the test” (S029 on T02); “It was 'our' responsibility to cover the text” (S021 on T02). One student perceived the problem as one of process: “[As] we go through examples, I feel like I understand everything … but as soon as I get a test … the wording seems different and I don't have a clue where to get the answers” (S062 on T24).

Most students who were asked to describe their own ineffective practices described problems they had or observed in class. Many felt too much noise or “a lot of people talking” resulted in missed explanations and misunderstandings: “You can't hear what the teacher is saying” (S132); “No learning is able to take place” (S087). Many also felt that quick explanations were ineffective because “nothing sinks in” (S083): “When a teacher … brushes over complex things” (S112); “When [he] moves on very quickly, no notes, … [no] questions” (S127); “When [he] just flies through [and] leaves me thinking what the hell just happened” (S084).

Others students suggested that unexplained or complicated notes caused confusion or made concepts “harder to understand and remember” (S118). Some suggested some notes were unnecessary or “not overly important” (S134) and “half the notes are already in the text book” (S086). Most students believed group work was ineffective because their partners did no work or would not let them do any work: “I always end up doing the work!” (S115); “I can't get a word in because other people are too controlling over everything” (S094); “I always feel left out” (S135).

General or Cross-curricular Practice

General practice was defined for teachers as applicable to all the HS courses they taught and most did so in at least two subject areas. Fifty-nine percent had a Training Index of 0.80 or above (Figure 5) indicating a match between assignment and background knowledge. Hence, it was not surprising that 65% of teachers (Table 25) agreed to having a standard practice and an additional 5% excepted one course: “Pretty much the same: review, practice, new material, practice, review” (T54-music); “The material is different but I still like to go in and talk” (T31-English).

Some teachers described students as *the* common factor: “Teaching to the student works best” (T76-science); “Pedagogy applies … because we work with students, not with courses” (T89-science); “The curriculum is secondary … once students know I am interested in them they willingly come to the curriculum table” (T25-English); “All courses follow the same format, as there seem to be universal strategies that work well with students” (T84-science). T83, a teacher who taught technology courses, among others, suggested his practices were applicable to all his courses because of a common goal: “to make sure students understand what is expected of them [and] to complete outcomes.”

Table 25

Cross-curricular Practice

Teacher Practice	Student Practice
“my practice is applicable to all disciplines.” ***“I have specific subject area practices.”*** “my practice may be general but I only teach in one discipline or subject-area.” description of a general practice. “almost all my practice is general with one difference.”	***“I have specific subject area practices.”*** *“my practice is applicable to all disciplines.”* *“practice is specific in response to the teacher.”* description of a general practice. “almost all with one difference.”

Note. Teacher Practice - Do you have long-term or daily practice which are specific to a particular discipline, or can your practice be described as applicable to all the courses you teach? Please explain. Student Practice - Do you do things for **some courses** which you don't do for other courses (e.g., No - all courses are the same. OR Yes - in physics I draw everything but I don't draw in English or math.)?

Thirty percent of teachers believed their practice was subject-specific; however, when examined, their descriptions (Table 26) were not definitive. For

example, one English teacher (T70) claimed to use more videos in English Language Arts (ELA) than in French or Health, and another (T87) claimed ELA was more activity-based than Social Studies. These descriptions suggested individual preferences rather than a general subject-specific practice.

Table 26

Subject-specific Teacher Practices

Subject	Unique Practice
English Language Arts	More videos than French or Health (T70), more versatile and activity-based than Social Studies (T87), requires daily review (T95), curriculum outcomes broad and not as specific as math (T34), fewer demonstrations and more lectures than technology (T17), less hands-on than technology (T17), fewer life issues than H (T38), less discussion than Health (T38).
Mathematics	Calculator use (T68), specific curriculum outcomes not as broad as English (T34), different technology (T92), need to relate to the world outside school (T92), need to work long-term plan (T92), less lab and activity-based than Science (T47), less discussion than Science (T47), little less group work than Social Studies (T67), more new concepts and practice needed than PE (T08).
Science	Preparation of lab activities (T96), more investigative approach (T47), need to link kids to everyday surroundings (T47), more lab and activity-based than math (T47), more discussion than math (T47), daily practice important (T99), less noise in class than technology (T74), fewer projects than technology (T74).
Social Studies	Not as versatile or activity-based as English (T87), fewer activities and more notes than religion (T21), not as hands-on as technology (T18), time constraints limit creativity (T18), more notes than technology (T32), little more group work than math (T67), less arranging for outdoor activities than PE (T97).
Religion	More activities and fewer notes than Social Studies (T21).
French	More games than English or Health (T70), warm up discussions (T20).
Physical Education	Fewer new concepts and less practice needed than math (T08), different (T90), more arranging for outdoor activities than Social Studies (T97), different materials than technology (T97), obvious reasons (T23).
Health and Human Dynamics	More guest speakers than English or French (T70), can take an English Language Arts-based approach (T30), more life issues than English (T38), more discussion than English (T38).
Technology	More hands-on than Social Studies (T18), time constraints not as limiting as Social Studies (T18), day-by-day (T32), different materials than PE (T97), noise level higher than Science (T74), more projects than Science (T74), more demonstrations and fewer lectures than English (T17), more hands-on than English (T17).
Special Needs	More freedom than English to plan for the week (T95), short and long-term plans (T75).

Note. Collected comments from teacher description. Key - Physical Education (PE). Teachers were identified during research by their username; for example, Teacher 12, which was abbreviated as T12 during data analysis. Member checking and EP descriptions confirmed that most teachers made comparisons between courses they were or had experience teaching.

Similarly, most subject-representative descriptions chosen by the Teacher Focus (TF) project suggested a common pedagogy. For example, descriptions by T17 and T34, who both believed their practice was subject-specific, were chosen as subject-representative: "[A] combination of lecture and discussion: start by

asking them by what they know – probing, clarify what needs to clarified, elaborate where necessary, [and] it develops into a discussion" (T17); "It changes from day-to-day: definitions, make sure they have a clear understanding, group discussion, [and] a chance to practice on their own" (T34). Once again, although these descriptions may represent a subject they are not definitive. Questioning, discussions and seat work may characterize ELA but also characterize many other subjects.

Most descriptions of DE teachers suggested teaching approaches were similar or identical to those of face-to-face (F2F) classes: "[My] approach has to be different. … I do the same thing in a regular classroom but probably not as many [questions] because I can see the students." T48 stressed the lack of a dynamic approach: "When I taught [F2F] … I had to be involved [and] get kids active. … I don't like sitting in front of this computer."

Table 27

Subject-specific Student Practices

Subject	Different Practice
English Language Arts	Write about things, highlight major points, doodle when bored, write down "every word" the teacher says, write down thoughts on the story or poem, draw some stuff, write jot notes.
Mathematics	Draw everything, draw all diagrams, help others, listen more carefully, do practice quizzes and tests, write formulas and draw graphs.
Science	Seven students noted that they drew diagrams. Highlight major points, draw when bored, listen more carefully, review notes regularly, review more, mark handouts, rewrite notes, draw everything, draw to answer most problems, write formulas and draw graphs.
Social Studies	Take notes while teacher is talking, draw an explanation after every note.

Note. Collected comments from student description.

When students were asked if they had practices in some courses which they did not have in other courses, many expressed surprise at the question and believed subjects were "obviously different." For example, many described drawing in science and/or math (Table 27): "In physics I draw a visual representation of the question, even if the teacher doesn't" (S093); "For chemistry, physics or pre-calculus, I write out the formulas and graphs but not for any other course" (S134). However, 35% clearly described their practice as standard: "It's

the same routine in every class" (S101); "In most courses I do the same thing - I listen attentively, work hard, and keep up my notes" (S112).

However, after data analysis, it appeared the question should also have asked students to indicate if a described practice was subject-specific because of the nature of the subject, in response to a teaching approach, or because of student preference. Twenty-five percent of respondents described their practice as a response to teaching: "[The] biology teacher makes us underline stuff" (S114); "We do mostly examples in physics and math [and] I write the required notes for English" (S083); "Math is going a slow because the teacher gets off topic" (S081). A few students also described responding to the environment: "Not all courses are the same … I can't study [in biology] because there are too many interruptions" (S081). Most described subject-specific practices related to personal preferences such as liking the course, valuing what the teacher said, or boredom: "I put more effort into [the courses I like] than the courses I dislike" (S084); "I tend to do more homework that involves drawing or crafts" (S086); "I write down every word any English teacher [says] … [but] in every other course I just do the assigned work" (S082).

Strengths and Talents

Strengths and talents were defined as personal attributes teachers believed facilitated learning or students believed helped them learn. Most teachers (Table 28) described interpersonal skills such as an ability to relate to students, "talk to students on their level" (T35), build a rapport, be "connectable" (T76), be "empathetic and sensitive" (T48), and/or be supportive: "I try to relate to students, to know who they are, where they are" (T31); "I always put myself into the shoes of my students" (T51). Others claimed to encourage fairness and mutual respect: "[I] allow them opportunities to have a bad day and give them [time] to chill or cool down" (T62). Many claimed to be able to read student expressions: "I can assess students' understanding simply by looking at their facial expressions [and] am able to see when [they] become distracted " (T82); "[It's] definitely no problem to tell from their 'look' whether or not they understand" (T34).

Table 28

Strengths and Talents

Teacher Strengths and Talents	Student Strengths and Talents
interpersonal skills.	**observant.**
knowledgeable in the subject area.	***good memory***
able to relate to students and build rapport.	***good study and/or review skills.***
able to read student expressions & behaviour.	***good at writing or taking notes.***
able to create interest in the course content or relate it to students.	***good at problem solving.***
empathetic, concerned, and/or supportive.	***able to listen well and remember what I hear.***
a sense of humour.	*patient or self-confident*
encourage fairness and/or mutual respect.	*good at drawing.*
able to read students expressions or reactions.	*able to recognize and satisfy a need.*
approachable.	*organized.*
skilled in various teaching methods and strategies.	*can relate topics to something I know.*
patient, forgiving, or open-minded.	*imaginative or creative.*
an energy or enthusiasm for my subject area.	*questioning.*
organized.	*musical such as rhymes or songs.*
committed.	tactile or interactive.
available for students.	"I don't know."
expect learning and student mistakes are OK.	like to work with friends.
good at involving and/or questioning students.	
adaptable to the situation.	
ability to simplify course content	
make no assumptions.	
experienced in the subject area.	
good communicator.	
able to provide a relaxed learning environment.	
still learning as a teacher.	

Note. Teacher Practice - Please list **three strengths or talents** which you believe enable you to facilitate student learning (e.g., able to 'read' student reactions). Student Practice - What are your **best three talents** that help you learn (e.g., I love to draw. If I can draw I can remember it.)?

Most teachers listed subject-area or "thematically related" (T25) knowledge as a strength: "I am … passionate about mathematics, hope this transfers to my students, … [and] they develop an appreciation and excitement" (T68). Many described being able to create interest: "I have a knack of coming up with entertaining stories to emphasize topics" (T71); "[I have an] ability to connect what I'm teaching … to their lives" (T51). Many claimed to be able to manage learning, "to explain a topic clearly … [and] break it down to a level that's understandable" (T52), "to prompt students to get them to participate in discussion and … generate ideas" (T55), to be "interactive in a manner [such that] kids feel free to disagree [and have] their own opinions" (T14), or to be "able to change direction if it looks like students aren't getting it" (T20). The only claim unique to DE teaching was one

“humanizing” oneself in terms of teacher and student roles: “I hope they sense that I am interested in 'who' they are and that they are not that different than me” (T51).

Most students who described their own practice claimed to be observant in class and many claimed to be able to listen well: “I picture everything in my head … [re]drawing the picture … helps me remember what I was thinking” (S132); “I listen to every word the teacher says so I can remember important topics” (S132). Some described an ability to relate new and familiar ideas: “When I am presented with something I do not completely understand; I try and relate it to something I know” (S082). Many described being able to ask questions: “I am not shy to ask about material that confuses me” (S107).

Many students claimed to be organized: “I organize all of my notes and it is easy for me to find things I need” (S095). Many described being “able to memorize things in a short amount of time” (S119): “When I write notes I read them aloud, which helps me remember” (S129). Some described being creative: “I have quite the imagination … [and] it helps me make stories and plots whenever I need to” (S108). Others claimed being patient: “The ability to make almost anything fun [and] patience; I don't give up easily” (S122).

Change or Wish Lists

Participants were asked to describe changes in practice they would like to experience and thereby, shared advice on how to create better classes. Given three wishes, most teachers (Table 29) suggested students should complete assigned work, be prepared for class, and be willing to work: “Students need to … realize the necessity of being prepared” (T93); “Inadequate practice is done once they leave” (T84). Many suggested reviewing notes: “When you're finished class take time to review in an honest, dedicated way” (T14); “Study notes … daily … to see [the concept] for the second time” (T17). Some felt students needed “better time management [to] … to complete work … in a more efficient manner” (T51).

Many teachers wanted students to stay on task, “listen intensively” (T32), “ask more questions [and] be more involved” (T48), or take notes during class in

"their own words" (T34). Some wanted students to develop a better work ethic, show initiative, and/or "take more responsibility for their own learning" (T30): "Students need to take pride in their work [and] not rush to complete something quickly" (T64). Many wanted students to be more independent or autonomous, "not so reliant on teacher, … willing to take more chances, feel comfortable about making mistakes, and enjoy learning" (T90); or to challenge themselves "to try to do the work before giving up" (T29).

Table 29

Suggestions for Change in Practice

Teacher Suggestions for Student Change	Student Suggestions for Teacher Change
complete assigned homework.	**Yes. I could get better marks if the teacher**
be prepare for class.	
review or study lesson notes.	***gave better explanations or helped me understand***
be more independent and challenge yourself.	***the topic.***
time management or be prepared for the long-term.	*gave us more time to understand a topic.*
ask more questions or for help in class.	*changed evaluations by giving more time, better*
develop a better work ethic or have initiative.	*instructions, or lowering expectations.*
take responsibility for, ownership of, or pride in learning.	*gave better, more, or fewer examples.*
learn to take better notes or drawings.	*gave better, more, or fewer notes.*
participate in class and discussions.	helped us prepare better for evaluations by more review
stay on task; be attentive, persistent and focused.	and/or practice.
organize your notes and materials.	used more interactive practices.
read the textbook and/or read for pleasure	was better prepared for class.
go beyond what was assigned and/or do extra practice.	gave fewer or more worksheets.
develop learning and/or study skills.	gave more individual attention.
learn and practice at home as well as school.	
try during class.	**No. I couldn't get better makes because**
attend class and be on time	*no explanation.*
use the Internet or web resources.	*the teacher is great and no change is necessary.*
remember to take your books home.	my marks are great now.
take advantage of tutorials or study groups after school.	I'm the one who should change or work harder.
demonstrate understanding in class.	no but the teacher could still reduce repetition and make
use class time wisely.	class relevant.
review the lesson before the end of class.	

Note. Teacher Practice - Please list student academic practice **you would like to see more often**. Student Practice - I could get better marks in this class if my teacher changed what they were doing by ... Can you finish the sentence?

Thirty-five percent of the students indicated their teacher was "great" or that their marks were already "pretty high:" "I am doing really well, the teacher is awesome, and I don't think he can do anything better" (S006 on T49); "The teacher is always asking if we understand before doing something new and that works for me" (S050 on T76). Some felt that the key to achieving a better mark was changing their own practice: "[My] poor marks are due to … a lack of being attentive in class"

(S009 on T43); “I could participate more” (S016 on T14); “My marks can increase if I change my study habits” (S024 on T43).

However, 60% of students believed a change in teacher practice could result in better marks. Most wanted teachers to manage their time to give more detailed, in-depth, or better explanations: “Elaborate on some topics and be more focused … if [students] really need to pay attention to certain [topics] for our tests, then I think [the teacher] should spend more time on [those]” (S062 on T23); “Explain things without rushing [because] there are occasions when a topic is covered so quickly I didn't learn anything at all” (S009 on T47). Most who attended DE courses also emphasized the need for a slower pace: “He covers too much in one class” (S047 on T51); “He rushes through really fast (S052 on T52). Some students suggested more time was also needed to lead guided practice: “Sometimes the transition from everything being explained … to being given an assignment is a difficult one to overcome” (S062 on T24). Others suggested more time or better instructions for tests: “[When] all the questions are worth a lot of marks, little mistakes cost me big time” (S035 on T85).

3.6 Supplementary Data

The Finish Line (FL)

In an email which confirmed completion of their assigned project, students were asked to contribute a question for survey development. This final exploratory exercise was entitled the Finish Line (FL) and was done to “increase the reliability and validity of the data” (Alreck and Settle, 2004, p. 110). Students contributed 94 questions, which were categorized as relating to long-term, short-term or effective practice, although many could have been placed in multiple categories; for example, with respect to long-term practice (Table 30): “Do teachers teach the course in more than one way so that everyone understands?”

Table 30

Finish Line (FL) Suggested Questions (Long-term or Course Situations)

Topic	Questions
Teaching Approach	Do all teachers teach the same way? If so, Is it a good way of learning? What method of teaching would you want your teachers to use in school? List ways your teacher teaches that you do like and that you don't like. Do your teachers teach the course in more than one way, so that everyone understands it? How does the teacher teach (e.g., write notes on board, use the projector for notes)? Do you think they should have some different teaching methods (ex. movies, interactive activities, etc.)? Does your teacher teach in one specific way (e.g., mostly visuals such as charts, diagrams, graphs, etc.)? Do you think teachers choose one set method and leave out the others making students suffer in grades?
Learning Preference	What are the best ways you have learned ever in a classroom? What methods of learning do you find help you the best? How adequately does your teacher use these? What do you think is a good way to learn and why? Ask students what they found that worked best for them and if other students found that a good way too. What is your preferred way of learning in your classroom and what is your most hated way to learn? What type of learner do you think you are out of the following three: audio … writing … hands on …? Had your teacher ever asked what methods of learning you find the best?
Preparation	How would you describe your teacher(s) work ethic? Do you think the teachers know what they're talking about? Maybe some teachers don't care. Do you think that everything that your teacher says to you is true? Does your teacher do the work that they are required to do in your classes?
Environment	How can a teacher make sure students' attitudes toward them, the course and the subject matter support a constructive learning climate for the semester? How does the environment and the students around you help (e.g., up beat)?
Distractions	Do you work better in a quiet environment or can you learn just as well in a noisy environment? What is your classroom atmosphere like on a regular basis (e.g., distractions)?
Discipline	Does your teacher use appropriate discipline on students? Why do teachers tend to give detentions if you're late or don't give your homework in on time? When students in your class are misbehaving, does your teacher make them keep the noise down or kick them out of class?
Evaluation	Does your teacher teach you the things you need to know before they assign work from your work book? What do your teacher do before a test that helps you best?

Note. Twenty-eight questions were categorized as relating to long-term or course situations. Categorization was difficult because most questions related two or more concepts, for example teacher approach, student preference, and/or effectiveness.

With respect to short-term practice (Table 31): "In an everyday class do you feel like you have actually learnt something or made progress?" With respect to effectiveness (Table 32): "Are you learning the way your teacher is teaching?" and "Do you fully understand the concepts you are learning?" The purpose of the Finish Line was to proceed "carefully and thoroughly" with survey development to "save a great deal of time and effort later" (Alreck & Settle, 2004, p. 110). It engaged students in survey development beyond that of simply being respondents by checking to ensure their concerns were included. Student suggestions led to the

addition (e.g., Teacher-Class Relationships) and modification of questions during the Development Phase (DP).

Table 31

FL Suggested Questions (Short-term or Lesson Situations)

Topic	Questions
Interest	How does a teacher get your attention while in class? What do teachers do to get you interested about the subject they are teaching? What interests you in learning?
Explanations	Do you think that your teacher explains their course well enough? How well do your teachers explain the topic you mostly have trouble with? Does the teacher focus on the class or go off on a different idea?
Understanding	Does your teacher not continue until everyone knows how to do whatever is being taught? Does your teacher move on once most the class knows what they're doing? Do your teachers try to help you … with subjects you are not understanding fully? Do you fully understand the concepts which you are learning in the classroom? What do you think the teacher can do to help you obtain a better understanding? Over all the years you have been in school and been with different teachers … what way did the teacher do differently to help you understand more about the subject and what you were learning!!
Rushing	Does your teacher offer individual help or do they help everyone at the same time? Does the teacher take time to help students that need help and explain it the way it should be explained or do they rush though it to get it over with? Are teachers helping you if you need help instead of pushing you further? When your teacher starts a new topic, does he always ask you if you understood the last section?
Questions	Do teachers listen to you and answer the questions you ask?
Groups	Do you think working in a group or alone is better? Will students learn the same? Do teachers let you do “buddy buddy” group actives and do they help you learn?
Individuals	Have the teacher ask How do you want me to teach you? How would you like your teacher to teach you (e.g., notes on whiteboard, following the book)? Does your teacher teach each student individually? What does your teacher do to help you and the way you learn? Do your teachers teach using different techniques to ensure that everyone gets a chance to do a project that is based upon the way they learn best? What form of teaching helps you learn best (e.g., taking notes, completing worksheets, etc.)? Do your teachers ask how you learn best? Have any teachers ever tried to find out how you learn best and tried to adapt to that way of teaching? What aspects of teaching works best for you (ex. writing notes, drawing diagrams, discussions...etc.)? What is the best way a teacher has taught you how to do something and how did he teach this concept?
Availability	Do your teachers make themselves available to be asked questions outside of class if you need help?

Note. Thirty-one questions were categorized as relating to short-term or lesson situations. Categorization was difficult because most questions related two or more concepts, for example teacher approach, student preference, and/or effectiveness.

Table 32

FL Suggested Questions (Situational Perception)

Topic	Questions
Effective Practice or a Good Class	In an everyday class, do you feel like you have learnt something or made progress? Does your teacher teach in one specific way (e.g., mostly visuals such as charts, diagrams, graphs, etc.)? Does that way work for you? Which teaching method do you feel is better: when the teacher does a lot of talking and gives you notes on the topic … or … to discuss the topic a little and then give you questions, worksheets, assignments on that topic for you to do … to get a better understanding? Does your teacher present the material you're learning in a way that is easy for you or does the way your teacher present it make it more difficult for you to understand? What is the most efficient teaching method you find that your teacher uses? How do the teachers teach and how effective is there method of teaching? What things do you find works the best and the least that this teacher does? What is one thing teachers do that helps you understand new concepts? Are you learning with the way your teacher is teaching? Why do you like and dislike about what the teachers are doing? What do you think is the most effective way of teaching (e.g., hands on, one on one)? Explain why this the easiest way for you to learn.
Ineffective Practice	What things do your teacher do that doesn't work for you? Is there is anything about your teachers that bug you, like … their teaching habits? Do teachers use positive criticism to help you improve your work or is it just plain criticism?
Teacher Attitude	Do you think that your teacher teaches their classes in a reasonable manner? Do they sit on a desk, in the chair behind the desk, in a student's desk, sit on the floor, lie on the floor, turn the chair backwards and sit on it, put one leg up on the desk while standing, swing a meter stick around, throw things for demonstrations, sing loudly, and obnoxiously, scream? If a teacher yells at a student because they were talking or any other misbehaviour in class does it work? In the class where your mark is the lowest, does your teacher criticize or bully you when you get a low grade, you're late for class … or for no apparent reason?
Teacher Strengths	What traits do you look for most in a teacher? What aspects of a teacher's personality do you believe makes them a good teacher?
Favourite Teacher	Think of your favourite teacher. What does he do in class that makes learning and studying easier? What does your most favourite teacher do that makes it easier for you to understand the subject?
Improvement and Change	What are some things we can do to improve this course or topic? What do you feel your teacher can improve on to make class better? How fair he is on evaluating? What do you think they could improve to be a more appealing and effective teacher? If you were the teacher what would you change or keep the same? What is the one thing a teacher can do for you that will make or break your year with them?

Note. Twenty-nine questions were categorized as student perception of situations. Categorization was difficult because most questions related two or more concepts, for example teacher approach, student preference, and/or effectiveness.

Focus Group Feedback

Nine student focus groups met in the Virtual Meeting Place shortly after Exploration Phase (EP) projects were completed to discuss project administration, student observations, and descriptions. An orientation session was held prior to meetings to troubleshoot possible connectivity problems and reminders of meeting times were emailed to students. Three to nine students for widely-separated schools logged in anonymously using their usernames.

The commonly identified administrative issue was time and that some participants were busy with homework, activities, volunteer work, and part-time employment. The research website ability to save and return to questions was well received. Other concerns were remembering a randomly generated password and lack of access to projects, other than the one students had been assigned. Some SJ students who observed teachers questioned their ability as observers. Most believed teachers were not suspicious of their activities and that no disruption had occurred in class. Some commented that classes had regular breaks or "down time" during which they had the opportunity to make notes. S045 stated that he gave school the priority and took research notes only after class notes were finished. S005 stated that keeping a journal had kept him interested and attentive in class.

Table 33

Focus Group (FG) Suggestions (Long-term or Course Practice)

Situation	Description
Course Preparation	Read internet information, ask parents, talk to teachers, just show up and see what happens.
Course Start	Get the outline, find all needed texts, look at previous tests, read the curriculum guide online. Teachers should start slowly and build on things students did before. Teachers should try to learn how students write.
Unit Start	Organize notes, look at notes and work from previous courses, and/or look at outcomes. "Most teachers have their own [order] so trying to get ahead can be confusing if the teacher has a different idea in mind" (S114). All teachers do not do the same thing.
Unit End	Class review, rewrite notes, "make sure I cover any aspects I don't know" (S119). There's "no need to study everything because sometimes things sink in the first time you hear them in class." Teachers discuss worksheets, review test-taking skills such as read aloud or read over when done, and/or review concepts or main ideas.
Course End	Review notes, go over any material, create an information folder for the exam, and/or review what was done before Christmas. Teachers tutor and/or ask questions during class.
Course Close	Save material in a folder, give my notes to someone who needs them, and/or keep tests and worksheets that might help me in other courses. Science notes are useful. Teachers check marks for students between 45-50%.
Other Long-term or Course Practice	Teachers encourage portfolio work in some science courses.

Note. Students were asked to brainstorm missing student and teacher situational practices. The researcher would occasionally prompt groups with items from SP project descriptions.

Table 34

FG Suggestions (Student Short-term or Lesson Practices)

Situation	Description
Class Preparation	Do assigned readings, study for 2 to 4 hours every night, and/or memorize information. Diverse means different. “I don’t think I’ve ever witnessed teachers with activities for diverse learners and I can't remember any of my teachers talking about it either” (S163). “Me either, that was why I was confused” (S199). Teachers tell you the outcomes students need to learn. “My biology teacher used to use the outcomes and base every lesson around specific ones to make sure they were all covered for the public” (S162). Point out the outcomes that would be covered on a test, final, or public. Load clips into the [virtual classroom] so that when students need them there’s no wait.
Class Start	Wait for the teacher to start or get ready and/or have books and notes out. Teachers discuss current events. “I don’t like when they just start something new when we got a substitute” (S199). “I like the break at the end of class more than the beginning” (S162).
Main Part	“I don’t read ahead because teacher introduces the topic.” “Raise your hand, which you can’t do with the textbook.” “Tell the teacher you understand what is being taught, like in math class when you need to tell them each step that they write up” (S162). “Go up in the front of class and write the answer.” Use the whiteboard for questions. Teachers “go on and on without a break,” introduce and explain the topic better than the book, assign seatwork or questions, put problems on the whiteboard or say them aloud and students will solve them, and/or “put a problem on the board and ask the class to take them step by step” (S189).
Class End	“It’s nice to get things clued up.” “In my chemistry class, we've kept doing work after the bell because our entire class gets so into it” (S162)

Note. Students were asked to brainstorm missing student and teacher situational practices. The researcher would occasionally prompt groups with items from SP project descriptions.

The most difficult task, according to some students, became re-describing the same events lesson after lesson. S092, the only student who also participated in the SP project, suggested more examples per situation would have helped. It was explained that too many examples might limit students’ ability to brainstorm responses. S119 suggested the use of fewer open response questions and more multiple choice questions; this was explained as the goal.

Alreck and Settle (2004) suggest the main objective of focus groups is “to provide information to guide the survey research … the focus group agenda … contains what might be called ‘trigger’ questions designed to draw out various opinions and stimulate a conversation …” (p. 391). In this way, these focus groups were used to enrich the exploratory data through member checking gaps in student descriptions of own and teacher practice. Students logged in to review their own responses and a compiled version of example responses, and were asked to brainstorm answers not included in lists. For example, in discussing SP project descriptions of Unit Start (Table 33), students described not wanting to read ahead

because “most teachers have their own [order], so trying to get ahead can be confusing if the teacher has a different idea in mind” (S114). Focus group members agreed that they had not witnessed teachers having different activities to accommodate diverse learners (Table 34) and pointed out a dislike of starting a new topic with a substitute.

Table 35

FG Suggestions (Special Classes)

Situation	Description
English	Discussions, research papers, in-class essay or assignment (S073), posters for research papers (S005), acting in Theatre Arts, writing poems (S199), look up information on a novel that we are going to read (S189), play a game to remember phrases from plays (S163), and type up something in the computer room. “I like reading and acting out novels too” (S005). “My friend in St Johns told me that … every year they go to see the Macbeth play but I can't think of anything we do in my school” (S162).
Math	In-class assignments (S073), competitions (S005, 082), “math contests and things” (S005), “discuss problems on the whiteboard” (S163), “things on probability like roll dice and toss coins” (S189), “work on major unit work samples,” and/or use graphing calculators on the whiteboard (S163). “We played some sort of basketball math game once in grade 9” (S005). “I had no idea there was such thing as going outside in math class” (S045). “We don’t do anything special” (S045). “We had a class where we made Christmas cookies” (S163). “Math study is different than English study” (S189).
Science	Research project, watch a movie, “a lab activity, we did one with bouncing balls once” (S162), and Mole Day online (S009). Two or three labs completed so far (S094). “We have a large class so I haven’t been in the lab.” “We do have some in the lab or in the computer room but not much changes” (S045).
Social Studies	Movie, random Disney movie, “museum maybe, even though we don’t do that” (S045), and “not really” (S073). “I have the geo combo … one is public and other not … we cover most of the same outcomes though... we just do a few extra” (S162).
Example Conversation	“English and social studies aren’t alike I don’t find” (S189). “I think English is more based around discussion and opinion whereas social studies is mostly facts and notes. They're nothing alike at all” (S162). “They're different subject areas and you can't teach grammar or poetry in geography, the same as you wouldn't learn about ocean currents in English” (S163). “I’m a little biased towards English though, its my favourite class and I hate geography and stuff” (S162).

Note. Students were asked to brainstorm subject-specific practices because few were given during SP project descriptions. The listed practices were considered to be subject-specific by the focus group who, for example, agreed that in-class assignments were more characteristic of math than other subjects. Few practices were classified unanimously.

One group focused on Special Classes (Table 35) and brainstormed activities for English (e.g., attending plays, research papers, acting, games, Internet research, posters) and math (e.g., competitions, finding math outdoors, games of chance, Christmas cookies, games). Labs were the agreed-upon special science class and movies were associated with social studies classes. The meeting, which started out with the purpose of describing experienced activities,

became a brainstorm of possible activities as students grew to enjoy the concept of enriched classes.

Table 36

FG Suggestions (Situational Perceptions)

Situation	Description
Effective Practice or a Good Class	Nodding along with what the teacher is saying, starting a discussion, contributing to the conversation, hands on work. "When your friends are not there disrupting the teacher" (S119). Looking close at my paper and writing notes, making notes in the margins. "I notice that when we're confused or not interested, nobody sends any text messages because we don't want to draw attention to it … but when we are, we chat up a lot" (S162) Teachers hold labs and give life examples to give a better understanding of the outcomes, diagrams and examples. "Lots of notes so I have everything I need to study" (S082). "Notes work well with me because I have something I can study" (S045). "Notes work good but I like discussions too [because] talking about things helps it to stick in my head. I don't always pay attention to what I write off the board" (S005). "If it starts well it goes well." "Teachers liked it when everyone participated" (S005). "When a lot of work gets done, a lot of new material gets covered" (S073), "we've done something productive and what he or she wanted covered it was covered" (S045). "Routine works excellent for me... especially when I end up having to miss a little bit of class at least then I know what I missed" (S005)
Ineffective Practice	Not enough practice, group members who couldn't care less, "sometimes it's embarrassing to ask for help" (S166), having to read the text and answer questions on the material, rushing or trying to squeeze things in, work sheets given for no real purpose, and taking notes without any explanation, and "filling in blanks for two hours … six pages of text with random words missing and the answer to one of the blanks was 'the'." Teachers who have a routine. "If we do the same thing every day, I wouldn't go... that would get a bit boring … I like change" (S045). Student-developed lesson plan. "Wow, I would not learn from that whatsoever" (S163). Unclear instructions. "If you don't talk clearly, no one can understand what you're talking about and no one pays attention" (S163). The teacher makes us write instead of photocopying, getting 45 minutes of notes (S114). "My Canadian History teacher can't write at all, so no one can pick out what he writes on the board" (S189). "I used to have a teacher like that too, no one could pick out his writing because it was really sloppy and he mumbled a lot" (S163).
Talents	Memory, picture notes as they are written, "put the information given into understanding and use it in real situations" (S119), have fun and stay on task, and the ability "not to laugh at your friends who can distract you from doing work." "My biology teacher is good at explaining" (S189 & S163),

Note. Students were asked to brainstorm reasons why a class was effective or good and ineffective or poor. The researcher would occasionally prompt groups with items from SP project descriptions.

Another group focused on what made a lesson good (Table 36) or poor. They developed a list which included that the lesson started well and was interactive, and the teacher captured student attention, motivated students to contribute, discussed examples from outside school, gave good explanations, gave good notes, gave good diagrams and that there were no disruptions. "Notes work good but I like discussions too [because] talking about things helps it to stick in my head. I don't always pay attention to what I write off the board" (S005). They observed teachers labelled classes as good when everyone participated and new

material was covered (S073). In contrast, they described Ineffective Practice to include a lack of variety, notes without explanations, poor or “sloppy” writing, rushing to finish, unclear instructions, and/or groups where partners “couldn’t care less” about finishing.

CHAPTER 4: DEVELOPMENT PHASE (DP)

This chapter presents the Development Phase (DP) of the program of research, the purpose of which was to produce a survey instrument to measure the most frequent practices in long-term or course and short-term or lesson situations. This phase included four stages: the *Student Explanation of Teacher Description* (SE) project, *Development Study* (DS) design, analysis of DS results, and redesign to produce the *Final Survey* (FS) instrument.

Creswell et al. (2003) suggest that "mixed methods researchers need a repertoire of strategies for establishing rigour within their mixed methods studies, and these strategies need to reflect both the paradigm guiding the study and the specific design used in the study" (p. 190). Onwueguzie and Johnson (2006) suggest paradigmatic mixing may occur in mixed methods research. In this case, exploration and development was used to create a qualitative-quantitative continuum; open response questions were used to identify a response universe and forced-choice questions were used to rank practices and perceptions. "Obtaining counts of the themes present in qualitative data can prevent researchers from over-weighting or under-weighting emergent themes" (Sandelowski, 2001). In addition, student participation was designed to cross the Exploration Phase (EP) – Development Phase (DP) paradigm boundary with new participants randomly chosen from the initial volunteer pool and many continuing to further participation such as completing the DS. "To the degree to which the qualitative participants are like a quantitative random sample, the [validity of meta-inferences] will be reduced" (Onwueguzie & Johnson, 2006).

4.1 Student Explanation (SE) Project

Do teachers and students share a language with which to discuss teaching and learning? Schutt (2001) states that "all hope of achieving measurement validity is lost unless the questions in a survey are clear and convey the intended

meaning to respondents" (p. 212). Bradburn and Sundman (1992) suggest "the fact that there can be multiple meanings to the same question increases the importance of adequate developmental work for questionnaires" (p. 36). In the *Student Explanation of Teacher Description* (SE) project 60 students examined 220 descriptions from the Teacher Description of Practice (TP) project to enable the researcher to recognize conceptual equivalents or alternate forms, examine differences, uncover misconceptions, and establish a measure of reliability. Alternate-form reliability "refers to the extent to which two items measure the same concepts at the same level of difficulty" (Fink, 2003, p. 49). Student re-statement of descriptions allowed the researcher to establish a range of meaning for terms instead of having to assume a consistent interpretation of meaning. Alternatives were identified which were used to clarify questions during survey instrument development.

Students were given lists of ten "behaviourally anchored" (Hallinger, 1983, p. 28) statements, which had been chosen as representative by the *Teacher Focus* (TF) project. They were asked to choose the two statements they found to be the most difficult to understand and explain these in their own words, thereby highlighting conceptual struggles. For example, as listed in Table 37, 18% of the students chose to explain the Course Preparation description, which includes cross-curricular connections. It was not assumed that the 82% who did not chose this statement understood the concept but, by not doing so, they suggested they had more difficulty with other statements. Most students who critiqued the phrase "cross-curricular connections" matched the researcher's understanding of ways a subject connected with other courses or subjects. However, a few students described teachers looking at "things not in the curriculum that relate to the course" (viz., enrichment), making connections with "things we might have done before" (viz., previous courses), and/or looking at "how other students in the province are learning" (viz., methodology). These misconceptions were related to the central concept but slightly askew. However, established variety in understanding helped the researcher modify questions and responses in the DS.

Table 37

Examples of Student Misconceptions (Long-term or Course Situations)

Concept	Misconceptions
Remind students of where they are now and where they need to be. (Other Long-term or Course) (20%)	
Student effort. "Teachers discuss with students how they need improving from where they are now," "that they are not doing adequately or not reaching the teachers standards," "the teacher will try to keep you on track," "to set the students in a right direction," "of what their marks are and what marks they need to obtain the course credit or their graduation diploma."	Course content. "The teacher tells students how much they need to know at the end of the course." "Work on the units, then take a few days and go over what we have done in the year before exams."
Reflect on how the course went and what could be improved. (Course Close) (19%)	
Teacher reflection. "The teacher will look at their performance for the year and look at how they may be able to improve their teaching methods," "see how good or bad the year was," "will improve it for next year so it runs smoothly."	Student feedback. "Ask for feedback from the students," "ask students what do they think should be included in next year classes," "talk to the students and see what can be improved in the course or how the teacher can improve how they teach the course." Feedback to students. "Help [students] by giving us good feedback that could help us in future years," "teachers sometimes tell us what needs to be improved," "this could help us improve next year because if we do I course like that course we will understand the necessary things."
Look at cross-curricular connections. (Course Preparation) (18%)	
Across subject areas. "To look at ways that a certain subject connects with other courses or subjects," to look at other courses or guides "to help students understand more" or "learn better."	Resources. "Look at things not in the curriculum that relate to the course." Previous courses. "To make connections with things we might have done before," "in other years." Other schools. "What other schools are teaching," "how other students in the province are learning."
Discuss expectations for student attendance, assignments, etc. (Course Start) (18%)	
Expectations. "The teachers explain to students what they expect of them," "what the teacher is looking for in attendance and work," "get assignments in on time."	"I don't understand why they do this because we know it all anyway"
Determine the learning needs of students. (Course Preparation) (17%)	
Special needs. "Check out who needs what sort of help in special ways," "learn what students need to learn such as special help." Comment -- "I'm not sure how the learning needs of students can be determined until the course has begun and the teacher can observe how students respond to their teaching methods."	Learning preferences. Six students suggested learning preferences, "to see how the students best like being taught," "to understand how the students learn best, how some catch on quickly and some need more time." Previous knowledge. Three students suggested previous knowledge needed to learn, possibly focused on specific outcomes, "to test the students to see what they already know."
Talk to students about the low points and greatest hits of a course. (Course Close) (16%)	
Invite feedback. "Conversations … about the fun and exciting things that happened in the course … and the boring, dreadful things," "talk about which units went well and which didn't," "discussing the topics in which need improving."	Critique of students. "Telling [students] where we should put more effort into the course," "where they went wrong and what they are having trouble with and doing good with;" "how to improve in their weak spots and congratulating them on their strong spots," "the negative things that happened during the year"

Note. Students who completed the Student Explanation (SE) project (n = 40 of 60) chose and commented on 22 lists of 10 teacher descriptions, most of which were chosen as situationally representative by the *Teacher Focus* (TF) project. The purpose of the SE project was to choose two confusing descriptions per question and attempt to explain their meaning. The five or six examples in the table represent frequently chosen items. Higher percentages indicate the most troublesome statements. Most SE choices were chosen by five to ten percent of the group. Note that the researcher's judgement as to whether or not student descriptions matched the researcher's concept was secondary to mapping variety in understanding.

Table 38

Examples of Student Misconceptions (Short-term or Lesson Situations)

Concept	Misconception
Internet research in the computer lab or library. (Special Classes) (33%)	
Research. "Research on topics we have previously studied," "looking up information for projects and sharing ideas," "the teacher mostly supervises us and gives us certain websites to visit to get information," "the teacher walks around and reading what people as researched and help them out more."	Evaluation. "Teachers assign work which involves research so they can see if students are capable of it on their own." Free period. "Teachers just leave us there while they go check their e-mails and do other stuff," "none of the students even bothers to do their work and they play games cause the teachers just don't really care." Typing. "To type up assignments."
Negotiate with students what they have for homework. (Class End) (19%)	
Student input. "Ask for student input on what to do for homework," "teachers discuss with the students the homework to be assigned and get feedback on it, which may or may not affect the teacher's decision," "to make sure that … they won't have too much to do in one night."	One-way. "The teacher will notify all students of the homework they must complete for the next lesson," "explain to students what needs to be finished," "help [students] to understand the work we are doing." Comment -- "there shouldn't be negotiation - if it's relevant give it for homework but if it's not and you're just giving homework for the sake of work... don't"
Check to see if everyone understands the lesson. (Class End) (16%)	
Understanding. "The teacher wants everyone to understand or ask questions," "to ensure that everyone knows what was explained in class and check to see if anyone has any questions so no one is left out and unsure," "verify that everyone has understood the lesson," "check to ensure everyone gets what's going on before moving onto something different."	Comment -- "I think students should make the teacher aware as the lesson is being taught if they are not following something [because] it makes it easier to go over things in pieces as opposed to trying to teach the entire lesson over again."
Plan activities for diverse learners. (Class Preparation) (14%)	
Learner preferences. "Plan activities that will suit all students," "plan various activities for the many different types of learners." Comment -- "most teachers don't do [this] as every student usually does the same activities."	Special needs. Struggling learners. "To plan activities for people who have a hard time by giving them extra activities to help them learn more," "separate activities for the bop kids?" Enrichment. "Extra work for smarter people who understand the topic," "shouldn't they be in an advance class then?"
Take a few minutes to talk about current events such as sports or movies. (Class Start) (14%)	
Relationship building. "To relax students before they start work and set the class off on a good note," "a casual conversation before class," "taking the time to socialize and associate with the students which gets the class going and the students thinking," "the teacher is trying to get the students to think about different things"	Killing time. "The teacher wants to pass time by talking about something not related to school," "why would you talk about sports and movies [which has] nothing to do with school work, so why waste time talking about it?" Waste of time. "I can understand this if it's a basic or level one [course] but for a public exam course it's asking for trouble," "I think this is better done at the end of class when students want a break from work," "not many teachers I know do this"

Note. Students who completed the Student Explanation (SE) project (n = 40 of 60) chose and commented on 22 lists of 10 teacher descriptions, most of which were chosen as situationally representative by the *Teacher Focus* (TF) project. The purpose of the SE project was to choose two confusing descriptions per question and attempt to explain their meaning. The five or six examples in the table represent frequently chosen items. Higher percentages indicate the most troublesome statements. Most SE choices were chosen by five to ten percent of the group. Note that the researcher's judgement as to whether or not student descriptions matched the researcher's concept was secondary to mapping variety in understanding.

Table 39

Examples of Student Misconceptions (Situational Perception)

Concept	Misconceptions
Teachers must teach different students in different ways. (Cross-curricular Practice) (29%)	
Accommodating variety. "Not all students learn the same, not all students are the same in the way they speak, their personality, their intelligence level," "everyone is unique and has different ways of learning and the teacher must try his or her best to accommodate this," "students react differently to different types of teaching," "different students have different ways of solving things out," "different learning methods," "some learn by doing questions themselves while some need a teacher explaining it on the board," "I myself learn better when I write notes from the white board."	Unfair. "If you teach students different ways then one way might be more complicated then another way so this wouldn't be fair towards the student" One-dimensional intelligence. "Some people may not be as smart as others." Problem with the individual. "Some students are harder to teach than others" Speed. "People learn at different rates," "some are slower and some are faster," "some learn quicker … and some need more time," "student "A" may not catch on to a topic as fast as student "B."
Don't have a "puzzled look" on their faces. (A Good Class) (21%)	
Understanding. "Students understood what was being taught," "the teacher feels like the students fully understand the information," "[students get] most of what the teacher was saying for the day." *No correlation.* "Some students can have a 'puzzled looked' on their face but still have a good learning class," "many students don't express their confusion … around their teachers if they are not comfortable doing so."	Lack of understanding. "The students don't understand what the teacher is saying," "as in they don't know how to do the work." Lack of attention. "They probably weren't listening so the teacher must have everyone's attention while the teacher is giving a lesson."
Create a learning environment where students are willing to put themselves out there and respond to challenges. (Student Skill Development) (18%)	
Comfort zone. "Teachers try to help students learn by creating a good learning environment," "a comfortable setting where the students don't feel threatened by the teacher and are comfortable to make mistakes," "so that students would be more calm and learn better," "students try to answer the questions being asked," "it is easier to voice your opinion in an environment in which you feel comfortable."	Challenge. "The student sets their own challenges and reaches them with the help of their peers," "challenges are always great for children they learn more by them." Student preference. "To let students learn how they like to and teachers make a learning spot for students and can set and down with other students and learn." Performance. "Some students may not be willing to put themselves on the spot because it may make them have "stage fright" and forget what they are learning."
Lectures and giving notes can be used to teach any course. (Cross-curricular Practice) (14%)	
General pedagogy. "I disagree. Some classes are more example and information based such as math and science while classes like English, Theatre Arts, and Music are more performance, talking and thinking based," "some courses such as Skilled Trades need hands on work."	Notes are a control. "Most students get bored really fast and tend to go off tract when the teacher is standing for a long time explaining things," Notes are helpful. "Writing notes helps students remember material;" "notes are helpful when studying and help me memorize important facts for tests" Notes are for tests. "we are often given notes but we don't have tests therefore nobody studies or learns them"
Being able to detect misconceptions. (Strengths and Talents) (14%)	
Misconceptions. "Teachers can tell when students understood something the wrong way."	Lack of understanding. "Being able to detect when a student doesn't understand," "being able to see when students are not fully understanding" Teacher mistakes. "They can know how to do the problem by fixing the teacher mistake." Honesty. "They can tell when we are lying (e.g., about our homework being done) or when we plagiarize."

Note. Students who completed the Student Explanation (SE) project (n = 40 of 60) chose and commented on 22 lists of 10 teacher descriptions, most of which were chosen as situationally representative by the *Teacher Focus* (TF) project. The purpose of the SE project was to choose two confusing descriptions per question and attempt to explain their meaning. The five or six examples in the table represent frequently chosen items. Higher percentages indicate the most troublesome statements. Most SE choices were chosen by five to ten percent of the group. Note that the researcher's judgement as to whether student descriptions matched the researcher's concept was secondary to mapping variety in understanding.

The most frequently chosen descriptions of short-term or lesson situations chosen by students are listed in Table 38. Thirty-three percent of students chose to explain the meaning of the phrase “Internet research in the computer lab or library.” This was not surprising, based on the researcher’s experience as a technology and learning resources program specialist. Many teachers in the Central District had expressed the opinion they lacked the background to teach research and Internet use was considered a novelty. Commonly, teachers did allow students to use computers to type creative writing pieces; however, many expressed concerns that research was merely “cut and paste” assembly of copied information. Concern and lack of training on how to evaluate such projects led some teachers to focus computer use on exploration of curriculum topics, and for some students this did translate into a free period. Hence, the identified misconceptions were within the range of observed practice but did not equate to the concept.

The most frequently chosen descriptions related to perceptions of effectiveness, a good class, cross-curricular practice, talents, and self-development were listed in Table 39. The statement “teachers must teach different students in different ways” was taken from a TP project description of diverse learners and was intended to convey the need to accommodate the variety of learning styles or preferences in the classroom. Students who chose the item, and therefore claimed not to fully understand it, suggested it meant that some students were not as smart as, harder to teach than, and/or learned slower than others. A few suggested that variety in practice might be unfair to the students.

4.2 The Development Process

Development was the process of merging Exploration Phase (EP) open-response data from Teacher Description of Practice (TP), Student Journal of Teacher Practice (SJ), and Student Description of Practice (SP) projects to produce a fixed-choice survey instrument. The *Development Study* (DS) was more

than a pilot; it was designed to investigate survey format, sections, question structure, and response lists. Eight changes (Table 40) marked the transition from exploratory to developmental research.

Table 40

Transition Guidelines

Guideline	Description
Weeding	Elimination of sections and/or questions to focus the research on practice and reduce participant workload, such as omission of EP section entitled *External Influences*.
Splitting	Recognition of EP response categories and indications of the need for additional questions. For example, study periods as distinct from special classes.
Student Suggestions	Development of new questions based on student Finish Line suggestions (e.g., Teacher-Class Relationships).
Checkbox Style	Replacement of drop box response with check boxes to allow participants to see all possible choices simultaneously and make better decisions (i.e., Choose all that apply).
Verbatim Text	Re-examination of the EP theme list for each question to use student description and language as much as possible in forming response choices.
Equivalent Response	Identification, clarification, and merging of equivalent responses based student perceptions (SP, SJ) and misconceptions (SE, focus groups). For example, "course outline" and "course overview" appeared to be used interchangeably.
Negative Response	Inclusion of negative (e.g., "It doesn't work for me") and null (e.g., "None of the listed items") choices in each question.
Open Response	Reframing open-response from collecting rich data to collecting undiscovered data (i.e., "Something else? Please list.").

The DS included sections concerning demographics, student practice, student-described course-specific teacher practice, and student-described general teaching practice. The demographic questions, entitled *You as a Student* (Section A), were kept as unchanged as possible from the EP projects in order to later use the twice-collected data as a reliability check. The open-ended self-description questions asked in the *SP* project were changed to a fixed-response format and became *Your Learning Practice* (Section B) with an integration of long- and short term situations. *An Individual Teacher's Practice* (Section C) was like the student summary descriptions from the *SJ* project. *General, Subject-specific, and Online Practice* (Section D) was developed to highlight themes formerly integrated across projects, for example cross-curricular practice and DE. Figures 7, 8, 9, and 10 map the changes from EP data to the DS.

DS Section A (DA) was based on Section A of the SP project, which was composed of subsections entitled *The Big Picture, Your Learning Preferences*, and *This Year*. The map (Figure 7) illustrates question order, number, source, title, style, and number of response choices. For example, DS Section A question 1 (DA01) was entitled Frequency Using the Internet. It was one of two questions resulting from a clarification of SA01 choices during SP administration.

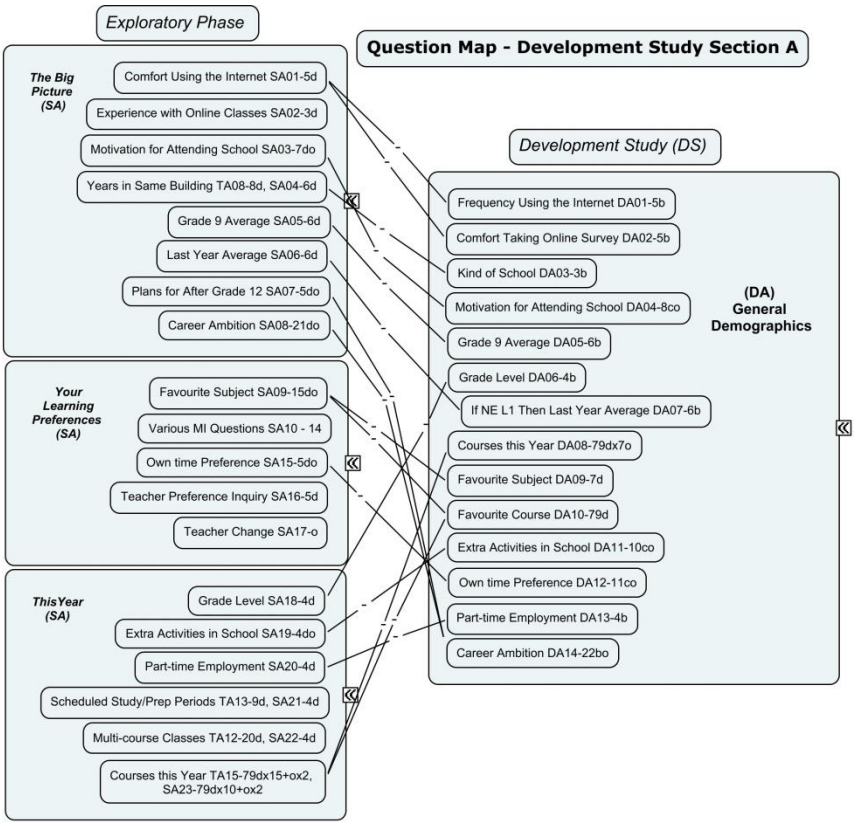


Figure 7. Development Study (DS) Question Map Section A (DA).
DS Section A (DA) was designed based on the three subsections of Student Description of Practice (SP) Section A (SA). Student descriptions, data analysis, and project administration were used to determine changes. The map illustrates question order and number (e.g., DA01 is DS Section A question 1), source (e.g., DA01 originates as SA01), title (e.g., DA01 is Frequency of Internet Use), number of choices (e.g., 5d as 5 choices), and style such as button (b), checklist (c), dropbox (d), or open (o). Decisions were based on the eight established eight guidelines and resulted in SP Section A questions being split (e.g., SA01 > DA01 + DA02), combined (e.g., SA07 + SA08 > DA14), dropped (e.g., SA02), changed (e.g., SA15-d6o > DA12-c12o), and/or moved (e.g., SA10 > Section B).

Students had five fixed choices in answering DA01 but, unlike SA01, those choices were listed in a button-response format (i.e., 5b) so that students could

view all choices in deciding; another recommendation during project administration. Such decisions, based on the eight guidelines (Table 40), resulted in SP Section A questions being split, combined, dropped, changed, and/or moved. Order was changed to bring together questions with related themes, such as in-school vs. extracurricular activities.

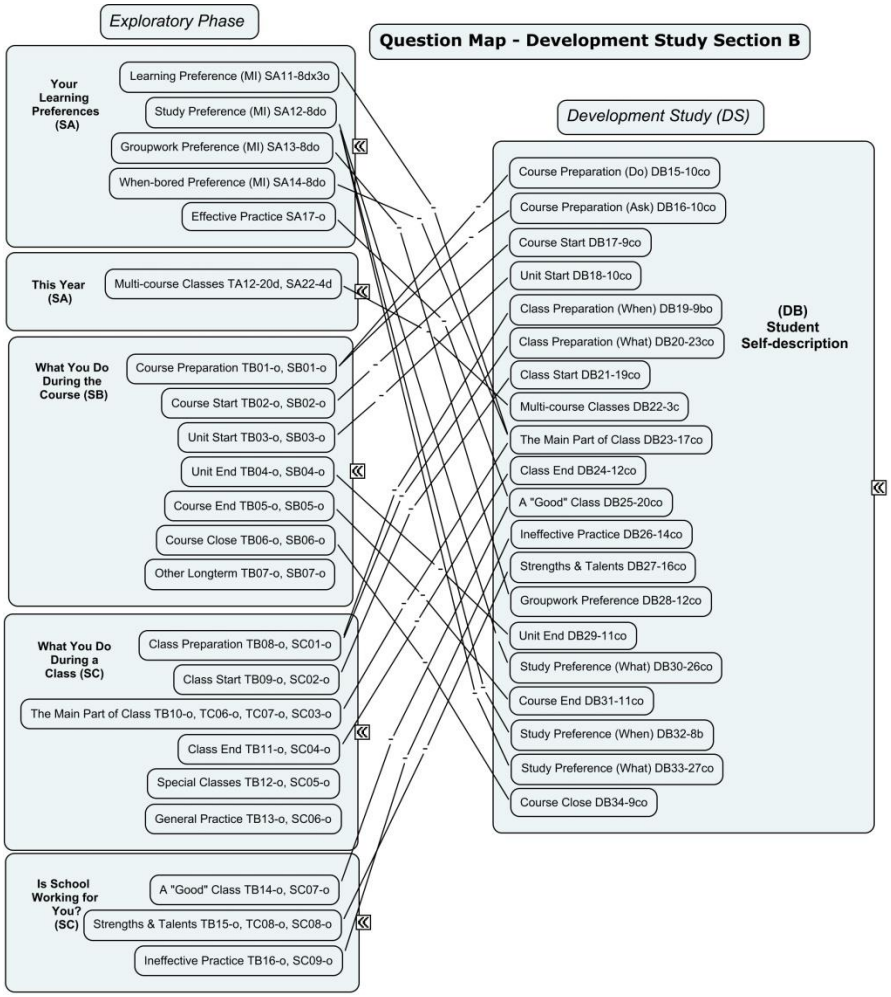


Figure 8. Development Study (DS) Question Map Section B (DB).
The map illustrates question order, number, source, title, number of choices, and style such as button (b), checklist (c), dropbox (d), or open (o). For example, DB15-10co, the 15th DS question, was in Section B and offered respondents 10 choices in a checkbox-style format and an open-response option. It originated from Section B of the Teacher Description (TP) and Student (SP) Description projects. Analysis of that data suggested dividing the original Course Preparation question into actions (DB15) and information gathering (DB16). Note that long-term situation questions from SP B and short-term from SP C were merged in DS B. This reflected the choice to separate questions of student practice from questions of student-described teacher practice.

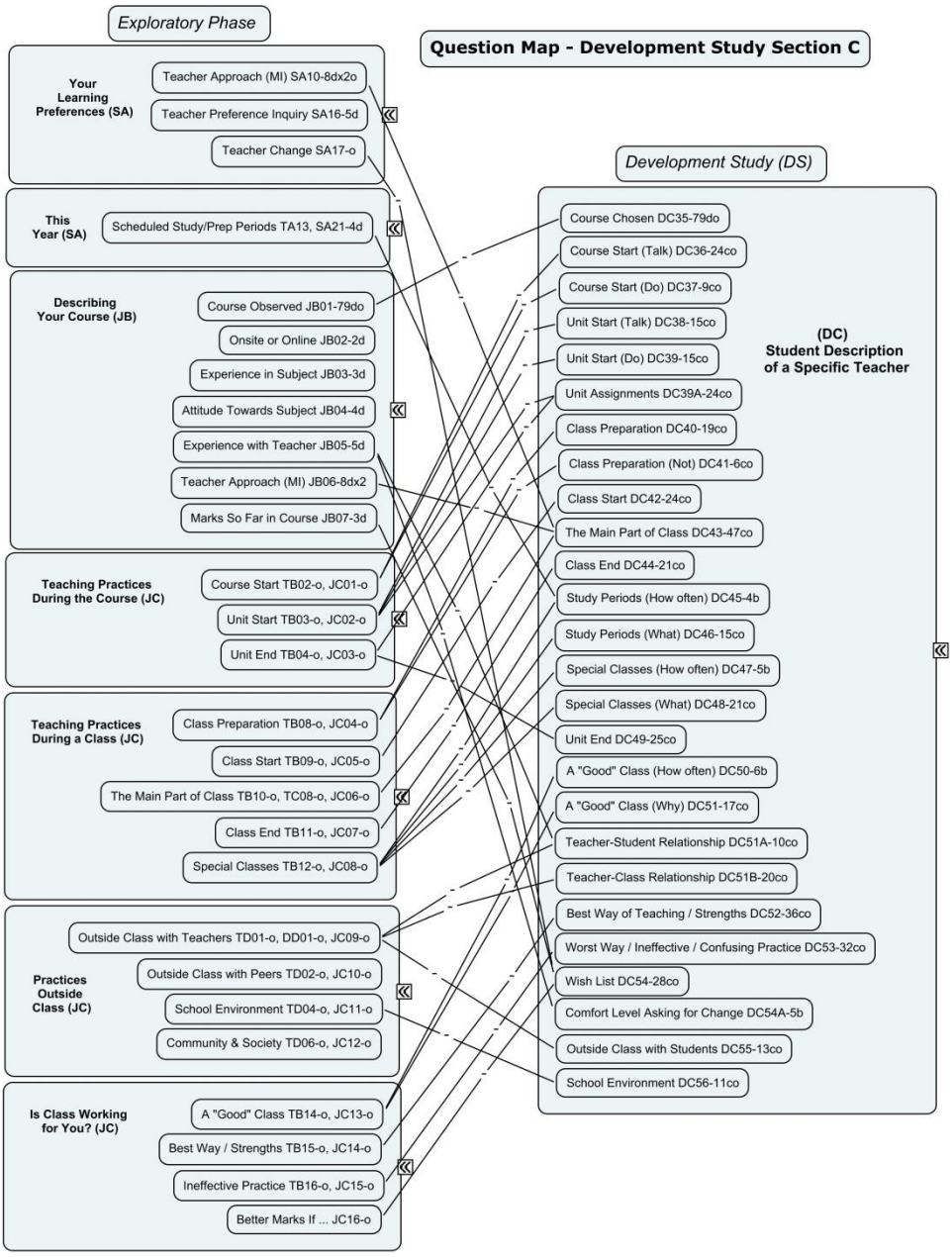


Figure 9. Development Study (DS) Question Map Section C (DC).
The map illustrates question order, number, source, title, number of choices, and style such as button (b), checklist (c), dropbox (d), or open (o). Note that DS Section C questions of student-described teacher practice originated from and were based on analysis of data from the Student Journal (SJ) project. Also, note that analysis of EP descriptions often resulted in the creation of many DS questions. For example, analysis of descriptions of Special Classes (TP B 12 and SJ C 08) led to DS C 45 (viz., Frequency of Study Periods), 46 (viz., Practice during Study Periods), 47 (viz., Frequency of Special Classes), and 48 (viz., Practice during Special Classes).

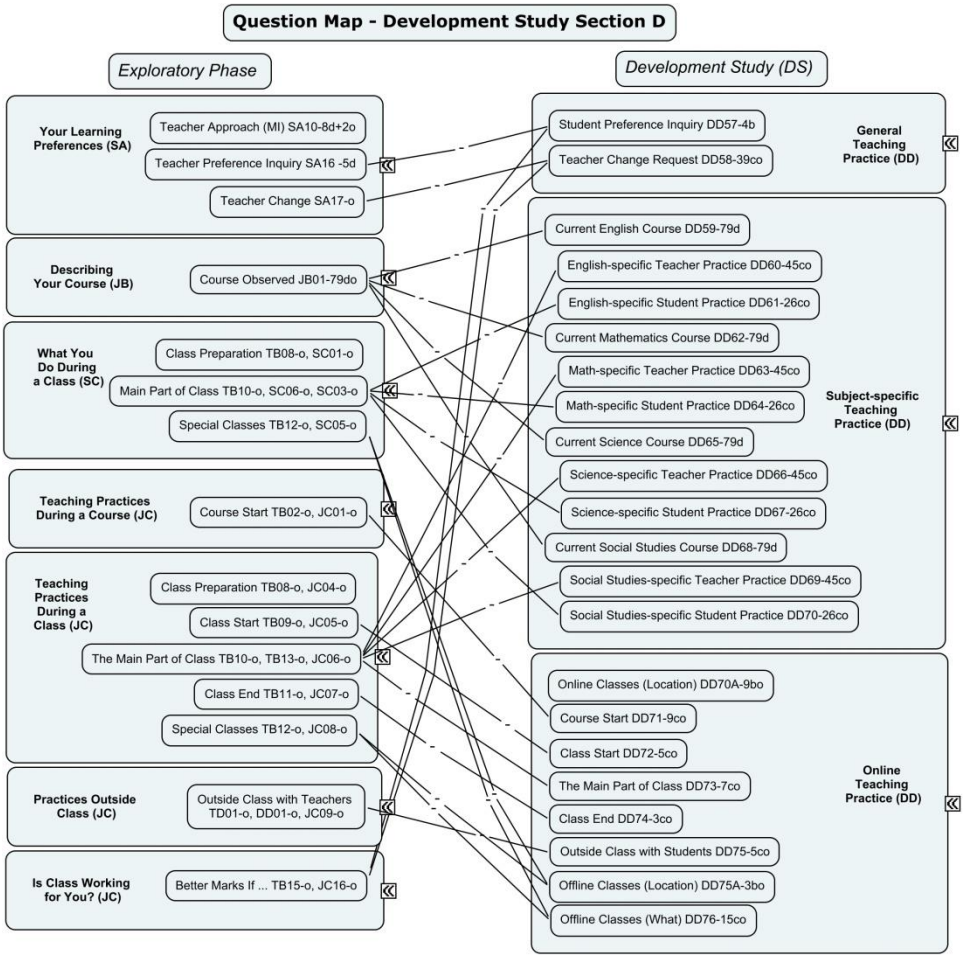


Figure 10. Development Study (DS) Question Map Section D (DD).
The map illustrates question order, number, source, title, number of choices, and style such as button (b), checklist (c), dropbox (d), or open (o). Note the origin of specific DS D subsections focused on subject-specific and online or distance education practice. These subsections characterized the DS as an intermediate stage between description and forced-response; survey development was not predetermined but dynamic.

DS section and question design led to the creation of the corresponding webpages, questions, response lists, and database coding. An email was broadcast to all participating teachers to update them on progress and keep the program in mind. A week later a random sample of 16 (20%) stratified by subject area was invited to critique the DS, of which 12 agreed and 10 returned feedback. Teachers were asked to read through questions for content, coverage, and clarity. General comments were positive: “comprehensive … my God - you seem to have nailed every possible response a kid might have!” (T49); “very extensive and very

detailed … able to produce a clear picture" (T93); the questions are "all fairly easy to understand and answer for the student" (T23); "clear with a huge range of responses" (T78). Many liked that questions offered students the ability to type an open response and T49 specifically mentioned the inclusion of negative or "honest" response choices, noting that "kids always had the option to respond honestly at each item, so there's always the option for kids to say something like ... I don't do anything, if that is the case. The survey seems very 'real' to me." One teacher (T23) circulated the DS at their school to collect additional feedback and another (T85) circulated it in senior high classes to get student impressions.

Teachers also made specific suggestions about 12 questions. For example, one (T85) suggested students would not understand if the question (DA01) regarding Internet use would apply to school or personal use. Two teachers (T23, T84) questioned the wording concerning student averages and felt that some students might not remember. T84 suggested including a response in DA11 to distinguish between extracurricular varsity and competitive sports. T84 likened a Unit Start (DC37) response choice "got to work right away" to "jumping into the deep end of the pool" and suggested toning down the wording. T78 questioned the choices in describing the frequency of special classes (DC47). T48 suggested an additional response item for DD67 (science): Students had to listen more carefully because science class was "harder, more confusing, and more complicated." T49 suggested that distance education (DE) teachers provided contact information such as home phone numbers, fax numbers, and email address at Course Start; something that is "not normally done in traditional classrooms." At Class Start (DD72) teachers talk to students and grant them privileges "to communicate with each other" (T49) while waiting for others to log in. T48 questioned the frequency of student practice during offline DE classes (DD76) and suggested a response that included "off-task" activities "like Facebook or MSN or playing games." All suggestions were considered for the DS.

4.3 Development Study (DS) Results

The *Development Study* (DS) was the transition between rich-description Exploration Phase (EP) projects and a limited-choice survey instrument. The purpose of the study was to test possible questions and to reduce response lists by identifying rare and associated responses. The first 60 EP (31 SJ, 18 SP, 11 SE) participants who responded to an email invitation were assigned new usernames and given two weeks during which to log on and complete the study. The sampling method was chosen to provide a measure of construct validity across phases and paradigms; to collect checklist style data from participants who had previously written or critiqued open-ended descriptions.

Administration led 54 students to complete the DS and describe the practices of English (18%), math (24%), science (22%), social studies (18%), and other (16%) teachers teaching academic (84%), basic (6%), and advanced (10%) courses in levels 1 (27%), 2 (24%), and 3 (49%). Fourteen of 756 possible responses (1.9 %) were missing for demographics (viz., Section A) and three of 1080 possible responses (0.3 %) were missing for student self-description (B) with no student or question missing more than one response. Two students did not continue and attempt teacher description (C) making the response load 26 questions times 52 participants, or 1352. Of the 58 missing responses (4.3%), two students who began but did not finish the section accounted for almost half (47%) of the missing values. Two additional students did not continue to the section on subject-specific and distance education (DE) practices (D).

Three types of analyses were used to identify responses to exclude from the FS: rarely chosen responses, response associations, and significant rank order changes. These are discussed in the following sections. However, inclusion of new responses was still possible as open-response options gave students the ability to override developed lists and “communicate the true answer” (Schwarz & Hippler, 1992, p. 41). Open response was also the mechanism by which students

critiqued questions. Critiques and response equivalencies were discussed in three student focus groups.

Rare Practices

Recognition of rarely chosen response items representing student practice and perception of teacher practice was important because these items were discarded and not carried forward in the process of streamlining questions for the Final Survey (FS). The relative frequency of student practices (DS Section B) and student-described teacher practices (Section C) were calculated and choices were ranked as frequent (≥75%), common (≥50%), occasional (≥25%), and rare (<25%), with rare responses identified for exclusion. For example, as listed in Table 41, less than 25% of DS students chose five of the ten items suggested by EP students as Class Preparation practice. Thus, it was concluded students rarely skimmed the curriculum guide, read chapter outlines, and/or reviewed notes in preparation to take a course. Students were directed to choose all responses that described their situational practice in answer to DS questions. Hence, non-chosen responses did not represent limited forced choice but the decision that the practice was not in play.

Many interesting practices were rarely chosen in the DS. For example, with respect to Course Start (Table 42), students rarely indicated that teachers talked about how they like to teach and/or how students like to learn. This lack of communication at the start of a course suggested assumptions on the teacher's part and a lack of power on the students' part. Students also indicated that teachers rarely discussed student interests at Unit Start, asked how their day was going at Class Start, tried to understand student misunderstandings during the Main Part of Class, and/or taught them how to do Internet research during Study Periods. On the positive side, students rarely indicated teachers were unprepared for class or unorganized.

Table 41

DS Rarely Chosen Items (Student Practice)

Situation	Ratio	Rare Student Practices
Course Preparation	5 of 10	Students rarely indicated they skimmed the curriculum guide, just went to class, read textbook chapter outlines, reviewed notes from a previous course, and/or talked to a teacher or guidance councillor.
Course Start	2 of 9	Students rarely indicated they talked to the teacher about their interests.
Unit Start	2 of 10	Students rarely indicated they thought about the unit and/or googled key terms.
Unit End	3 of 11	Students rarely indicated they stayed after school for extra help, asked for a make-up assignment, and/or did nothing special.
Unit Test	9 of 26	Students rarely indicated they wrote a review, wrote a list of questions, read the outcomes, worked with a friend to test each other, scheduled study time, made a practice test, drew diagrams connecting notes, and/or took a walk outdoors to think.
Course End	2 of 11	Students rarely indicated they asked for a make-up assignment and/or did nothing special.
Course Exam	8 of 27	Students rarely indicated they read the outcomes, wrote a review, made up a practice exam, worked with a friend to test each other, drew diagrams connecting notes, did nothing different than for a unit test, took a walk outdoors to think, and/or didn't study. Students rarely indicated they started to study a week before, after Easter holidays, a month before, a few days before, the day before, or at the beginning of the year, and rarely claim not to study for exams.
Class Preparation	11 of 23	Students rarely indicated they discussed the lesson with friends, did extra studying, tutored others, researched the Internet, read ahead, made up practice questions, forgot about school, talked to parents, charged their laptop, went to the library, and/or didn't do homework. Students rarely indicated they did homework during class with teacher permission, at all, after school before supper, during recess or lunch, on weekends, during classes without the teacher knowing, and/or early in the mornings, and rarely had study periods in their schedule.
Class Start	3 of 19	Students rarely indicated they listened to the teacher's reason why the class was important, finished homework before the teacher corrected it, and/or did nothing.
Main Part of Class or Lesson	7 of 17	Students rarely indicated they asked a friend questions if the teacher was busy, checked answers to assigned questions, related new ideas to everyday things, asked if the topic was important, did nothing special, read ahead, and/or reread and organized notes.
Group Work	6 of 12	Students rarely indicated they created graphs or slides, finished their part alone before sharing, did something that involved moving around, added sounds or music to the presentation, did what no one else wanted to do, and/or linked the assignment to the outdoors.
Class End	3 of 12	Students rarely indicated they made sure they were prepared for the next period, did nothing really, and/or did what they wanted because the teacher loses control.
A Good Class	2 of 20	Students rarely indicated they described a class as good because the teacher was engaged and not so laid back, and rarely claimed not to have had a good class.
Strengths and Talents	10 of 16	Students rarely indicated they had a talent in note taking, being creative, remembering formulas, remembering what they saw, studying with friends, relating new ideas to things they already knew, writing things down, and/or connecting class with their life.
Teacher-Student Relationships	4 of 10	Students rarely indicated that the teacher was a friend, hated going to class, and/or were afraid of the teacher, and few had never thought about it.

Note. Analysis of Development Study data resulted in determining the frequency of each question response. Responses chosen by less than 25% of participants were labelled *rare* and considered for deletion from the Final Survey. A few responses were identified in most question but up to 50% were identified in other questions. Hence, the table displays many ideas from Exploration Phase descriptions that were not carried forward.

Table 42

DS Rarely Chosen Items (Student-described Teacher Practice)

Situation	Ratio	Rare Teacher Practices
Course Start	11 of 25, 6 of 9	Students rarely indicated teachers talked about how they liked to teach, student interests, careers associated with a course, how the course related to everyday life, sections of the textbook, a school event, what they learned from students last time, students' best ways of learning, and/or health problems. Students rarely indicated teachers reviewed material from last year, did nothing special, asked them to fill out information sheets, did an activity, played games, and/or took a sample of their writing.
Unit Start	8 of 15, 11 of 15	Students rarely indicated teachers talked about how previous students found the unit, how the topics related to the world, a famous person, how the topics connected to a different course, their interests, what students might enjoy about the topics, and/or how students preferred to learn. Students rarely indicated teachers brainstormed ideas related to topics, wrote example questions, skimmed the textbook, tested to see what students already knew, grouped students to discuss topics, gave a handout of the notes, asked students to watch interesting videos, gave brain teasers, told them to watch the news, and/or gave samples of student work such as poetry or portfolios.
Unit Assignments	15 of 24	Students rarely indicated teachers assigned group projects, problem sheets, creative writing, web-based projects, lab reports, research reports, constructions or models, extra-credit work, artwork, drawings, paintings, formal debates, multimedia projects, surprize quizzes, and/or major projects such as science or heritage fairs. Students rarely indicated they were given the opportunity to suggest how they could be marked.
Unit End	14 of 25	Students rarely indicated teachers did a lot of in-class review, gave class time to study with friends or write a review, gave a self-test for practice, showed videos that reviewed topics, reviewed without asking questions, had a fun project, and/or had review games such as Jeopardy. Students rarely indicated there was no test and instead the class completed projects or went on to the next unit. Students rarely indicated they believed teachers expected them to review on their own and take responsibility.
Teacher Preparedness	5 of 19	Students rarely indicated teachers spoke of preparing the previous evening, searching online, using notes from the previous year, and/or posting slideshows before class. Students rarely indicated they saw no evidence of preparation.
Teacher Not Prepared	5 of 6	Students rarely indicated teachers only gave notes, assigned seatwork and took time to correct, appeared to be unorganized, asked students for ideas for activities, and/or didn't know the answers to questions before class.
Class Start	13 of 24	Students rarely indicated teachers asked how their day is going, returned corrected work, reviewed upcoming deadlines, corrected homework, told funny jokes or stories, spent time setting up equipment, made sure everyone was feeling good, disappeared to do something, gave warm up questions, did nothing special, allowed students to choose an activity, and/or showed up late and put students to work right away.
Main Part of Class	26 of 47	Students rarely indicated teachers asked students to participate in activities, let them work in pairs, use a graphing calculator, explained new ideas according to outcomes or by drawing diagrams, tried to understand student misunderstandings, wrote terms on the board, did demonstrations, used a projector for notes, asked for examples, related new ideas to experiences, had interesting resources, didn't give many notes, made notes about students, put them into groups, showed videos from the Internet, gave feedback on how well they were learning, sat and watch them work, asked them to stand up and stretch, made sure everyone was safe, refereed games, were preoccupied with something, didn't give examples, let them read novels, never took time for discussions, and/or played games to get us to participate.
Class End	8 of 21	Students rarely indicated teachers wrote homework on the board, corrected seatwork, let them know of school announcements, assigned seatwork questions, let them get ready for the next class, stopped writing notes and started a discussion, allowed them to cool down and switch back into street clothes, and/or did nothing special.

Note. Analysis of Development Study data resulted in determining the frequency of each question response. Responses chosen by less than 25% of participants were labelled *rare* and considered for deletion from the Final Survey. A few responses were identified in most question but up to 50% were identified in other questions. Hence, the table displays many ideas from Exploration Phase descriptions that were not carried forward.

Table 43

DS Rarely Chosen Items (Perceptions of Teacher Practice)

Situation	Ratio	Rare Perceptions
Making Learning Easy	15 of 36	Students rarely indicated that teachers wrote important words on the board, asked lots of questions, did the same thing every time, wrote notes students could rearrange, explained things in funny memorable ways, let them get creative, used videos, had a multiple-choice question class before tests, concluded units with fun assignments, got students out of their seats, read, designed experiences like field trips and labs, and/or posted slideshows.
A Good Class	7 of 17	Students rarely indicated they believed a teacher labelled a lesson as good because the teacher didn't have to speak over students, certain students were absent, students could all answer questions, students practiced teamwork, and/or it was a small class and they could work one-on-one. Students rarely indicated "I don't always have a good class when they call it a good class."
Making Learning Difficult	30 of 32	Students rarely indicated that teachers dragged out the lesson and it became boring, weren't there to show students what to do, assigned questions students didn't understand, explained something by asking another question, put notes on the whiteboard and didn't explain, explained things too quickly and left, put uncovered topics on the test, wandered off topic, wrote notes fast before the bell rang, asked students to work without examples, wrote confusing assignments, used words they didn't understand, gave definitions with close to the same meaning, gave a meaning for something that was different from what everyone knew, went to a new topic before they could ask questions, used new terms inside new definitions, read something out loud they couldn't see, gave a test that covered the text instead of the notes, used a different method than they were taught, changed directions for an assignment before they passed it in, gave notes that contradicted their textbook, used confusing tables, and/or used equations before they were explained. Students rarely indicated learning was hard because they missed the point, misunderstood, didn't think the teacher's method was correct, and/or didn't know if they were supposed to already know how to answer a question.
Teacher-Class Relationship	11 of 19	Students rarely indicated that teachers sent students out of class or to the office, favoured some students over others, talked to students about their behaviour so that everyone could hear, yelled at students, gave detentions for inappropriate behaviour, were hard on students when they didn't deserve it, asked students to help set the expectations for the course, criticized students without reason, said things which were inappropriate or insulting, looked down on students, and/or treated students as inferior.
Outside the Class	8 of 10	Students rarely indicated that teachers had meetings about the course, stayed after school to play in the gym, ran a school club, worked on a committee, and/or helped with the student council.
Student-suggested Change	25 of 28	Students rarely indicated they would like teachers to discuss notes more, not expect tests to be finished in an hour, not have so many long answer questions on tests, explain concepts more in-depth, help them understand, do more activities, give more time for them to figure things out, make class more interesting, bring it down to their level, give second chances to understand explanations, give less workload, give more challenges, and/or not write so many notes so they could pay more attention.

Note. Analysis of Development Study data resulted in determining the frequency of each question response. Responses chosen by less than 25% of participants were labelled *rare* and considered for deletion from the Final Survey. A few responses were identified in most question but up to 50% were identified in other questions. Hence, the table displays many ideas from Exploration Phase descriptions that were not carried forward.

Frequent Associations

Response associations were defined as the frequency of a second choice based on the presence of the first that is, the frequency of choice "b" given "a." For example, Table 44 displays the relative response frequencies for ten choices

describing student Course Preparation. The choice "gather supplies" is represented by the code "a." The association matrix shows that, for example, that 100% (1.00) of the students who chose "a" chose "a" (a=1►a at 1.00 or a=1 1.00►a) and that 43% (0.43) who chose "b" (viz., "Nothing. I just go to class") also chose "a" (b=1►a at 0.43 or b=1 0.43►a). Associations with values greater than 75% were labelled *frequent* and were investigated to identify equivalencies, repetition, and the possibility of combining response items.

Note that associations were directional and strength in one direction did not imply an equally strong association in the opposite direction. For example, 96% of students who organized notebooks gathered supplies (c=1 0.96►a) while only 49% of students who gathered supplies organized notebooks (a=1 0.49►c); matrices of situational practice were not symmetric. Associations of 0.75 or greater in both directions were labelled *reflexive*.

Table 44

Example Association Matrix (DS Student Course Preparation)

Response Frequencies

Frequency Table

Attribute	*code*	*n*	*ratio*
Responses	*#*	*54*	*1.00*
Missing	*?*	*0*	*0.00*
Other	*O*	*2*	*0.04*
Gather supplies (e.g., binders)	A	46	0.85
Organize my notebook	C	24	0.44
Skim through the textbook	H	21	0.39
Talk to friends or relatives	J	20	0.37
Read the course description	D	16	0.30
Skim through the course curriculum guide	G	13	0.24
Nothing-I just go to class	B	8	0.15
Read the textbook chapter outlines	E	7	0.13
Review notes from a previous course	F	5	0.09
Talk to another teacher or guidance councillor	I	3	0.06

Response Associations

	a	b	c	d	e	f	g	h	i	j
If a=1	**1.00**	*0.07*	0.49	0.33	*0.11*	*0.11*	0.29	0.38	*0.04*	0.38
If b=1	0.43	**1.00**	*0.00*	*0.14*	*0.00*	*0.00*	*0.00*	*0.00*	*0.14*	0.29
If c=1	**0.96**	*0.00*	**1.00**	0.39	*0.17*	*0.22*	0.39	0.39	*0.09*	0.43
If d=1	**0.88**	*0.06*	0.53	**1.00**	0.29	*0.24*	0.35	0.35	*0.00*	0.53
If e=1	**0.83**	*0.00*	0.67	**0.83**	**1.00**	0.33	0.50	0.50	*0.17*	0.50
If f=1	**1.00**	*0.00*	**1.00**	**0.80**	0.40	**1.00**	0.60	**0.80**	*0.00*	**0.80**
If g=1	**1.00**	*0.00*	0.69	0.46	*0.23*	*0.23*	**1.00**	0.62	*0.00*	0.46
If h=1	**1.00**	*0.00*	0.53	0.35	*0.18*	*0.24*	0.47	**1.00**	*0.00*	0.41
If i=1	0.67	0.33	0.67	*0.00*	0.33	*0.00*	*0.00*	*0.00*	**1.00**	0.33
If j=1	**0.94**	*0.11*	0.56	0.50	*0.17*	*0.22*	0.33	0.39	*0.06*	**1.00**

Note. Question DB16 - What do you *DO to get ready* for a course *before it begins* or during the first few days of the school year? Lower case letters were used as response codes during data analysis. Key – number of responses (n), ratio of response to number of participants (ratio) for example, a proportion of 0.85 or 85% of students indicated they gather supplies. Missing indicates zero students failed to answer the question. Other indicates two students gave an open-responses. The matrix is read from left to right not top to bottom, for example if a=1 then b=0.07 which indicates that 7% of students who chose response "a" also chose "b." Association values less than 0.25 (viz., rare) in italics; values equal to or greater than 0.75 (viz., frequent) in bold.

Also, note that the validity of associations involving *rarely chosen items* (viz., those with a response frequency of less than 25%) was questionable and not

considered. For example, although 100% of students who chose “review notes from a previous course” (f) also chose “gather supplies,” only 9% of students chose response (f).

Many of the associations for student practice taken from the Development Study (DS) data and listed in Tables 45, 46, and 47 raised interesting questions. For example, for Course Preparation (Table 45), all participants who indicated they skimmed the textbook and/or the curriculum guide prior to the first class also indicated they gathered supplies. Note that associations were not claimed to be causal; for example, it was not claimed that gathering supplies was the result of skimming the textbook. Listed associations not labelled as *always* (if a=1 ► b=1.00) or *never* (if a=1 ► b=0.00) were *frequent* (if a=1 ► b ≥ 0.75) or chosen by at least 75% of participants. Some associations were reflexive. For example, students who asked friends if the course was easy or difficult *frequently* asked how they did in the course, and students who asked how friends did in a course *frequently* asked if it was easy or difficult. Note that a short representative phrase was used in tables to facilitate reading.

Associations were not examined for their causal nature but as a way to discover repetition in question response lists. For example, at Course Start, all students who indicated they try to get to know their classmates also indicated they try to get to know their teacher. This prompted the researcher to consider if both responses were necessary. In preparing for classes (Table 46), all students who checked with a friend to make sure they understood what they had to do for homework, compared notes with someone and/or discussed assignments also got notes if they missed a class. Hence, to reduce the number of items, can it be assumed that students who compare notes also obtain missing notes? When in groups, students who helped organize the group *frequently* listened to what the rest of the group had to say. Can it be assumed that organizers listen? Students who labelled a lesson as *good* (Table 47) because it was interesting *frequently* did so because they could understand it. All students who chose “when the teacher can come down to our level” also chose “when everyone pays attention.”

Table 45

Frequent Associations (Student Long-term or Course Practice)

Situation	Number	Frequent Associations
Course Preparation	27	Skim curriculum guide & skim textbook *always*► gather supplies. Ask if the course will help my career *always*► ask how friends did. Organize notebook & read course description & talk to friends ► gather supplies. Easy or difficult ◄► how friends did. If the teacher is boring or interesting & workload & required course & teacher's personality & topics & teaching methods ► how friends did & easy or difficult. Teacher's personality & methods & help career ► boring or interesting & workload. Teaching methods ► teacher's personality.
Course Start	1	Get to know my classmates *always*► get to know teacher.
Unit Start	11	Identify important pages & ensure work was finished & copy definitions & write jot notes & copy objectives & read the unit ► start a notebook. Copy definitions & write jot notes & copy objectives ► identify important pages. Write jot notes & copy objectives ► copy definitions.
Unit End	28	Get ready ◄► ask teacher & complete notes & make sure know everything. Ask teacher ◄► complete notes & do sample problems. Know everything ► ask teacher & complete notes. Sample problems ► get ready & complete notes. Review sheet & complete assignments & class discussions ► get ready & ask teacher & complete notes & know everything. Review sheet & class discussions ► sample problems.
Unit Test	47	Correct mistakes on assignments *always*► memorize what I need. Practice with tests from previous years *always*► do practice questions or problems. Practice questions & organize notes & make up a study guide & review assignments & review definitions & read textbook & correct mistakes & rewrite notes logically & create something to help me remember ► memorize notes & what I need. Practice previous tests ► memorize. Complete review assignment & brainstorm & rewrite notes ► memorize & organize. Cram, cram and cram & make a study guide ► memorize. Review assignments & review definitions & read textbook & create something ► organize & complete review assignment. Make a study guide & correct mistakes & rewrite notes ► complete review assignment. Review definitions & correct mistakes & rewrite notes ► review assignments. Correct mistakes & rewrite notes logically & rewrite according to the study guide ► make a study guide.
Course End	23	Ask about exam ◄► ask for sample problems & complete notes. Sample problems ► complete notes. Know how to do everything & ask for a review sheet & complete assignments & participate in discussions & stay after school ► ask about the exam & complete notes & sample problems.
Course Exam	110	Rewrite notes according to study guide *always*► review key topics and definitions. Memorize notes ◄► memorize what I need & review assignments & definitions. Organize notes ◄► review definitions. Practice problems & make a study guide & read textbook & correct mistakes & complete assignments & organize notes & rewrite notes & list questions ► memorize notes & what I need & organize. Cram, cram and cram & practice exams & go over units ► memorize. Organize notes ► memorize & review assignments. Review definitions & brainstorm & make a schedule & create something ► memorize. Make a study guide & read textbook & complete assignments & memorize & organize & schedule & create ► review assignments & definitions. Correct mistakes & practice exams & go over units ► review assignments. Practice problems ► review definitions. Rewrite notes & schedule & create ► practice problems & study guide. Read textbook & complete assignments & list questions ► practice problems. Complete assignments ► correct mistakes. Practice exams & list questions ► read textbook. Brainstorm & list questions ► go over unit. List questions ► complete assignments & practice exams.
Course Close	7	Celebrate & have fun or party ◄► relax and let it all go. Get ready for summer work & burn notes & save notes for a friend ► celebrate. Burn notes & throw out notes ► relax and let it all go. Save my notes *never*► burn my notes.

Note. Development Study (DS) Section B (DB) - Student Practices. Note that all listed associations are frequent unless otherwise indicated. Note that response items were commonly listed in a shortened version to reduce verbiage. For example, at Course Close, "Celebrate, have fun or party" was also listed as "celebrate." The "&" symbol was used to separate response items and make the text easier to read. For example, "burn notes" and "throw out notes" were two distinct response items. Response codes (e.g., (b) & (f)) were also used at times to improve text flow.

A response item was defined as well-represented if it was chosen by 25% or more of student respondents; if it was not rare. An association was the likelihood of a second practice being chosen given the first practice; for example, a=1 ► b=0.50 indicates that item "b" was chosen by 50% of respondents who chose item "a." A frequent association was defined as a=1 ► b ≥ 0.75. Associations in which a=1 ► b=1.00 (viz., *always*) and a=1 ► b=0.00 (viz., *never*) were also listed in the table. Some frequent associations were also reflexive, meaning that a=1 ► b ≥ 0.75 and b=1 ► a ≥ 0.75. These were indicated as ◄►.

Table 46

Frequent Associations (Student Short-term or Lesson Practices)

Situation	Number	Frequent Associations
Class Preparation	25	Check to make sure I understand what we must do & compare notes & discuss assignments or projects *always*► get notes from a friend if I missed a class. Get notes ◄► finish classwork. Any writing ◄► assigned readings. Study for tests alone & do readings & discuss assignments & compare homework & check to make sure I understand & pack books & study for tests with friends ► get notes & finish classwork. Any writing & review notes & do homework due next day ► get notes. Any writing & pack books ► study alone. Review notes ► any writing. Study with friends ► discuss assignments.
Class Start	45	Find out what we're doing ◄► prepare supplies. Get ready for notes ◄► pass in homework. Get ready for notes ◄► prepare supplies. Prepare supplies ◄► pass in homework. Prepare supplies ◄► prepare notebook. Pass in homework ◄► prepare notebook. Listen for information about assignments & wait for directions & settle class & wait for teacher & depends on last class ► find out & get ready for notes & prepare supplies. Listen to teacher's jokes ► find out & prepare supplies. Ask about homework & listen for attendance ► get ready for notes & prepare supplies. Find out & open textbook & prepare notebook & chat with friends ► get ready for notes. Wait for directions & ask about homework & listen for attendance ► pass in homework & prepare notebook. Listen for information ► pass in homework & open textbook. Daydream ► chat with friends & settle class. Settle class ► chat with friends. Listen for attendance & listen to teacher's jokes ► wait for directions.
Main Part of Class or Lesson	16	Ask a friend questions if the teacher is busy *always*► copy notes from the board. Seatwork & ask to go over something again & try to understand & write down repeats & work in groups ► copy notes & listen to discussions. Listen & ask questions & highlight & ask for an example ► copy notes. Work in groups ► seatwork.
Group Work	1	Help organize the group and what must be done ► listen to what the rest of the group has to say. Hence, organizers listened!
Class End		Ask about next class *always*► pack up my things. Chat if free time ◄► wait for bell. Chat & complete homework & wait for bell & make sure I have all notes & ask questions & listen to teacher's summary & write due dates & ask about next class ► pack up. Ask about next class ► chat & complete homework.

Note. See notes Table 45.

Table 47

Frequent Associations (Student Perceptions)

Situation	Number	Frequent Associations
A Good Class	62	When it's quiet and you can really listen & when teacher can come down to our level & when there's a mix of notes, discussion, and seatwork *always*► when everyone pays attention (b). Everyone pays attention ◄► it's interesting and doesn't seem dragged out (g) & everything is explained well and I can understand (d). It's interesting ◄► I can understand it. Understand it ◄► I get all my work done and feel proud of myself (f). Proud of myself ► everyone pays attention & it's interesting. We have a laugh and it's not boring & it's quiet and you can really listen & it's different from the same thing we do every class & there's lots of practice & we can do planned activities & the teacher can come down to our level & there's a mix of notes & discussion & and seatwork ► (b) & (g) & (d) & (f). There's lots of examples & the topic is connected to life outside school & we do more hands-on work & there's lots of discussion & we complete our homework in class & we get lots of useful notes & we learn a variety of ways of doing something ► (b) & (g) & (d). Mix of notes & discussion & and seatwork & we learn a variety of ways ► there's lots of examples. Hands-on work ► it's different. Learn a variety of ways ► the topic is connected to life outside school.
Teacher-Student Relationship	22	I like this teacher ◄► I respect this teacher & I am comfortable going to classes. Respect ◄► comfortable & this teacher encourages me to do my best & I trust their advice on how to improve my work. Comfortable ◄► encourages me & trust. Encourages me ◄► trust. Encourages me & trust & favourite teacher ► like. Favourite teacher ► respect & comfortable & encourages me.

Note. See note Table 45.

With respect to student-described teacher practice (Tables 48, 49, and 50), students indicated that teachers who explain a course outline at Course Start (Table 48) frequently explain the evaluation scheme, and vice versa. Those who explain a mark scheme *frequently* explain course outcomes, and vice versa. Those who explain outcomes *frequently* explain a course outline but this association was not reflexive and explaining an outline does not necessarily mean explaining outcomes. With respect to student description of Teacher Preparedness (Table 49), teachers who students believed knew the lesson plan for the next class *frequently* knew if the class was ahead or behind with respect to the course timeline. With respect to Making Learning Easy (Table 50), students who felt their teacher explained topics "without big words" *frequently* felt the teacher was willing to re-explain notes they did not understand. Note that although associations were used as a means of response reduction, they raised many interesting questions.

Table 48

Frequent Associations (Student-described Teacher Long-term Practice)

Situation	Number	Frequent Associations
Course Start	27	Explained course outline ◄► explained evaluation scheme. Explained evaluation ◄► explained outcomes. Welcomed students ► explained evaluation. Outcomes ► outline. Explained expectations ► outcomes & outline & welcomed students. "Students need to work at it" ► outline. Reviewed course from last year ► welcome.
Unit Start	5	What we probably knew about the topics *always*► how long it should take to complete. How many quizzes or assignments & materials we need & how it compares to other units & how previous students found it ► how long it should take to complete.
Unit Assignments	10	Unit tests ◄► finish class work. Take-home assignments & new homework ► unit tests & finish class work. New homework ► take-home assignments. Planned quizzes & portfolios & class presentations ► unit tests.
Unit End	25	Go over examples of everything *always*► answer everyone's questions. Answer questions ◄► tell us what we need to study. Encourage us to finish assignments ◄► describe the test format. Review and questions & go over examples & give a study class ► answer questions & remind us the unit ends soon & tell us what we need to study. Finish assignments & describe format & give us time ► answer questions & tell us what we need. Remind us & study guide ► answer questions. Study class ► finish assignments & describe format & review & answer questions.

Note. See note Table 45.

Table 49

Frequent Associations (Student-described Teacher Short-term Practice)

Situation	Number	Frequent Associations
Teacher Preparedness	20	Knowledge of next day ◄► knowledge of ahead or behind in the course. Lesson plan & notes to copy ► knowledge of next day & ahead or behind & what they're talking about. Notice of assignments & use public exam questions ► next day & ahead or behind. Correct quickly ► next day & know what they're talking about. Have questions chosen & in-class activity planned & photocopies ready ► next day. Public exam questions & notes ► questions chosen. Lesson plan ► correct quickly.
Class Start	11	Ask about assignments & ask about last class ► take attendance & talk about today's class. Ask about assignments ► ask about last class. Collect assignments & settle class & ask questions & check homework & review last class & get us to stop talking ► take attendance. Two non-associations were well-represented -- ask how our day was going ◄*never*► return corrected work.
Main Part of Class or Lesson	21	Give worksheets *always*► give examples when explaining notes. Ask questions to see if we understand & explain new ideas & work out problems & start class discussions & use humorous example. Make it easy to remember ► give examples when explaining notes & take time to help anyone who doesn't understand. Take time & give time to work on assignments & stop and explain ideas & give examples & give and go through handouts & give worksheets ► give examples when explaining notes. Give one-on-one help ► take time. Give handouts ► randomly pick people to answer questions. Write a lot of notes ► ask questions to see if we're paying attention. Give worksheets ► give examples.
Class End	12	Let us know if certain questions are important ► remind us of upcoming deadlines & tell us about next class & let us ask questions. Let us ask questions & plan to be away ► remind of deadlines & next class. Next class & work till bell & tell us it was a good class & summarize class & remind us of special supplies ► remind of deadlines
Study Periods	3	Help us find what we need & help us privately one-on-one & give us websites ► explain what we should be doing.

Note. See note Table 45.

Table 50

Frequent Associations (Perceptions of Teacher Practice)

Situation	Number	Frequent Associations
Making Learning Easy	81	Explain without big words & we are the main priority *always*► willing to re-explain (a). Explain examples as they do them (i) ◄► willing to re-explain. Re-explain ◄► give examples. Give examples ◄► assign questions after we know how to do them. Without big words ◄► main priority. Involve us instead of just telling us ► explain examples & point out questions for the exam (y). Have a good attitude (q) & point out & give examples ► explain examples. Re-explain & make sure outcomes are covered & compare with everyday life ► point out for the exam. After we know & try to involve everyone in discussions & without big words & take time to discuss & explain so I can relate & help me 1-on-1 & relaxed class & refer to textbook ► (i) & (q) & (y) & (a). Give step-by-step instructions & draw diagrams & work things out fully ► explain examples & good attitude & re-explain. Main priority ► explain examples & good attitude & point out. Step-by-step instructions & involve us & one-on-one & work things out fully ► give examples & assign after we know. Explain so I can relate & relaxed class ► assign after we know. 1-on-1 ► step-by-step instructions & without big words. Work things out fully ► without big words & involve us. Refer to textbook ► take time to discuss.
A Good Class	17	Everyone cooperated ◄► everyone was attentive. Everyone showed up & worked peacefully & completed assigned work & had interesting discussions on topics & understood what the teacher was talking about & teacher didn't have to speak over students ► (c) & (f). Understood ► showed up. Caught up to where we should be ► attentive and interested. Didn't have to speak over ► worked peacefully.
Not a Good Class	22	Quick explanations I don't get (i) *always*► copying lots of notes I don't need & assignments due before the bell. Too much noise ◄► too much work at the same time. Too much work ◄► the teacher doesn't explain new notes. Doesn't explain ► too much noise. Students interrupt the teacher & notes I don't need & due before the bell & not enough examples ► too much noise & doesn't explain new notes & too much work. We're in groups and I do all the work ► too much noise & doesn't explain new notes & students interrupt. In addition, 31 non-associations such as the teacher gives quick explanations I don't get ◄*never*► we don't have class discussions (j). Too much noise & too much work at the same time & doesn't explain new notes & students interrupt & doesn't do enough examples & I do all the work ◄*never*► (i) & (j). Lots of notes I don't need & assignment due before the bell ◄*never*► we don't have class discussions.
Teacher-Class Relationship	22	Encourages all students to learn (c) ◄► treats students equally (r). Tries to encourage respect ◄► respects students' efforts and feelings. Treats students fairly & encourages respect & respects students & gives positive criticism & maintains discipline ► (c) & (r). Talks to students privately about behaviour ► encourages students to learn. Positive criticism & talks privately & maintains discipline ► treats fairly & respect. Respect ► treats fairly. Maintains discipline ► encourages respect. Hard on some students ► respects students.
Outside the Classroom	5	Coach or sponsor & give up lunch to supervise gym *always*► chat with students in hallways. Give tutorials & treat us like adults ► chat. Supervise ► coach.
Student-suggested Change	76	Repeat explanation *always*► review for test. Give unit outlines ◄► go through questions I don't understand. Examples ◄► review. Examples ► review sheets. Explain in simpler terms & step-by-step & why something is done a certain way & ask questions & take time for discussions ► examples. Make sure I understand & reword explanations ► examples & review. Make class interesting & hints & 1-on-1 explanations & explain until I get it & give choice & repeat explanation ► examples & review sheets. Help with seatwork & use diagrams & find another way to help me & speak loud & give outlines & do questions & lighten the mood & review ► examples & review sheets. 1-on-1 help & give choice & make sure I understand & discussions & speak loud ► step-by-step explanations. Lighten the mood & repeat explanation & speak loud ► give outlines & do questions. Explain until I get it & reword explanations ► explain in simpler terms. Review classes ► make it interesting. Use diagrams ► work in groups. Discussions ► hints. Speak loud ► repeat explanation.

Note. See notes Table 45.

Significant Rank Order Changes

Comparisons of Development Study (DS) response rankings with Exploration Phase (EP) lists (Chapter 3) were made for each question to note items which rose or fell by more than three places. "Predictive validity is achieved if the data acquired at the first round of research correlate highly with the data acquired at a future date" (Cohen et al., 2000, p. 111). For example, when DS students were asked about their Course Start (Table 51) "read the course outline" was ranked second while it was only mentioned by a few students in Student Description of Practice (SP) data and ranked sixth. In general, changes in item ranking were found to depend on the availability of more appropriate choices and changes in wording. It was necessary to keep in mind that EP lists were generated from individually-brainstormed descriptions, whereas DS choices were based on a visible list. "Listened or paid attention" was an example of a change in wording which influenced results. Listening or paying attention was described by most students as an active practice engaging the teacher. However, the researcher inadvertently diminished the practice by phrasing the response as "nothing - I just listened to the teacher" which resulted in a rank drop from second (EP) to eighth (DS). Associating the practice with "nothing" and "just" introduced a bias unacceptable to many students, as explained in focus groups. Hence, comparisons of rankings were useful in discovering effects, intentional and unintentional, wording had on response. Such errors were fixed during redevelopment of the survey instrument.

Some items originated in participant feedback, focus groups and other EP questions, and were added to DS response lists. These responses were ranked as unlisted, added or moved in Tables 51 and 52. For example, with respect to student perception of teacher practice (Table 52), DS students were not asked about teacher Course Preparation because it was a scenario about which they could have little information. They had not been present and it was unlikely teachers would raise the subject in class.

Table 51

EP-to-DS Rank Order Changes (Student Practice)

Situation	Number	Significant Rank Order Changes
Course Preparation	1	Gathered supplies (last to 1st).
Course Start	2	"Listened or paid attention" was changed to "nothing - I just listened to the teacher" (2nd to 8th). DS wording unintentionally diminished "paid attention" by associating it with nothing and "just." Read the course outline (6th to 2nd).
Unit Start	1	"Paid attention" (2nd to 6th) diminished by associating it with "nothing."
Unit End	2	Asked teacher about test (6th to 2nd), made sure I knew how to do everything (10th to 4th).
Unit Test	1	Did practice questions or problems (6th or 12th to 3rd).
Course End	0	Reviewed assignments (3rd to moved), asked the teacher about the final exam (unlisted to 1st) was moved from Unit End practice.
Course Exam	1	Reviewed key topics and definitions (12th to 5th).
Course Close	3	Threw away notes (2nd to 6th), celebrated or had a party (7th to 2nd), got ready to work for the summer (unlisted to 4th). Nothing really (3rd to 9th) probably dropped because students benefited from having a list.
Class Preparation	0	Got notes from a friend if I missed class (unlisted to 1st) originated in focus group discussions.
Class Start	2	Opened textbook to the correct page (1st to 5th), prepared a new page in my exercise (1st to 6th).
Main Part of Class or Lesson	1	Seatwork on questions or problems (8th to 3rd).
Group Work	0	Listened to what the rest of the group had to say" (unlisted to 1st), tried to add ideas or suggestions (unlisted to 2nd).
Class End	2	Noted homework (1st to 8th), watched the clock and waited for the bell (8th to 4th).
A Good Class	1	When everyone pays attention (5th to 1st), it's interesting and doesn't seem dragged out (unlisted to 2nd), I get all my work done and feel proud of myself (unlisted to 4th), we have a laugh and it's not boring (unlisted to 5th).
Strengths and Talents	6	I remember what I see or draw (1st to 10th or 16th), I remember what I write (3rd to 7th or 13th), problem solving (4th to 9th), I am an excellent listener (5th to 1st), I ask questions when I'm not sure (8th to 2nd), I am not afraid to get extra help (12th to 4th).

Note. Most questions and responses did not significantly change in rank from Exploration Phase (EP) projects to the Development Study (DS). Member checking and focus groups confirmed that many significant changes were due to the difference between brainstorming description (EP) and being able to chose from a developed list (DS). Note that some items were listed with two or more ranks. For example, from Strengths and Talents, "I remember what I write" (3rd to 7th or 13th). Multiple rankings reflected the fact that the wording in some items was altered during development. Items noted as unlisted did not originate in EP descriptions but from supplementary sources such as the Student Explanation of Teacher Descriptions (SE) project, Finish Line questions, and focus groups. Items listed as moved were moved to another question.

Hence some themes identified in teacher description (Table 10) were added to DS lists of Course Start to determine relative importance. Two such items were "course outcomes" and "handed out textbooks" which went from unlisted to fourth and second respectively. Note that "got to work right away" significantly rose from sixth (EP) to first (DS). This was explained by the difference between individual

brainstorming and visible choice. Hence, rank comparisons, which were possible because of the design of the program of research, were used as a check during development.

Table 52

EP-to-DS Rank Order Changes (Student-described Teacher Practice)

Situation	Number	Significant Rank Order Changes
Course Start	2	Course outcomes (unlisted to 4th), got to work right away (6th or 7th to 1st); handed out textbooks (unlisted to 2nd); checked names on a list (10th to 3rd). SE students interpreted many diverse actions as work. Attendance was ranked much higher than was suggested by the EP data.
Unit Start	4	How long the unit should take to complete (8th to 1st), what was expected of us (8th to 2nd), how many quizzes or assignments (8th to 4th), started right away on first lesson (7th to 1st).
Unit End	2	Teacher-led review (1st to 8th or 12th) described by many DS items. Reminded us of unit end (14th to 2nd).
Teacher Preparedness	5	Slideshow or notes ready (2nd to 8th or 12th), lesson plan ready (3rd to 9th); could tell us what we will be doing the next day (5th to 1st), know what they're talking about (9th to 3rd), could tell us if we're ahead or behind in the course (unlisted to 2nd), corrected tests and assignments quickly (unlisted to 5th). I could not answer the question (1st to 19th). Significant differences were the result of changing the question from listening to teacher comments to noting evidence; not being able to answer dropped from 1st to last.
Main Part of Class or Lesson	4	Gave notes (1st to 5th or 7th or 16th) - many DS choices concerning notes. Diagrams (3rd to 26th), reading (4th to 19th), gave examples when explaining notes (5th to 1st), asked questions to see if we were paying attention (unlisted to 3rd).
Class End	4	Assigned homework (2nd to 14th), reviewed the current class (4th to 10th), let us ask questions (9th to 4th), finished writing notes (10th to 3rd).
Effective Practice or a Good Class	3	Covered or caught up with the material (1st to 6th or 8th), students understood (2nd to 7th or 12th), everyone showed up (11th to 3rd).
Making Learning Difficult	3	When teachers assumed we knew what they were talking about (7th to 2nd s), dragged out boring classes (13th to 3rd), they aren't there to show us what to do (22nd to 4th). Most students did not experience or recognize practice they considered to be ineffective.
Ineffective Practice or a Poor Class	1	Group work (1st to 10th or 12th), too much new work at the same time (6th to 2nd).
Outside the Classroom	2	Chatted in the hallways (6th to 1st) was rarely mentioned in EP data. Gave up lunch to supervise in the gym (11th to 4th), treated us like adults (unlisted to 5th).
Student-suggested Change	5	"Better explanations" changed to "break down explanations step by step or in simpler terms" (1st to 5th or 7th or 8th) due to many DS possibilities. More time (2nd to 19th), better evaluations (3rd to moved), better notes (5th to 34th), course and unit review sheets (6th to 2nd).

Note. Most questions and responses did not significantly change in rank from Exploration Phase (EP) projects to the Development Study (DS). Member checking and focus groups confirmed that many significant changes were due to the difference between brainstorming description (EP) and being able to chose from a developed list (DS). Note that some items were listed with two or more ranks. For example, from Student-suggested Change, "better explanations" (1st to 5th or 7th or 8th). Multiple rankings reflected the fact that the wording in some items was altered during development. Items noted as unlisted did not originate in EP descriptions but from supplementary sources such as the Student Explanation of Teacher Descriptions (SE) project, Finish Line questions, and focus groups. Items listed as moved were moved to another question.

4.4 Supplementary Data

The identification of rare and equivalent practices was supplemented by open-response feedback collected during the DS and subsequent focus group exercises. Supplementary data were used to further challenge question and response relevance, reduce the length of response lists, and confirm survey development guidelines.

DS Open Response

The *Development Study* (DS) was more than a pilot of the Final Survey (FS). For example, students were asked to note confusing items and record how long it took to complete each section while completing questions (Table 53). Thirty of the 60 students submitted feedback. Most made general comments such as “I didn't notice any mistakes and questions were not confusing” (S241), “I had no problem with any of the questions” (S244), or “all the questions were good and easy to understand” (S246). One student suggested a few questions were “a little unclear but easy to figure out” (S297). Two students (S247, S280) identified grammatical mistakes, two (S244, S262) could not answer a subject-specific question (Section D) because they were not enrolled in a course during the research year, one (S284) could not recall course numbers, and two (S247, S260) reported technical difficulties which could not be duplicated.

Nineteen students estimated the time they took to complete and critique the DS. Estimates ranged from 30 to 121 minutes with an average of 57, median of 50, and modes at 40 and 70 minutes. Although these times were too long for the FS, they were acceptable during the development process. The researcher could use automatic time-stamped email notifications and participant logs to also calculate the mean completion times for sections A (6.8 minutes), B (14.5), C (22.2), and D (12.4), and for the survey (55.9). For example, S246 wrote, “I've finished the survey, it didn't take too long at all. Section A - five minutes Section B - 10 minutes Section C - 20 minutes Section D - 10 minutes.”

Table 53

DS Student Feedback

Student	Time	Student Feedback
S244		I had no problem with any of the questions except in Section D because I am not taking a Social Studies course this year.
S247	43	There is a grammatical error in Q41, "They usually assigns seatwork..." There is also a mistake in Q53. I think you may have wanted to say "when" instead of "why I'm not learning anything." Another grammatical error in Q58. "What do you ask teachers do to help you learn..."
S277	72	Looks good so far. Can't see much wrong, or confusing. Section C wasn't bad. Slightly repetitive, but good none the less. Section D is also long but most of it doesn't apply to me. But it does look good. Again, some things are repetitive but that's all.
S278		Everything is good the only thing is that some questions were a little bit long. Hi. I understand. I'm cutting the survey in half for the final. Your responses in the *Development Study* and feedback is helping me do that.
S280	65	In Q07 the wording was slightly confusing. In Q45, Mr. X usually gives assignments per unit not per month or week, maybe a choice for that would be good.
S284	121	A was done quite well. In the drop-down boxes to select courses, you should have if its basic or academic course and the grade level. That part is the only thing that confused me. Most time in this section was spent trying to find out the numbers for my courses. Section B was very confusing. There were way too many answers to choose from. By the time I read through all of them, I forgot most of the first ones, plus after I read through them all, I didn't remember if there was another answer I could have entered in other because it was too much information to read. Section C. I don't take DE courses. I answered based on Mr. X Math 3206. In Q50, you should add a comment space for Q50 because my teacher enjoys the good students of the class and tells the good students that it's a good class. This section was also very long and too many things to choose from. Maybe you should try having a few possible answers and have another box for explanations. Section D. This section was the same as others. Too many answer options. Other than that, I didn't find any actual problems with this entire project.

Note. Forty-six students sent feedback but many simply stated the questions were clear and they found no mistakes. Development Study questions (e.g., Q50) can be read on the website included in the electronic version of the thesis.

DS open-response was also used to collect hitherto undiscovered question practices to expand the response universe. Most additional suggestions for self-description questions, *Your Learning Practice* (Section B), were for Class Preparation and Student Talents (Table 54). The lack of suggestions for Class Start, Main Part, and End suggested response lists were already saturated. For example, S260 claimed a talent of maintaining focus when studying. S284 identified a version of jot notes: "I use my cell phone and type all the notes in text messages and send it to myself. When I do that, the words stick in my head better." Most additional suggestions for student-described teacher practice, *An Individual Teacher's Practice* (Section C) were for questions concerning Teacher Preparedness, Study Periods, Relationships and Better Marks (Table 55). For

example, with respect to evidence of Teacher Preparedness, S241 suggested that "Sir is usually behind, it takes him forever to correct a test … and the beginning of class he can sometimes be printing off work for us to do."

Table 54

DS Response Suggestions (Student Practice)

Situation	Number	Response Suggestions
Course Preparation	2	Make my own notes.
Course Start	2	Take out a pencil, take notes on the course outline (S262).
Unit Start	1	Just go right ahead with reading and work (S284).
Unit End	1	No test in this course.
Course End	2	Review material from earlier in the year (S249), review the year (S251), get help from a tutor or teacher.
Course Close	1	I'll find out in June what happens. (Not trying to be sassy) (S251).
Class Prep	1	I don't have very much homework because I usually get it done in class (S241) or I don't do anything at home.
Main Part of Class or Lesson	1	Sometimes talk (S270).
Group Work	4	Get everyone working besides myself (S250) or make a movie or skit (S279). I usually end up doing everything (S260). I hate working in groups (S280).
Class End	2	Finish up work or free time to chat when the lesson is over or we finish work early (S241).
Effective	1	When the teacher is in complete control (S296).
Ineffective	1	When the guys are there in math class (S242).
Strengths and Talents	4	Ability to remember things I hear if I am paying close attention (S246). Read the text over several times. I can keep focused when studying (S260). To help study for a test I type all the notes in text messages and send it to myself. When I do that, the words stick in my head (S284).

Note. Students were assigned usernames such as Student 242 for Development Study access. These were shortened during data analysis to for example, S242.

Five students described Study Periods as happening in the classroom instead of the computer lab or library; "We don't go to the computer lab or library for math!!" (S299). Four DE students questioned whether study periods existed in DE courses; "Its an online course so we don't get those kind of classes" (S244). S284 suggested it was enough for his teacher to label a class a *good* if attentive students learned something: "The majority of time … my teacher has to keep telling students to behave … this happens every day … because the students … have no

respect." "My teachers are good at teaching - except … but I'd get my head chopped off for asking for a change in the teaching method …" (S250).

Table 55

DS Response Suggestions (Student-described Teacher Practice)

Situation	Number	Response Suggestions
Course Start	2	No class time for this course because we just go in the gym to play sports and exercise (S293). Give out notes, outlines and sheets of what the year will bring (S257).
Unit Start	3	Explain how to play a certain sport (273), find something in the first pages of the unit and explain it in French (S260), slowly begin notes explaining them clearly (S257).
Unit Assignments	4	Case studies, self-assessment portfolio (S250), participation, homework checks.
Teacher Preparedness	8	A teacher may be prepared if they are always organized, all equipment is set up (S273) or finds a clip on the topic then shows it in class. A teacher may not be prepared if they take forever to correct a test, uses notes from years before so he uses a projector and makes us write, at the beginning of class he can be printing off work for us (S241), never any in-class activity (S241), tell us to do whatever we want (S273), or the equipment is not set up.
Main Part of Class or Lesson	3	Notes and more notes, supervises students, mostly just gives us notes, a work sheet for our portfolio, mostly supervises sports and makes sure no one gets hurt (S293). There are two World Geo classes so he tries to make sure we're both caught up to each other (S241).
Study Periods	4	Study periods are in the classroom that way if we have a question he will answer it and can explain it to everyone; helps us with questions and problems (S284). If no one has any questions he would correct tests, portfolios or other things; he'll finish up some of his work (S280). Let us work on other courses (S241). It's an online course so we don't get those kind of classes (S244). We don't get assignments (S273). We don't go to the library (S275).
Special Classes	5	Read to kids (S242), do homework (offline classes) (S262), prepare for our competition (S275), let us play sports (S281), trip to Montreal in seven days! (S268). We don't have special classes.
A Good Class	2	Students who were paying attention deserve to hear it while others being disrespectful don't hear anyway (S284). Appears to be having fun (S293).
Making Learning Difficult	1	Give students one assignment and the next day we get another one with no time to fished first one (S300).
Better Marks If	3	Not go through notes so fast (S262), grade us on an appropriate scale, explain to us what we should be writing not just how (S267). My teachers are good except in English but I'd get my head chopped off for asking for a change in the teaching method.
Relationships	6	Teacher-student -- I'm doing better in class this year (S242). An incredibly inspiring teacher. I trust her and respect her a great deal. She's very easy to talk to and makes you feel very comfortable. She is more than willing to listen and lend a hand (S246). We get along like good friends (S250). Teacher-class -- when he's in a good mood, I wish half of the class would be sent to the office (S258); teacher has to keep telling students to behave and sends them to the office (S284).

Note. Students were assigned usernames such as Student 242 for DS project access. These were shortened during data analysis to for example, S242.

Focus Group Feedback

Two online focus groups, one focused on *Your Learning Practice* (Section B) and the other on *An Individual Teacher's Practice* (Section C), were held in the Virtual Meeting Place within a week of the project close. The purpose of the discussions was to ask students to identify and reduce the number of equivalencies or redundancies in each question response list. An email was sent to all students who had participated in the DS and the first 16 respondents were accepted as volunteers; 13 participated. The researcher led groups from question to question, during which time a student might volunteer an equivalency. Other students freely defended or contradicted the first student's opinion and this usually led to alternate suggestions and continued discussion. Students were asked to note their opinions and vote before the group moved to the next question after a discussion had finished or a time limit was reached. Students were also asked to email notes to the researcher at the end of the session.

Unit Test Preparation (Table 56) was the situation for which students determined the greatest number of suggested equivalencies with seven; in contrast, discussions about Course Start, End, and Close yielded one suggestion each. For example, for Course Preparation, most students equated asking if the teacher was interesting to the teacher's personality and/or equated asking how friends did to asking if the course was difficult. Most equated skimming the curriculum guide to reading the course description and many understood reading chapter outlines and skimming the textbook to mean the same thing. Other interesting equivalencies included, from Class Preparation, comparing notes to discussing what was taught in class; from a Good Class, paying attention was equated to "when its quiet and you can really listen;" from Strengths and Talents, making up ways to remembering was equated to jotting own notes to remember; from Unit End, asking the teacher to do sample problems was equated to staying after school for extra help.

Focus group examination of student-described teacher practice resulted in nine equivalencies for Course Start (Table 57) and eight for the Main Part of Class

and Unit End. For example, most students agreed that, from Course Start, explaining course outcomes was equivalent to explaining the course outline and key topics; from Unit Start, asking what students enjoyed about unit topics was the same as asking about student interests; from Study Periods, to correct assignments was equivalent to teachers doing their own work.

Table 56

Focus Group (FG) Equivalencies (Student Practice)

Situation	Number	Suggested Equivalencies
Course Preparation	5	"If the teacher is boring or interesting" to "the teacher's personality." "How friends did" and/or "the course workload" to "if the course is easy or difficult." "Skim through the curriculum guide" to "read the course description" and "read textbook chapter outlines" to "skim the textbook."
Course Start	1	"Read the evaluation scheme" to "read the outline."
Unit Start	4	"Write definitions in notebook," "write objectives in notebook," and "write down a few jot notes" to each other. "Skim the textbook" to "think about what the unit is about."
Unit End	3	"Get ready for the test" to "make sure I have a complete set of notes" and "make sure I know how to do everything." "Ask to do sample problems" to "stay after school for extra help."
Unit Test	7	"Gather and organize my notes" and/or "rewrite my notes according to the study guide" to "organize or rewrite my notes in a logical order." "Gather and organize my notes" and/or "correct mistakes on assignments or quizzes" to "review assignments and quizzes." "Make up a study guide or jot notes" to "write a review of the unit." "Read notes over and over to memorize them" to "memorize what I need." "Read outcomes for the unit" to "read or skim through textbook sections."
Course End	1	"Participate in discussions about the exam" to "ask the teacher about the final exam."
Course Exam	4	"Gather and organize my notes" to "organize or rewrite my notes in a logical order." "Make up a study guide or jot notes" to "rewrite notes according to the study guide" and/or "write a review of the course." "Read notes over and over to memorize" to "memorize what I need."
Close	1	"Burn notes and papers" to "throw out notes I don't need."
Class Preparation	7	"Compare notes or homework with someone," "discuss assignments or projects with friends," and/or "study for tests with friends" to "discuss what was taught in class." "Compare notes or homework with someone" to "review class notes."
Class Start	4	"Get ready for notes" to "prepare a new page" and "prepare a new page" to each other and "prepare supplies." "Listen to the teacher's reason why the class is important" to "listen to the teacher trying to settle the class." "Wait for the teacher to give directions" to "wait for the teacher to arrive or get prepared."
Main Part of Class or Lesson	4	"Ask for an example" and/or "ask if the topic is important" to "ask questions about the topic." "Ask for an example" to "ask to go over something again." "Seatwork on questions or problems" to "check my answers to assigned questions."
Group Work	1	"Take notes and write the report" to "collect and analyze the data."
Class End	5	"Ask about the next class," "make sure I have all the notes," and/or "make sure I'm prepared for next class" to each other. "Make sure I'm prepared for the next class" to "pack up my things." "Chat if the last 10 minutes are free time" to "watch the clock and wait for the bell."

Table 57

FG Equivalencies (Student-described Teacher Practice)

Situation	Number	Suggested Equivalencies
Course Start	12	Teachers discussion of "course outcomes," "course outline and topics," "evaluation scheme," and/or "what the units are about" may be equivalent to each other. "Jokes and interesting stories" to "summer holidays." "How they like to teach" to "their expectations." "The course isn't hard if we work at it" to "how to keep our marks up." Teachers "get to work right away" may be equivalent to "hand out textbooks," "ask us to fill out information sheets" and/or "nothing special."
Unit Start	9	Teachers "ask us what we enjoy about the topics" may be equivalent to "our interests in the topics." "How many quizzes or assignments are in the unit" to "the major assignments or projects." "How topics relate to what's going on in the world" to "what we probably already know." Teachers "start right away on the first lesson" may be equivalent to "give a lot of notes right away" and/or "nothing special." "Brainstorm ideas related to main topics" to "get us into groups to discuss topics." "Give out the unit outline and objectives" and/or "give a lot of notes right away" to "give a handout of the notes for the unit." "Give a few brain teasers to figure out" to "write example questions or problems on the board."
Unit Assignments	6	"Artwork, drawings, paintings, etc." to "media or multimedia projects" and/or "portfolios." "Internet or web-based projects" to "media or multimedia projects." "Homework (finish class work)" to "homework (new work)." "Unit tests" to "planned quizzes." "Group and team projects" to "formal competitions or debates."
Unit End	8	"Give plenty of time to ask questions" to "review for the test and we get to ask lots of questions." "Give us a fun project to help us feel good" to "play review games." "Give class time to write a review" to "expect us to review on our own - It's our responsibility." "Give plenty of time to ask questions" to "give class time to write a review." "Give a self-test before the real test" to "have us practice taking tests" and/or "give us a multiple-choice question class." "Give a review sheet or study guide" to "tell us what we need to study."
Teacher Preparedness	5	Evidence the teacher was prepared included "the lesson is on the whiteboard when we come in" which may be equivalent to "they post slideshows online before we come to class" and/or "as soon as we come in we are put to work." "Have questions from old public exams ready" to "have questions already picked out for us." "Tell us in advance if we're going to have an assignment" to "tell us what we will be doing the next day." Evidence of not being prepared included "they don't know the answers when I ask before class" which may be equivalent to "never organized."
Class Start	5	"Ask if we understood everything from last class," "ask questions to learn what we remember," and "review last class" to each other. "Ask questions to learn what we remember" to "ask where we left off and start right away." "Ask how our day is going" to "make sure everyone is feeling good."
Main Part of Class or Lesson	8	"Ask us to practice examples" to "ask us to give examples" and/or "give examples (q)." "Give examples" to "work out problems on the whiteboard." "Randomly pick people to answer" and/or "ask questions to see if we understand" to "ask questions to see if we're paying attention." "Explain ideas and make sure we understand" to "explain ideas according to the outcomes." "Let us work in pairs to complete questions" to "put us in groups to work."
`Class End	4	"Tell us funny stories if work done" to "let us relax and chat with friends." "Finish writing notes" to "stop writing notes and start a discussion." "Let us get ready for next class" to "tell us what we will be doing next class." "Let us ask questions" to "correct the questions we were working on."
Study Periods	2	"Correct assignments or homework" to "their own work while we do ours." "Teach how to do Internet research" to "help us privately one-on-one."
Special Classes	2	"Help us find the materials we need" to "remind us to bring materials from home" and/or "make sure we have proper equipment."

Table 58

FG Equivalencies (Situational Perception)

Situation	Number	Suggested Equivalencies
Relationships	5	For teacher-student relationships, “I like this teacher” may be equivalent to “I respect this teacher.” For teacher-class relationships, “Hard on some students even when they don’t deserve it” to “criticizes some students for no reason.” “Treats students as inferior” to “looks down on students.” “Gives positive criticism to help students improve” to “encourages students to learn.” “Treats students fairly” to “treats students equally.”
A Good Class	10	Students felt a good lesson was when “everyone pays attention” which may be equivalent to “its quiet and you can listen.” “There's lots of examples” to “there's lots of practice.” “It’s interesting and not dragged out” to “we have a laugh and it’s not boring.” Students believed that teachers considered class good when “everyone cooperated,” “everyone was attentive and interested,” and/or “the teacher didn’t have to speak over people” which may be equivalent to each other. “Everyone cooperated” to “everyone worked peacefully” and/or “we practiced teamwork.” “Everyone was attentive and interested” to “everyone worked peacefully.” “Students who usually caused trouble were not there” to “the teacher didn’t have to speak over people.”
Making Learning Easy	4	“PowerPoint presentations” to “bring in videos” and/or “post slideshows and cover the material.” “Give examples” to “explain examples as they do them.” “Explain things in a way I can relate” to “help me individually 1 on 1.”
Making Learning Difficult	4	“They explain things too quickly and leave before I understand” to “they go to a new topic before I can ask questions.” “When my understanding is different from how teacher describes it” to “when I didn’t think their way of solving a problem was the correct way.” “The way some assignments are written” to “the difference between understanding something in class and on a test.” “When they put things we didn’t learn on the test” to “when questions are assigned that I don’t understand.”
Ineffective Practice	2	“Students interrupt the teacher” to “there's too much noise or chatter.” “The teacher gives quick explanations I don’t get” to “the teacher doesn’t explain new notes.”
Strengths and Talents	3	“I am not afraid to get extra help” to “I ask questions when I'm not sure.” “I am good at memorizing text” to “I can remember what I see.” “I can make up ways of remembering things” to “I jot down my own notes to help me remember.”
Better Marks If	5	“Giving us a second chance to understand explanations” to “telling us the correct way before the test.” “Nothing - they do a good job” to “nothing - they always ask if we understand.” “Discussing notes more” to “going over notes and explaining things a bit better” and/or “explaining concepts more in depth.” “Helping me understand how to do things” to “being more focused on class.”
Outside the Classroom	6	“Run a school club,” “coach or sponsor a sports team,” “help with student council,” and “give free music lessons” to each other.
Student-suggested Changes	6	“Help me think of problems in ways easier to understand” to “reword explanations so I can understand’ and/or “explain topics until I get it.” “Explain topics until I get it” to “make sure I understand before moving on” and/or “reword explanations so I can understand” to “explain topics in simpler terms.” “Ask what we need as far as help goes” to “ask a lot of questions.” “Give course and unit outlines” to “give course and unit review sheets.”

Other interesting possible equivalencies included “how teachers liked to teach” (from Course Start) and “teachers’ expectations for the course,” “relating topics to the world outside school” (Unit Start) and “what we probably already knew about the unit,” “group and team projects” (from Unit Assignments) and “formal

competitions or debates," "not knowing the answers" (Class Preparation) and "never appearing organized," and "randomly picking people to answer questions" (the Main Part of Class) and "see if we're paying attention."

With respect to situational perception (Table 58), most students equated, from Teacher-Class Relationship, being "hard on some students even when they don't deserve it" was equated to criticizing students for no reason. Many suggested that, from a Good Class, being attentive and interested was the same as cooperating. Other interesting equivalencies included, from a Good Class, being attentive and interested was equated to working peacefully; from Teacher-student Relationships, "I like this teacher" to "I respect this teacher;" from Teacher-Class Relationships, giving positive criticism to help students improve was equated to encouraging all students to learn; from Making Learning Difficult, "when my understanding of something was different from how teacher described it" to "when I didn't think their way of solving a problem was the correct way;" from General Practice, "helped me think of problems in ways easier to understand" to "explained topics until I get it."

In addition to simplifying the process of question response reduction, equivalencies were intriguing because they pointed to many emergent and possibly causal relationships. For example, one can ask if how friends did was the determinant for labelling a course easy or difficult? Do students who take jot notes also have additional creative study skills? Are students who ask questions during class those most likely to stay after school for extra help? Are like and respect the same? How does a different understanding of a concept lead to concluding that the teacher was incorrect, and what does this say about constructivism? Also, I wonder about the equating of treating students "fairly" with treating them "equally." This sidesteps the issue of equity.

4.5 The Redevelopment Process

Nine decisions were made concerning production of the *Final Survey* (FS) because of the analysis of Development Study (DS) and supplementary data. These decisions reflected the fact that the FS was focused on the collection of data related to student practice and perception whereas the DS was focused on collecting survey design information.

Table 59

Redevelopment Decisions

Topic	Decision
Survey Purpose	Survey purpose was re-established as gathering information about student practice and perception as *Your Learning Practice* and *Your Perception of Teaching Practice*.
Demographics	Most demographic information (DS Section A) was found to be available from the School District and omitting 11 questions helped reduce the total number from 82 (DS) to 46 (FS).
Timeframe	The FS timeframe was reduced from two weeks to a class period. The longer DS timeframe had given students a no-longer-needed flexibility to both respond and critique questions.
Question Location	Question location and wording were clarified based on DS administration, participant feedback, and data analysis.
Subject-specific Practice	Subject-specific practice had been investigated through the *Teacher Focus* (TF) project and DS Section D. Omitting 12 questions helped reduce the total number in the FS.
Distance education	Eight DE-specific questions and responses were reintegrated into situation-specific questions after concluding most DE practices had F2F equivalents. Students who took DE courses rarely identified DE-specific practices as characteristic of a situation.
Choice	Student purpose changed from choosing all relevant to a limited number of the most relevant responses; from inclusion to exclusion.
Exclusion	Exclusion required participants to make decisions by ranking choices however limiting the number of choices to be ranked reduced the time required. Many rare DS responses were dropped and equivalent responses combined.
Open Response	The flexibility of the study was carried into the FS by maintaining open-response capacity for all forced-choice questions. Despite exhaustive development, it was recognized that the universe continually expands.
Negative Response	Retaining open-response flexibility meant that negative responses such as “nothing” or “not applicable” were omitted from the FS. However, the need for listed negative responses was rediscovered through FS administration, email and data analysis.

Each DS question and response was examined with respect to the guidelines and changes were recorded in a Table of Modifications, which was partially reproduced in coded form as Table 60. Questions were adjusted by adding a word such as “usual” or “special” to qualify a situation. For example, YOU was emphasized in some questions to focus attention on the student as opposed

to the teacher (e.g., “What do *YOU* ask teachers to do …”). New phrases were substituted for ambiguous words, for example “why” became “what interests you most.” Changes also included clarifying meaning by changing the emphasis on words, such as using italics, colour, or case.

Table 60

Example Question and Response Modifications

Question	Changes or Modifications
Grade	“Grade level” was unfamiliar to a few students so changed to “grade or level.” In responses, grade numbers were associated with levels, for example “Level 1” became “Level I (Grade 10).”
Motivation	Question wording clarified to focus on student interests hence, “why” became “what interests you most” with appropriate emphasis. In responses, “Academics – I like being a student” became “I like being a student,” extracurricular activities was split into “Extracurricular activities (e.g., music)” and “Sports or physical activities (e.g., volleyball),” “My parents made me go” was dropped due to low DS response, and “I’m not sure” was dropped to force use of open-response if necessary.
Strengths and Talents	Question wording changed “what are” became “what do you believe” to link with the framework and “THREE” dropped but guideline “choose three or less” was added. In responses, “I’m an excellent listener” became “I can remember what I hear in class” to give purpose to listening and mirror “I can remember what I see in class,” “I’m creative” became “I can make up ways of remembering things,” and “I can keep focused when studying” was added based on student suggestion. “I jot down my own notes to help me remember,” “I write things down over and over,” “I can connect what we do in class with my life,” “I don’t know,” and “I love to draw” were rarely chosen in the DS and dropped.
Course Preparation	Question wording softened to “usually ask.” In responses, “course topics” was changed to “course topics (i.e., what the course is about),” “course workload” changed to “course workload (i.e., how many assignments),” “teacher’s personality” to “teacher’s personality (i.e., if they are easy to talk to),” “if the teacher is boring or interesting” changed to “teacher’s methods (i.e., what do they like to do in class),” added “if the course is offered online or in school,” added “who teaches the course,” and deleted “nothing – I find things out when I go to class.”
Course Start	Questions were combined with Course Preparation (do) and DE Course Start due to overlap in data. Deleted “in class” to accommodate DE, “first few classes” changed to “the beginning” to clarify, “special” emphasized, and “course” emphasized as “COURSE” to distinguish it from unit or class. In responses, “read the course description,” “skim through the course curriculum guide,” “read the course evaluation scheme,” and “read the course outline” were combined as “read the course description or outline.” “Make a good impression” and “ask us to introduce ourselves using the microphone” became “get to know the teacher.” “Talk to friends about summer holidays” and “talk to friends or relatives” became “get to know my classmates.” “Read textbook chapter outlines” was deleted in favour of “skim through the textbook.” “Gather supplies” changed to “gather or organize supplies.” “Organize my notebook” changed to “organize or prepare my notebook.”; “talk to another teacher or the guidance counsellor” a> ”talk to the teacher about my interests”; +check my email if its an online course; “ask us to send pictures of ourselves” and “show us pictures of themselves” > exchange pictures with the teacher if its an online course; “Explain how e-live and all the icons worked,” “explain how the website worked,” and “show students online resources” became “learn about the online environment.” The negative items “nothing - just listen to the teacher” and “nothing – I just go to class” were deleted to force open response if necessary.

Note. Almost all Development Study questions which were kept for the Final Survey (FS) were modified in some way, as can be seen on the question maps (Figures 11 and 12).

Some responses were dropped, such as in the question on student motivation, “I’m not sure” (f) which had a DS frequency of 2%. Equivalent responses were merged into a single new response or one of the synonyms was kept. For example, for Unit Start, “prepare a new page in my exercise” was merged with “prepare any supplies I needed” because the second concept was understood to be included in the first and the items had an association of 0.83. Alternatively, some items were merged by a simple fusing of text. For example, for Class Start, “chat with friends” and “find out what we’re doing that class” became “chat with friends to find out what we’re doing that class.” Other responses were carried forward but clarified. For example, for Strengths and Talents, “I am an excellent listener” (a) was clarified without changing the meaning as “I can remember what I hear in class.” Compound responses were split to eliminate an ambiguity. For example, “complete all unit assignments” generated “complete all course assignments” and “complete all review assignments” after students asked for clarification during DS administration. New responses were also added when necessary. For example, a DS open-response suggested, “I can keep focused while studying” as a talent. Some responses were simply moved to a more appropriate question.

DS modifications were also expressed in question maps. *Your Learning Practice* (Section 1 or F1), as seen in Figure 11, consisted of three (of 14) DS Section A, all (of 20) Section B, and two (of 22) Section D questions. Grade level (DA06-4b > F101-4b) and previous grade average (DA07-6b > F102-5b) were retained as button (b) or single-response questions. Motivation (DA04-8co > F103-2/7co) was retained as a check box (c) or multiple-response question; however, instead of being able to choose all relevant items students were asked to choose two of seven. The open-response option (o) was retained to allow students to suggest other responses. The fourth F1 question asked students to identify learning Strengths and Talents (DB27-16co > F104-3/11co) with a response list reduced from 16 to 11. This question was also moved from the end of the student practice list to near the beginning because focus group students associated it with

motivation. Also, “the ordering of the questionnaire is important … it is important to commence the questionnaire with non-threatening questions that [students] can readily answer” (Cohen et al, 2000, p. 257). Students were then asked about teacher inquiry into student learning preferences (DD57-4b > F105-5b) and students’ requests for change in teacher practice (DD58-39co > F106-6/19co).

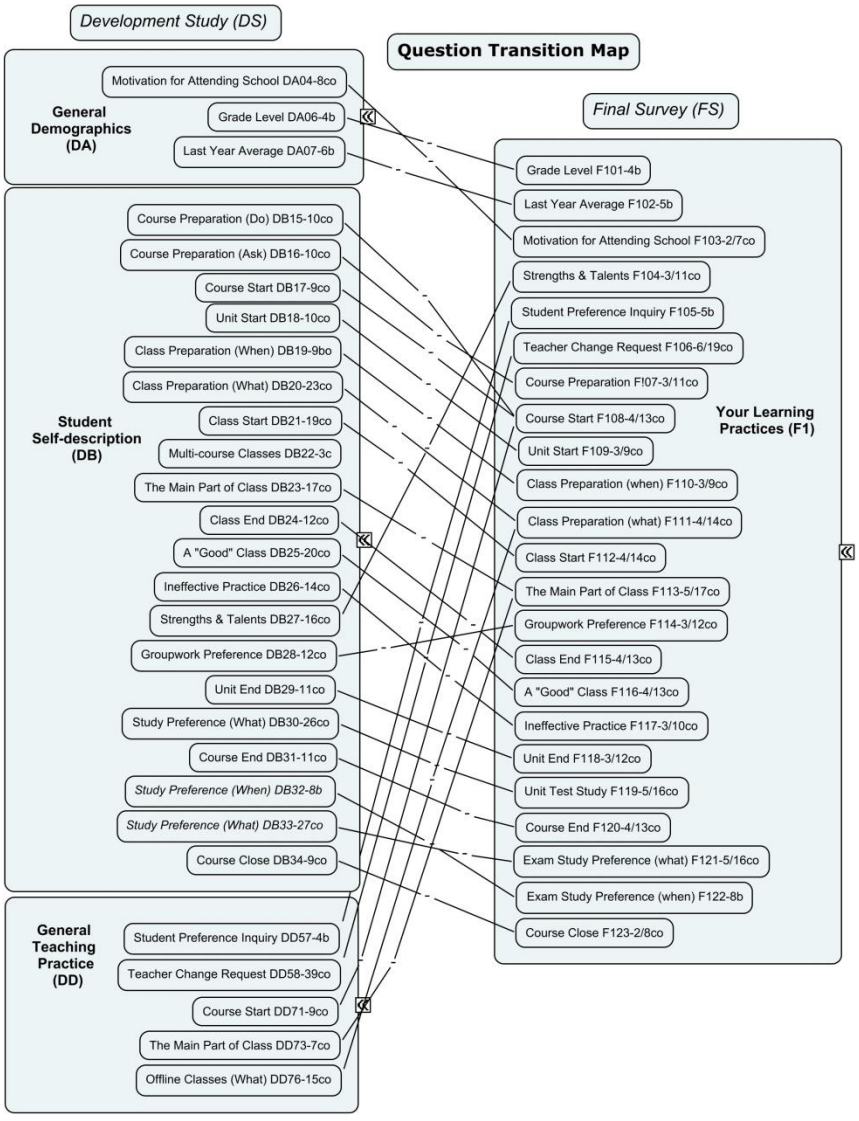


Figure 11. Final Survey (FS) Question Map Section 1 (F1).
Section 1 was developed from Development Study sections DA, DB, and DD. Note that response choice was limited in the FS; for example, response for the motivation question was limited from any or all of eight to two of seven (DA04-8co > F103-2/7co). The changed format reflects the changed purpose; from response reduction to information gathering. This was reflected in the reduced number of choices for each question (e.g., Unit Test Study, DB30-26co > F119-5/16co). Note the integration of situation and Distance Education questions (e.g., DB17 + DD71 > F108). The open-response option (o) was retained to allow students to suggest other responses. Also, note the change in numbering system. F119 or F1-19 is the 19th question in Section F1.

The DS question on student inquiry before taking a course was used as the FS Course Preparation question (DB16-10co > F107-3/11co). The questions on Course Preparation and Start were combined with added distance education (DE) responses (DB15-10co + DB17-9co + DD71-9co > F108-4/13co) with the number of choices decreased from 28 to 13. Questions constructed by merging with DE responses typically show two converging lines in Figure 11. DS questions on Unit Start (DB18-10co > F109-3/9co) and when homework was done (DB20-9co > F111-4/14co) were kept unchanged. The DS question on Class Preparation was combined with the question on DE Offline Classes (DB19-23co + DD76-15co > F110-3/9co) and the response list reduced from 38 to 14. Class Start (DB21-19co > F112-4/14co), the Main Part of Class (DB23-17co + DD73-7co > F113-5/17co), and Class End (DB24-12co > F115-4/13co) were kept and suggestions from Teacher Feedback were integrated into response lists. The question on student Group Work Preferences (DB28-12co > F114-3/12co) was repositioned after the Main Part of Class. Students were still asked to define both an Effective or Good Class (DB25-20co > F116-4/13co) and an Ineffective or Poor Class (DB26-14co > F117-3/10co). DS questions on Unit End (DB29-11co > F118-3/12co), Unit End Test Preparation (DB30-26co > F119-5/16co), Course End (DB31-11co > F120-4/13co), Course End Exam Preparation (DB32-8b + DB33-27co > F122-5/16co + F121-5/16), and Course Close (DB34-9co > F123-2/8co) were all kept but with reduced response lists. Response lists for Unit Test and Course Exam Preparation were kept identical to measure relative practice.

Your Perception of Teaching Practice (Section 2) was predominantly comprised of questions from DS Section C, as shown in Figure 12. Students were asked to choose the specific course (DC35-d > F201-d) to be described from a dropdown list (d) upgraded from DS open-response suggestions. Questions about relationships (DC51A-10co > F202-2/7co) (DC51B-20co > F203-4/14co) and comfort level (DC54A-5b > F204-5b) were moved to reinforce the constraint that students were being asked to describe one teacher and not answer generally.

Students were next asked about teacher practice that made learning easier (DC52-36co > F205-6/19co) or harder (DC53-32co > F206-5/15co) and how the teacher could change to enable them to achieve better grades (DC54-28co > F207-5/15co). Most questions were modified by offering fewer items (e.g., 28 > 15) and making a limited number of choices (5/15).

Students were then asked about teacher Course Start (DC36-24co + DC37-9co + DD71-9co > F209-5/16co) practice. EP Course Start data had been rich enough to subdivide the situation into separate DS questions focused on what the teacher discussed (DC36), what the teacher did (DC37), and what was different about DE (DD71). The three questions and response lists were recombined in the FS with the number of responses reduced from 42 to 17. The inclusion of DE-specific responses led to the specific FS instruction that students should choose responses that best described the situation. Like most questions, Unit Start, Assignments, Teacher Preparedness, Class Start, the Main Part of Class, and Class End response lists were relatively reduced to 43%, 54%, 52%, 55%, 56%, 63% of their DS counterpart by recognizing equivalent concepts across questions and equivalent responses in lists. Much of this recognition was based on the SE study of student misconceptions, focus groups, and the researcher's experiences as a teacher. Redevelopment of the survey instrument resulted in development of the FS website module. This did not take as long to develop as the DS because questions and response arrays could be copied. Note that the link to the FS module was colour-coded red to indicate that it was active.

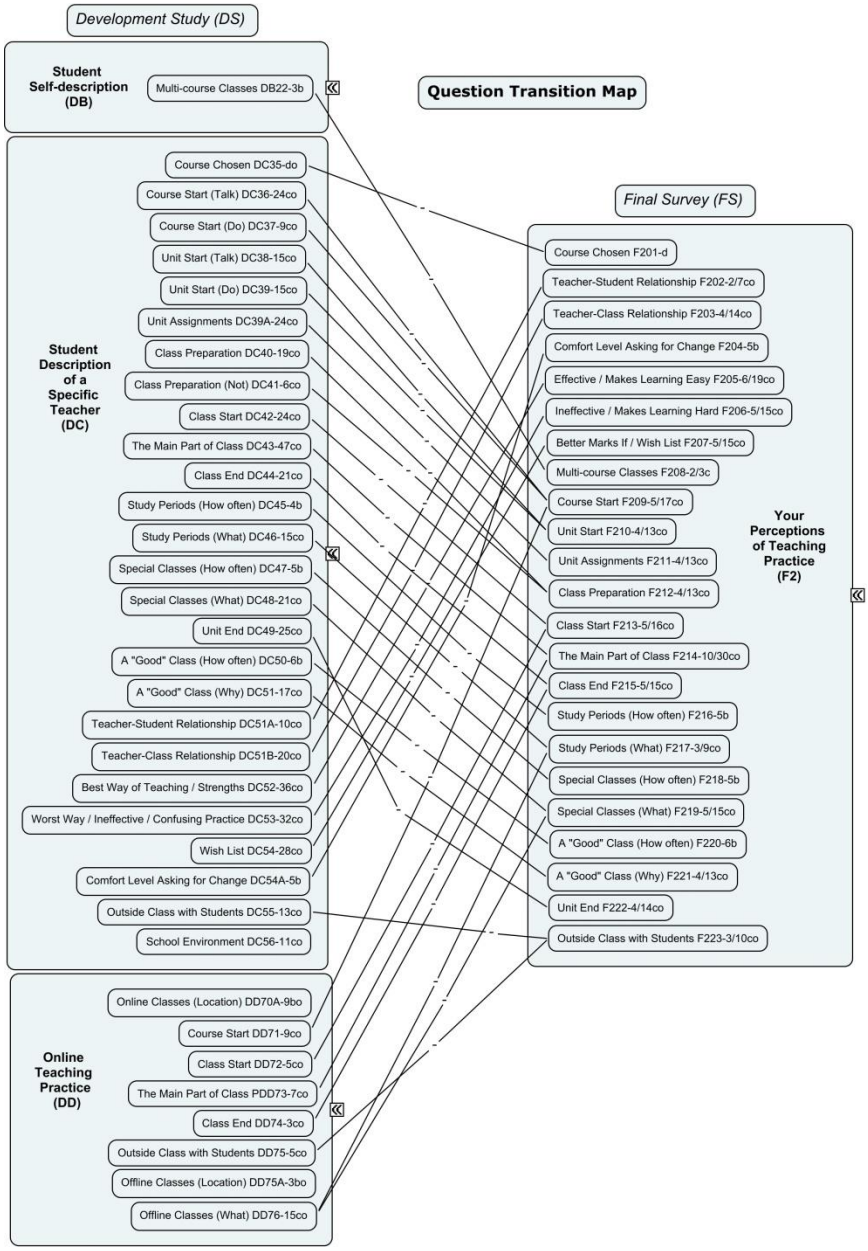


Figure 12. Final Survey (FS) Question Map Section 2 (F2).
Section 2 (F2) was developed from the Development Study sections DC and DD. Note that response choice was limited in the FS, for example response for the Unit Assignment question it was limited from any or all of 24 to four of 13 (DA39A-24co > F211-4/13co). The changed format reflects the changed purpose; from response reduction to information gathering. Note the integration of situation and Distance Education questions (e.g., DC36 + DC37 + DD72 > F209). The open-response option (o) was retained to allow students to suggest other responses. Also, note the change in numbering system. F211 or F2-11 is the 11th question in Section F2.

CHAPTER 5: FINAL SURVEY (FS)

The goal of this program of research was to develop a survey instrument to enable practitioners and researchers to examine High School (HS) student situational practices and perceptions. The *Final Survey* (FS), entitled *Student Practice and Perception in Onsite and Online Classrooms*, included sections entitled *Your Learning Preferences* (F1) and *Your Perception of Teaching Practice* (F2).

The version presented in Figures 13 and 14 includes minor adjustments made after FS administration. These adjustments include the text in responses; for example, the (F106) response “make sure I understand before moving on” was changed to become “ask questions and make sure I understand before moving on.” Some students suggested, through open response, the need for a negative option and “None of these. It is never easy to learn in this class” was added to F205 (Making Learning Easy), and “no changes are necessary in this class” was added to F207 (Better Marks If). A few responses were also re-inserted after noting rank differences between the *Development Study* (DS) and FS choices; for example, the DS response “everyone paid attention” was reinserted in F116 (A Good Class) and “remind us that the end of the unit is coming” was reinserted in F222 (Unit End). Responses which included the phrase, “if it is an online course,” were adjusted to eliminate the phrase leaving it to respondents to choose items best describing the situation. Redundant phrases (e.g., “in the unit”) were also cut from responses when the question clearly indicated the situation. Checks on grammar (e.g., didn’t > did not), emphasis (e.g., “usually” was always *usually*) and highlighting (e.g., “start of a new UNIT”) were also made. In addition, response limits were reduced on five questions based on the Response Index.

Student Practices and Perceptions of Teacher Practice in Face-to-face and Online Classrooms

Thank you for agreeing to participate. Completing a survey gives people a chance to learn from you and change the way they do things in the classroom; however, only honest answers include the information people need to improve teaching and learning. All information collected during this survey is confidential so please protect your own privacy by not discussing it with anyone

The survey has both Online and In-house Versions with identical question and response sets. If you do NOT take online courses then some of the responses will not apply to you. Just ignore them. If you do take online courses you can choose any response you like. Always choose the best responses you can make.

The survey has been divided into two sections. Section 1 is about YOU while Section 2 is about YOUR TEACHER. You may be doing one or both sections today. The survey administrator will tell you how long you ha ve to complete the survey and may have other instructions as well. Please listen carefully.

Section 1: Your Learning Practices

Check the boxes or buttons in each question which honestly describe YOU. The survey asks you about what YOU do now; not what you would like to do or what you think is a good idea. **Choose the best or most important answers for each question.** Please use the Other Box or the back of this page if you want to give an answer that is not in the list.

---

1. What grade or level are you in this year?

◉ Level 1 (Grade 10) ○ Level 2 (Grade 11) ○ Level 3 (Grade 12) ○ Level 4

2. What was your average last year?

○ Less than 50% ○ 50-59% ○ 60-69% ○ 70-79% ○ 80-89% ○ 90-99%

3. What interests you most about going to school? *Choose 2 or less.*

☐ A particular subject (e.g., math)
☐ Career aspirations or training
☐ Extracurricular activities (e.g., music)
☐ Friends or social life
☐ Getting my grade 12 diploma
☐ I like being a student
☐ Sports or physical activities (e.g., volleyball)
Other: _____

4. What do you believe are your best talents that help you learn? *Choose 3 or less.*

- ☐ I am good at memorizing text
- ☐ I am not afraid to ask for extra help
- ☐ I am very organized
- ☐ I ask questions in class when I am not sure
- ☐ I can keep focused when studying
- ☐ I can make up ways of remembering things
- ☐ I can relate new ideas to things I know
- ☐ I can remember formulas
- ☐ I can remember what I hear in class
- ☐ I can remember what I see in class
- ☐ I like to study with friends
- Other: _____

5. Has any high school teacher asked you how you learn best?

- ○ No never
- ○ Yes but NOT this year
- ○ In ONE course this year
- ○ In a FEW courses this year
- ○ In ALL my courses this year

6. What do you *usually* ask teachers to do to help you learn? *Choose 6 or less.*

- ☐ Ask questions and make sure I understand before moving on
- ☐ Break down explanations step by step
- ☐ Describe real experiences or problems
- ☐ Do another or different example problem
- ☐ Find another way to help me if I do not get the explanation
- ☐ Give choice when it comes to assignments
- ☐ Give hints or ways that help us remember
- ☐ Give simpler explanations so I can understand
- ☐ Go through seatwork or assigned questions I do not understand
- ☐ Let me work during class time so the teacher can help me if I need it
- ☐ Let us do things hands-on or in groups
- ☐ Make class more interesting
- ☐ Meet me after class or online to help 1-on-1
- ☐ Repeat explanations until I get it
- ☐ Review new material after a class or two
- ☐ Show me a number of different ways of doing something
- ☐ Speak loud enough so the class can hear
- ☐ Take the time to have class discussions
- ☐ Use diagrams or visuals when explaining
- ☐ Wait until I have copied the notes before you give explanations
- Other: _____

7. What do you *usually* ask others about a course before it begins? *Choose 3 or less.*

- ☐ How they did in the course
- ☐ If I need the course to graduate
- ☐ If the course is easy or difficult
- ☐ If the course is offered online or in school
- ☐ If the course will help with a career or if it is needed for college / university
- ☐ If the teacher is boring or interesting
- ☐ Course topics (i.e., what it is about?)
- ☐ Course workload (i.e., assignment?)
- ☐ The teacher's personality (i.e., friendly?)
- ☐ The teacher's teaching methods (i.e., how do they like to teach?)
- ☐ Who teaches the course
- Other: _____

8. What do you do at the start of a COURSE that is *special*? *Choose 4 or less.*

- ☐ Check my email
- ☐ Exchange pictures with the teacher
- ☐ Gather or organize supplies (e.g., binders)
- ☐ Get to know my classmates
- ☐ Get to know the teacher
- ☐ Learn about the online environment
- ☐ Organize or prepare my notebook
- ☐ Read the course description or outline
- ☐ Review notes from a previous course
- ☐ Skim through the textbook
- ☐ Talk about my interests in the course
- ☐ Try to make a good impression
- ☐ Write down jot notes about the course
- Other: _____

9. What do you do at the start of a new UNIT that is special? *Choose 3 or less.*

- ☐ Google some of the key terms in the unit
- ☐ Highlight definitions in the textbook
- ☐ Make sure work of the previous unit is finished
- ☐ Read or skim the chapters in the textbook
- ☐ Read the course objectives for the unit
- ☐ Start a new page or section in my notebook
- ☐ Think about what the unit is about
- ☐ Write down a few jot notes about the unit
- ☐ Write important definitions in my notebook
- Other: _____

10. WHEN do you *usually* prepare for classes and get homework done? *Choose 3 or less.*

- ☐ After school before supper
- ☐ After supper in the evenings
- ☐ During classes when the teacher lets us
- ☐ During classes without the teacher knowing
- ☐ During recess or lunch
- ☐ Early in the mornings (i.e., does not include packing books for school)
- ☐ I do not usually do or have homework
- ☐ I have scheduled free, study or offline periods
- ☐ Weekends (i.e., Saturday or Sunday)
- Other: _____

11. WHAT do you *usually* do for homework or to prepare for classes? *Choose 4 or less.*

- ☐ Any written work we have to do
- ☐ Assigned readings
- ☐ Compare homework answers with friends
- ☐ Discuss assignments or projects with friends
- ☐ Finish what I did not complete in the last class
- ☐ Get notes from a friend if I missed a class
- ☐ Only homework that is due the next day
- ☐ Organize and pack my books
- ☐ Practice what the teacher showed us
- ☐ Read ahead of the teacher in the textbook
- ☐ Review my class notes
- ☐ Study ahead of time for unit tests
- ☐ Use the Internet to research what was talked about in class
- ☐ Watch or listen to recorded classes
- Other: _____

12. What do you *usually* do during the FIRST ten minutes of most classes or periods? *Choose 4 or less.*

- ☐ Ask a friend or find out what we are doing
- ☐ Ask the teacher questions about homework or assignments
- ☐ Finish homework before the teacher corrects it
- ☐ Get ready to take notes
- ☐ Listen for my name during attendance
- ☐ Listen for any information about assignments
- ☐ Listen to the teacher tell jokes or stories
- ☐ Listen to why the class is important
- ☐ Listen to the teacher settling the class
- ☐ Log in
- ☐ Open the textbook to the correct page
- ☐ Pass in homework that is due
- ☐ Prepare a new page in my notebook or binder
- ☐ Prepare any supplies I need (e.g., calculator)
- ☐ Wait for the teacher to arrive or get prepared
- Other: _____

13. What do you *usually* do during the MAIN PART of most classes or periods? *Choose 5 or less.*

- ☐ Ask a friend questions if the teacher is busy
- ☐ Ask the teacher for an example
- ☐ Ask questions about the topic
- ☐ Ask to go over something again
- ☐ Assigned seatwork on questions or problems
- ☐ Check my answers to assigned questions
- ☐ Copy notes from the whiteboard or slides
- ☐ Highlight important sections in the textbook
- ☐ Listen to the teacher talk about a topic
- ☐ Participate in class discussions
- ☐ Share applications
- ☐ Surf the Internet or use web-based programs
- ☐ Text message or chat
- ☐ Try to understand the idea before the teacher moves on
- ☐ Write down anything the teacher repeats
- ☐ Write down my own thoughts about the topic
- ☐ Work with other students in groups
- Other: _____

14. What do you *usually* prefer to do when you have to work in a group? *Choose 3 or less.*

- ☐ Add audio to the presentation (e.g., music)
- ☐ Add visuals to the presentation (e.g., art)
- ☐ Collect and analyze the data
- ☐ Finish my part alone first and then share it
- ☐ Help organize the group and get everyone working
- ☐ Help organize the presentation (e.g., slides)
- ☐ Listen to the rest of the group
- ☐ Meet in a breakout room
- ☐ Something that involves moving around
- ☐ Take notes and write the report
- ☐ Try to add ideas or suggestions
- ☐ Whatever needs to be done
- Other: _____

15. What do you *usually* do during the LAST ten minutes of most classes or periods? *Choose 4 or less.*

- ☐ Ask any questions I did not get a chance to earlier
- ☐ Ask about what we need to do during offline classes
- ☐ Ask about the next class
- ☐ Chat, text or just sit there if we have free time
- ☐ Complete any seatwork to avoid homework
- ☐ Listen to the teacher's summary of the lesson
- ☐ Log out early when I can
- ☐ Make sure I have all the notes for the class
- ☐ Make sure I am prepared for the next period
- ☐ Pack up some of my things
- ☐ Watch the clock and wait for the bell
- ☐ Whatever we want because the teacher usually loses control
- ☐ Write down homework and due dates
- Other: _____

16. When you say to yourself "that was a good class" what do you *usually* mean? *Choose 4 or less.*

- ☐ Everyone paid attention
- ☐ Everyone showed up and we could do the planned activities
- ☐ Everything was explained well; I understood
- ☐ I did more hands-on work
- ☐ I finished all my seatwork or homework
- ☐ I had a laugh and it wasn't boring
- ☐ I learned a different way of doing something
- ☐ I wrote down lots of useful notes
- ☐ It was different from what we usually do
- ☐ It was quiet and I could really listen
- ☐ The teacher was engaged and not laid back
- ☐ The topic was connected to real life
- ☐ There was lots of examples and practice time
- ☐ There were lots of discussions I understood
- Other: _____

17. When you say to yourself "that was NOT a good class" what do you *usually* mean? *Choose 3 or less.*

- ☐ I did not have enough time to do the in-class assignment
- ☐ I did not understand some of the quick explanations or discussions
- ☐ I had to copy a lot of useless notes
- ☐ Students were not listening and the teacher had to repeat explanations or questions
- ☐ The teacher did not do enough examples
- ☐ The teacher did not explain the notes well
- ☐ There was too much noise that interrupted the teacher
- ☐ There were too many technical problems
- ☐ We were assigned too much work to do
- ☐ We were in groups and I felt left out
- ☐ We were in groups and I had to do all the work
- Other: _____

18. What do you do or ask the teacher to do at the end of a UNIT during class that is *special*? *Choose 3 or less.*

- ☐ Ask for a unit review sheet
- ☐ Ask the teacher about the unit test
- ☐ Ask the teacher for a review class
- ☐ Complete unit assignments and projects
- ☐ Complete the review assignment
- ☐ Go online for extra help or tutorials
- ☐ Make sure I have a complete set of notes
- ☐ Make sure I know how to do everything
- ☐ Participate in class discussions
- ☐ Relax and enjoy courses with no unit tests
- ☐ Stay after school for extra help or tutorials
- ☐ Write a list of questions to ask the teacher
- Other: _____

19. In those courses which have unit tests, **what do you *usually* do OUTSIDE class to study or prepare for a UNIT TEST?** *Choose 5 or less.*

- ☐ Brainstorm what will be on the test
- ☐ Create something to help me remember
- ☐ Do practice questions or problems
- ☐ Draw diagrams connecting my notes
- ☐ Gather together and organize all my notes
- ☐ Make a schedule for my study time
- ☐ Make up a study guide or jot notes
- ☐ Practice with unit tests from previous years
- ☐ Read my notes over and over to memorize
- ☐ Read the important sections in the textbook
- ☐ Read the outcomes for the unit
- ☐ Review assignments and correct my mistakes
- ☐ Review key topics and definitions
- ☐ Review my notes
- ☐ Review recorded classes or posted files
- ☐ Work with a friend to test each other
- Other: _____

20. What do you do or ask the teacher to do at the end of a COURSE during class that is *special*? *Choose 4 or less.*

- ☐ Ask about the final exam if we have one
- ☐ Ask for a make-up assignment to boost my mark
- ☐ Ask for course review sheets
- ☐ Ask for some review classes
- ☐ Ask the teacher to do some sample problems
- ☐ Complete all the review assignments
- ☐ Complete course assignments and projects
- ☐ Go online for extra help or tutorials
- ☐ Make sure I have a complete set of notes
- ☐ Make sure I know how to do everything
- ☐ Participate in class discussions
- ☐ Relax and enjoy courses with no final exams
- ☐ Stay after school for extra help or study time
- ☐ Write a list of questions to ask the teacher

Other: _____

21. In those courses which have a final exam, **what do you *usually* do OUTSIDE class to study or prepare for a FINAL EXAM?** *Choose 5 or less.*

- ☐ Brainstorm what will be on the exam
- ☐ Create something to help me remember
- ☐ Do practice questions or problems
- ☐ Draw diagrams connecting my notes
- ☐ Gather together and organize all my notes
- ☐ Make a schedule for my study time
- ☐ Make up a study guide or jot notes
- ☐ Practice with exams from previous years
- ☐ Read my notes over and over to memorize
- ☐ Read the outcomes for the course
- ☐ Read the important sections in the textbook
- ☐ Review assignments and correct my mistakes
- ☐ Review the key topics and definitions
- ☐ Review recorded classes or posted files
- ☐ Review my notes
- ☐ Work with a friend to test each other

Other: _____

22. WHEN do you *usually* start studying or preparing for a FINAL EXAM?

- ○ At the beginning of the year
- ○ Two months before
- ○ A month before
- ○ Two weeks before
- ○ A week before
- ○ Two days before
- ○ The day before
- ○ I do not study for exams

23. Is there anything *special* you do after a course is over? *Choose 2 or less.*

- ☐ Burn or throw away the notes I won't need
- ☐ Celebrate, have fun or party
- ☐ Delete all course files and notes
- ☐ Get ready to work for the summer
- ☐ Give my notes to a friend or relative
- ☐ Relax and let it all go
- ☐ Save the notes I think I will need next year
- ☐ Worry or pray about the exam
- Other: _____

Figure 13. Final Survey (Section 1) - Your Learning Practices.
The copy displayed in these pages can also be seen by examining the research website located with the electronic copy of the thesis. Note that this final copy includes minor modifications determined from analysis of FS administration and data analysis.

Section 2: Your Perceptions of Teaching Practices

Please check the boxes or buttons in each question which honestly describe YOUR TEACHER. The survey asks you to describe what that ONE TEACHER does now, not what you would like him or her to do or what you think is a good idea. **Choose the best or most important answers for each question.** Please use the Other Box or the back of this page if you want to give answers that are not in the list.

---

1. **What course does this ONE teacher teach?** _____

2. What kind of relationship do YOU have with *this particular teacher*? *Choose 2 or less.*

- ☐ I am comfortable going to class
- ☐ I am scared of this teacher
- ☐ I dread or hate going to class
- ☐ I like and respect this teacher
- ☐ I trust their advice on how to improve
- ☐ This teacher encourages me to do my best
- ☐ This teacher is also a friend
- ☐ This teacher is my favourite
- Other: _____

3. How does *this particular teacher usually* relate to most of the students in your class?
This teacher … *Choose 4 or less.*

- ☐ Criticizes some students for no reason
- ☐ Encourages all students to learn
- ☐ Favours some students more than others
- ☐ Gives detentions for inappropriate behaviour
- ☐ Is hard on students when they deserve it
- ☐ Looks down on all or most students
- ☐ Maintains discipline in the classroom
- ☐ Makes an example of a student sometimes
- ☐ Respects students efforts and feelings
- ☐ Says inappropriate things sometimes
- ☐ Sends students out of class sometimes
- ☐ Talks to students privately about behaviour
- ☐ Treats all students equally and fairly
- ☐ Tries to encourage respect for everyone

Other: _____

4. I am comfortable talking to *this particular teacher* to discuss a problem I have with their teaching method.

○ Strongly Disagree ○ Disagree ○ Neither ○ Agree ○ Strongly Agree

5. What does *this particular teacher usually* do that makes it EASY for you to learn or understand new ideas? *Choose 5 or less.*

- ☐ Always refers to the textbook when talking about a topic
- ☐ Asks lots of questions in class
- ☐ Assigns work after we know how to do it
- ☐ Compares what we are learning with real life
- ☐ Creates a relaxed class with no tension
- ☐ Draws diagrams to explain things
- ☐ Explains notes over and over if we need it
- ☐ Explains topics in a way I understand and remember
- ☐ Focuses on our class and never seems preoccupied
- ☐ Follows the same routine every class and it works for me
- ☐ Gives examples and explains them after we copy them down
- ☐ Gives step-by-step instructions on how to do something
- ☐ Gives tons of good notes to study
- ☐ Helps students individually or 1-on-1
- ☐ Involves us instead of just telling us
- ☐ Lets us get creative in class
- ☐ Listens to students and has a good attitude
- ☐ None of these – it is never easy to learn in this class
- ☐ Passes out notes so we can follow along
- ☐ Points out how certain things can be questions on the exam
- ☐ Takes the time to get everyone involved in class discussions

Other: _____

6. What does *this particular teacher usually* do that makes it HARD for you to learn or confuses you? Choose 4 or less.

- ☐ Answers questions by asking other questions
- ☐ Assumes students know what they are talking about
- ☐ Drags out classes and it becomes boring
- ☐ Gives a meaning for something and I think it means something different
- ☐ Goes on to a new topic before I can ask questions
- ☐ None of these – it is never hard to learn in this class
- ☐ Puts notes on the board but does not explain
- ☐ Reads text out loud I can not see or read it
- ☐ Sometimes I do not see the point of what we are doing
- ☐ The way some assignments are written
- ☐ There are new terms inside new definitions
- ☐ Uses words I do not understand
- ☐ Wanders off topic and no one sees the connection
- ☐ When we have to do work without examples
- ☐ Work is assigned that I do not understand
- ☐ Writes notes really fast to get finished before the bell rings
- Other: _____

7. I could get better marks if this *particular* teacher changed by ... *Choose 4 or less.*

- ☐ Doing more activities
- ☐ Explaining the topics more in-depth
- ☐ Explaining what we should be writing and not just how
- ☐ Fewer long answer questions on tests
- ☐ Finding a way to give notes and let us pay attention during their explanations
- ☐ Giving us a little more time to figure things out
- ☐ Giving us a second chance to understand their explanations
- ☐ Giving us less of a workload
- ☐ Giving us more time to finish tests
- ☐ Going over their notes more and explaining things a bit better
- ☐ Helping us understand how to do things
- ☐ Helping us learn how to study notes to make assignments and tests easier
- ☐ Making it more interesting so I would want to learn and look forward to next class
- ☐ More long answer questions on tests so a couple of questions aren't worth so much
- ☐ No changes are necessary in this class
- ☐ Talking more with our school teachers if he/she is a DE teacher
- ☐ Telling us the correct way of doing something before the test
- ☐ Telling us what we can do to raise out marks
- Other: _____

8. Do other students take different courses in your classroom at the same time as this course? *Choose 2 if there are both other and online courses during your classes .*

- ☐ No - all the students in the classroom are taking the same course
- ☐ Yes – the teacher teaches two or more courses at the same time
- ☐ Yes - other students take online courses during my classes

9. What did *this particular teacher* talk about or do that was *special* at the start of the COURSE? *Choose 5 or less.*

- ☐ Asked about our best ways of learning
- ☐ Asked us to exchange pictures
- ☐ Checked all our names on a computer or list
- ☐ Different activities or projects in the course
- ☐ Explained how the online classroom worked (e.g., microphones)
- ☐ Handed out and skimmed through textbook
- ☐ How they like to teach and their expectations
- ☐ How to keep our marks up
- ☐ Interesting careers related to course topics
- ☐ Our interests and how they fit into the course
- ☐ Provided contact information (e.g., email)
- ☐ Summer holidays or interesting stories
- ☐ The course evaluation or mark scheme
- ☐ The course outline and main topics
- ☐ Welcomed us and asked us to introduce ourselves
- ☐ What supplies we needed for the course
- ☐ What previous students thought about the course
- ☐ Other: _____

10. What does *this particular teacher* talk about or do that is *special* to the start of a new UNIT or section? *Choose 4 or less.*

- ☐ A famous person who had something to do with the unit
- ☐ Brainstorms ideas related to the main topics
- ☐ Gives us a handout of all the notes for the unit
- ☐ Gives us the unit outline and objectives
- ☐ How long the unit should take to complete
- ☐ How the unit topics are related to everyday life
- ☐ How the unit compares to other units
- ☐ Reads from or skims through the textbook
- ☐ Reviews previous course or unit to refresh our memories
- ☐ Starts right away on the first lesson
- ☐ Tests us to see what we already know
- ☐ The major assignments or projects of the unit
- ☐ What supplies we needed for the unit
- ☐ Other: _____

11. What kind of student work does *this particular teacher usually* assign and mark during a unit? *Choose 4 or less.*

- ☐ Case studies
- ☐ Class presentations
- ☐ Creative writing
- ☐ Group or team projects
- ☐ Hands-on projects (e.g., building models)
- ☐ Homework (i.e., finishing seatwork)
- ☐ In-class seatwork or assignments
- ☐ Internet research projects
- ☐ Lab or experiment reports
- ☐ Participation in class activities
- ☐ Planned quizzes or unit tests
- ☐ Portfolios (e.g., examples of writings)
- ☐ Problems on sheets or from the textbook
- Other: _____

12. What evidence do you *usually* see that *this particular teacher* is *usually* prepared to teach classes? *Choose 4 or less.*

- ☐ Brings in information they found online
- ☐ Can tell us if we are ahead or behind in the course
- ☐ Can tell us what we will be doing the next day
- ☐ Corrects assignments and tests quickly
- ☐ Equipment is set up when we get to class
- ☐ Has an in-class activity planned
- ☐ Has notes on the whiteboard or ready for us
- ☐ Has photocopies ready for everyone
- ☐ Has questions already picked out for us to do
- ☐ Never assigns seatwork just to keep us busy
- ☐ Really knows what they are talking about
- ☐ Talks about the lesson plan for the class
- ☐ Tells us in advance about assignment
- Other: _____

13. What does *this particular teacher usually* talk about or do during the FIRST ten minutes of most classes or periods? *Choose 5 or less.*

- ☐ Asks how our day is going so far
- ☐ Asks if we have any questions about assignments or deadlines
- ☐ Asks us to calm down and stop talking
- ☐ Checks and / or corrects homework
- ☐ Collects assignments if they are due
- ☐ Grants online privileges to students
- ☐ Returns corrected work to us
- ☐ Reviews topics from the previous class and asks if we have any questions
- ☐ Spends time setting up equipment (e.g., gym, science)
- ☐ Starts class right away with new notes
- ☐ Takes attendance
- ☐ Talks about the class and what we'll be doing
- ☐ Tells funny jokes or stories
- ☐ Tests what we remember from the last class
- ☐ Troubleshoots technical problems
- ☐ Waits for students to log in before starting
- Other: _____

14. What does *this particular teacher usually* talk about or do during the MAIN PART of most classes or periods? *Choose 8 or less.*

- ☐ Application share
- ☐ Asks questions to see if students understand what they are teaching
- ☐ Asks us to give examples or explain what they were talking about
- ☐ Asks us to participate in activities or demonstrations
- ☐ Brings in interesting resources (e.g., videos)
- ☐ Draws diagrams to help explain new ideas
- ☐ Explains new ideas and makes sure everyone understands
- ☐ Gives class time or study periods for us to work on assignments
- ☐ Gives examples when explaining notes
- ☐ Gives funny examples or ways to help us remember important information
- ☐ Gives notes - not enough and it makes studying for tests difficult
- ☐ Gives notes – too many or more than we need
- ☐ Gives out worksheets so we can practice problems or questions
- ☐ Has students work together in pairs or groups
- ☐ Just sits there and watch us work
- ☐ Lets us answer questions privately
- ☐ Makes notes about us while we do seatwork
- ☐ Makes sure everyone is paying attention
- ☐ Makes sure everyone is safe
- ☐ Points out important definitions or terms we should understand and remember
- ☐ Points out outcomes we have completed
- ☐ Reads aloud from the textbook or a novel
- ☐ Relates new ideas to their own experiences
- ☐ Shows us or tells us about Internet resources
- ☐ Starts class discussions about the topics
- ☐ Takes the time to stop and explain ideas
- ☐ Tries to give us personal feedback on how well we are learning
- ☐ Tries to help students 1-on-1 during seatwork
- ☐ Tries to involve everyone in class discussions
- ☐ Works out problems on the whiteboard
- Other: _____

15. What does *this particular teacher usually* talk about or do during the LAST ten minutes of most classes or periods? *Choose 5 or less.*

- ☐ Answers any questions we have about class
- ☐ Asks us to clean up the room
- ☐ Assigns unfinished seatwork for homework
- ☐ Corrects some of the questions we were working on
- ☐ Keeps giving us notes until the bell rings
- ☐ Lets us know if there are any announcements
- ☐ Lets us relax and chat with our friends
- ☐ Reminds us of special supplies we need to bring for next class
- ☐ Reminds us of deadlines for assignments
- ☐ Reminds us of what we need to do during study periods or offline classes
- ☐ Reminds us to watch the class recording
- ☐ Stops giving notes and starts a discussion
- ☐ Summarizes the class and what was covered
- ☐ Tells us if he/she plans to be away next class
- ☐ Tells us what we will be doing next class
- Other: _____

16. How often does *this particular teacher* give you a "study period" in your classroom, the computer lab or the library? A study period is a whole period in which you can work on whatever you want. *IF you are describing an online course then an offline class is a study period.*

○ Never ○ Once so far ○ More than once so far ○ Once a month
○ More than once a month ○ Once a week ○ More than once a week

17. What does *this particular teacher usually* do while you have a study period? *Choose 3 or less.*

- ☐ Answers questions through e-mail
- ☐ Answers questions privately 1-on-1
- ☐ Checks for inappropriate behaviour
- ☐ Checks to make sure we are working
- ☐ Corrects assignments or homework
- ☐ Explains what we should be doing
- ☐ Helps us find what we need (e.g., websites)
- ☐ Meets with groups of students
- ☐ Pops online to answer questions or help
- ☐ Their own work while we do ours
- ☐ We never have study periods
- Other: _____

18. How often does *this particular teacher* have a "special class" (e.g., a writers' workshops, culture days, competitions, outdoor activities, labs or field trips? Study periods, assignments and seatwork are not special classes. *IF you are describing an online course then an offline class is NOT a special class.*

○ Never ○ Once so far ○ More than once so far ○ Once a month
○ More than once a month ○ Once a week ○ More than once a week

19. **What does *this particular teacher usually* do during special classes that is DIFFERENT from regular classes?** *Choose 4 or less.*

- ☐ Arranges activities at the places we visit
- ☐ Arranges for a local teacher at our school to supervise us
- ☐ Asks us to prepare notebooks in a certain way
- ☐ Asks us to read something special
- ☐ Changes the way the classroom is set up
- ☐ Collects permission slips
- ☐ Discusses or plans what we are going to do
- ☐ Helps us experience what we learned in class
- ☐ Helps us find the materials we need
- ☐ Helps us set up the equipment we need
- ☐ Listens to a guest speaker or guide explain what we are doing
- ☐ Puts us into groups or assign partners
- ☐ Reminds us of safety rules
- ☐ Reminds us to bring in money or materials
- ☐ Watches out for inappropriate behaviour
- ☐ We never have special classes
- Other: _____

20. How often has *this particular teacher* called a period a "good class"?

- ○ Never – he/she does not enjoy our class
- ○ Never - but he/she usually enjoys our class
- ○ Once so far
- ○ More than once so far
- ○ Once a month
- ○ More than once a month
- ○ Once a week
- ○ More than once a week
- ○ Every class

21. Why do you believe *this particular teacher usually* calls a period a "good class"?
Choose 4 or less.

- ☐ Certain students who usually cause trouble were absent
- ☐ Everyone completed the assigned work
- ☐ Everyone cooperated or practiced teamwork
- ☐ Everyone showed up
- ☐ Everyone understood the explanation
- ☐ Everyone was attentive and interested
- ☐ The teacher did not have to speak over a noisy class
- ☐ The teacher never calls our class |good"
- ☐ The teacher participated in class activities (e.g., sports)
- ☐ The teacher was in a good mood
- ☐ There were no technical problems
- ☐ They could work with us 1-on-1
- ☐ We caught up to where we should be
- ☐ We had interesting discussions on the topics
- Other: _____

22. What does *this particular teacher* talk about or do at the end of a UNIT that is *special*?
Choose 4 or less.

- ☐ Describes the unit test and how much each section is worth
- ☐ Encourages us to finish all unit assignments
- ☐ Expects us to review on our own
- ☐ Gives us a study guide
- ☐ Gives us a study period so we can ask questions 1-on-1
- ☐ Gives us a study period to study with friends
- ☐ Gives us an in-class review assignment
- ☐ Goes over examples of everything we did
- ☐ Has a class discussion to answer questions
- ☐ Has one or two review classes
- ☐ Has us practice taking tests
- ☐ Reminds us that the end of the unit is coming
- ☐ Reminds us to review the class recordings
- ☐ There are no unit tests in this course
- ☐ We just go on to the next unit
- Other: _____

23. What does *this particular teacher* do OUTSIDE normal class time that helps them be a better teacher in the classroom? *Choose 3 or less.*

☐ Chats with students in the hallways or online	☐ Runs a school or online club (e.g., drama)
☐ Coaches or sponsors a sports team	☐ Supervises students in the gym during lunch or after school
☐ Gives help through e-mail	☐ Treats us like adults
☐ Gives tutorials if a student needs help	☐ Visits our school (i.e., if an online teacher)
☐ Has meetings about the course	☐ Works on a committee (e.g., yearbook)
☐ Helps with the student or school council	Other:

Thank you for completing this survey and contributing to a better understanding of teaching and learning. If you have other ideas or thought you would like to share please email the administrator at the given address.

Figure 14. Final Survey (Section 2) - Perceptions of Teaching Practice.
The copy displayed in these pages can also be seen by examining the research website located with the electronic copy of the thesis. Note that this final copy includes minor modifications determined from analysis of FS administration and data analysis.

5.1 Administration

One hundred eighty students, representing 30 schools in Central NL, volunteered to complete the FS. All students who had participated in the Exploration Phase (EP) were invited to participate and 50 students (72%) from the *Student Journal of Teacher Practice* (SJ), 34 (64%) from the *Student Description of Practice* (SP), and 30 (60%) from the *Student Explanation of Teacher Description* (SE) groups responded. These volunteers included the 48 who completed the *Development Study* (DS) and four who had not. Students who had volunteered for the EP but who had not been randomly selected for projects were also invited and 17 volunteered to write the FS. In addition, a control group (SX; n = 60) was randomly chosen from a geographically-separate second sample. Students from these schools had no prior experience with this research and it was assumed no knowledge of it. Online administration permitted the researcher to operate at a distance into these 30 sites simultaneously.

The Final Survey (FS) module was opened on May 4th and students were emailed unique usernames and passwords. The email was participant-specific, based on previous involvement with the research. DS students were asked to complete F2 using the DS-described teacher and SJ students were asked to re-describe a teacher on whom they had kept a journal. Many students began work immediately and some finished that same day. Participation was monitored and prompted during the 10 days; for example, an email which explained encountered email difficulties was sent to students whose accounts had shown no activity. Subsequent prompts entitled *Time Running Out* and *Last Day* resulted in many students completing the project.

5.2 Response and Data

One goal in developing the Final Survey (FS) was to reduce response time. The number of sections was reduced from four to two; the number of questions was reduced from 80 to 46; the number of response choices was reduced inside each question. It was assumed that choosing a limited number from the most representative items would require additional time. Students were asked to record section response times as part of the data entry process. The mean completion time for F1 was 14.9 minutes (n = 119), which was comparable to the 14.5 required for the Development Study (DS) student self-description section. F2 took 16.4 minutes (n = 126) on average, which was lower than the 22.2 required to complete the DS teacher practice description. The average DS completion time of 56 minutes was reduced to an average FS completion time of 31 minutes with 19.2 minutes of the reduction attributable to the elimination of Sections A and D.

FS data were coded in a manner like the DS; however, there were two minor issues. First, with respect to student perception of teacher practice at Course Start, two response choices were assigned the same code: “handed out and skimmed through the textbook” and “what supplies we needed for the course.” Both were saved as “handed out and skimmed through the textbook” (g). The likely

explanation was that the code was not changed when the typist moved from one item to the next in sequence and the researcher missed the error. Ten double occurrences of the value in the data file clearly indicated that some students had chosen both items; however, single occurrences were problematic because the items were consecutive in the response list. Hence, both responses were merged into a single item “handed out and skimmed through the textbook” *and/or* “talked about what supplies we needed for the course” with a value of 69 (of 131). The solution caused the combined answer to be ranked higher than was probably justified; however, it preserved a measure of data validity. The error was fixed in the final copy.

Another error was discovered in F116 data during analysis that was clearly and cleanly resolved. “I wrote down lots of useful notes” and “there were lots of discussions that I could understand” were coded using text strings dropped in designing the FS. This happened because DS sections were cut-and-paste as a basis for FS construction. Students never saw the codes and based their choices on the correct webpage text.

Students were directed to choose as many items as necessary during the DS to describe situational practices and perceptions. This gave the researcher the opportunity to conclude that, if a response was not chosen, it was not because of a limit on choice. However, choice was limited during the FS to force students to identify the most significant practices. Limits were set to approximately 25% of the number of items. Respondents were directed to choose some number *or less* (e.g., Choose three or less) suggesting that, if fewer could sufficiently describe the situation, then the question had been answered. Hence, the concept of missing choice was different from that of missing data. Table 61 lists the Response Index (RI) for each question as a measure of student choice. The index was calculated by dividing the total number of responses (r_t) by the number of respondents (n) by the question response limit (r_q). It varied from 1.00 to 0.45. A value of 1.00 meant that all students who answered the question made the maximum number of allowable choices.

Table 61

FS Response Index

Student Practice (F1)					Student Perception of Teaching Practice (F2)				
Question	r_q	n	r_t	RI	Question	r_q	n	r_t	RI
Grade	1	140	140	1.00	Course	1	136	136	1.00
Average (Last Year)	1	140	140	1.00	Teacher-Student Relationship	2	136	238	0.88
Motivation	2	140	275	0.98	Teacher-Class Relationship	4	136	428	0.79
Strengths & Talents	3	139	393	0.94	Student Ask?	1	136	136	1.00
Teacher Ask?	1	140	140	1.00	Making Learning Easy	6	136	642	0.79
Suggested Change	6	139	681	0.82	Making Learning Difficult	5	129	317	0.49
Course Preparation	3	140	405	0.96	Change Request	5	131	342	0.52
Course Start	4	139	429	0.77	Multi-course	2	133	140	0.53
Unit Start	3	140	352	0.84	Course Start	5	131	498	0.76
Class Preparation	4	140	454	0.81	Unit Start	4	133	370	0.70
When?	3	139	348	0.84	Unit Assignments	4	132	435	0.82
Class Start	4	139	489	0.88	Teacher Preparedness	4	132	438	0.83
Main Part of Class	5	140	559	0.80	Class Start	5	133	500	0.75
Group Work	3	139	389	0.93	Main Part of Class	10	131	847	0.65
Class End	4	138	460	0.83	Class End	5	130	473	0.73
A Good Class	4	137	463	0.85	Study Periods	3	124	247	0.66
Not a Good Class	3	139	395	0.95	How often?	1	129	129	1.00
Unit End	3	138	385	0.93	Special Classes	5	112	251	0.45
Unit Test	5	138	592	0.86	How often?	1	129	129	1.00
Course End	4	139	490	0.88	A Good Class	4	123	400	0.81
Course Exam	5	139	630	0.91	How often?	1	129	129	1.00
When?	1	139	139	1.00	Unit End	4	131	396	0.76
Course Close	2	139	264	0.95	Outside Classroom	3	129	285	0.74

Note. Final Survey Response Index. Key – number of permitted responses per question (r_q), number of respondents (n), total number of responses (r_t), response index (RI). Permitted response was arbitrarily set at 25% of fixed response items or at a researcher-estimated value. RI was calculated as (r_q x n) / r_t for example, for student motivation RI = (2 x 140) / 275 = 0.98. High RI values (> 0.90) indicated a need for a higher permitted response and low RI values (<0.70) indicated it was set too high. The purpose of the index was to manage respondent decision-making.

The Response Index (RI) confirmed that choice limits had been set correctly to allow sufficient choice and weed out superfluous response for most questions. However, six questions had an RI significantly less than 0.75. These were Ineffective Practice (F206), Wish List (F207), Multi-course Classes (F208), the Main Part of Class (F214), Study Periods (F217), and Special Classes (F219). With respect to Ineffective Practice and the Wish List, some students (10%) stated that their teacher did not have such practices and that no change was necessary; fewer choices were needed to describe the situation. For the multi-course

question, the RI was low because most students (88%) did not attend such classes and needed only one choice to answer the question. The choice limit for the Main Part of Class was set at 10, which was higher than the guideline, to draw in as much description as possible; however, had the guideline been followed, the RI would have been 0.81; a more acceptable value. Low RI values for questions on Study Periods and Special Classes were explained by students' frequent use of the open-response facility to give a negative response - that these did not happen. The negative item was dropped during redevelopment to determine if it was being used as a quick answer. Choice limits for the six questions were subsequently lowered on the final copy on F205 (6>5), 206 (5>4), 207 (5>4), 214 (10>8), and 219 (5>4). It was interesting to note that all the questions with RI<0.75 occurred in F2 when students were describing a teacher, suggesting that either more caution was taken in describing someone else, perceptions of self were more varied than perceptions of others, or both.

Twenty-nine students (22%) who completed F2 described teacher practice in an English course, with English 3201 being the most popular choice (Figure 15). Thirty-four (26%) described mathematics, with Math 1204 being the most popular; 41 (31%) described a science, such as Chemistry 2201; 21 (16%) described a social studies course, such as World Geography 3202.

One hundred forty of the 180-student sample (78%) started *Your Learning Practice* (F1) and the one student who did not complete the section accounted for 50% or 10 of 20 missing responses. The total missing response was 20 of 3220 (0.6%) and 129 of 140 (92%) students had no missing responses. Only question F116 (A Good Class) had two missing responses. One hundred thirty-six of the 139 students (97%) who completed F1 began *Your Perception of Teaching Practice* (F2) and five students who did not complete the section accounted for 56% or 71 of 127 missing responses. The total missing responses were 127 of 3220 (3.9%) and 98 of 136 (72%) students had no missing responses. Only four questions had more than two missing. F219 (Special Classes) had 19; F221 (A

Good Class) had 8; F217 (Study Periods) had seven; F206 (Making Learning Difficult) had six.

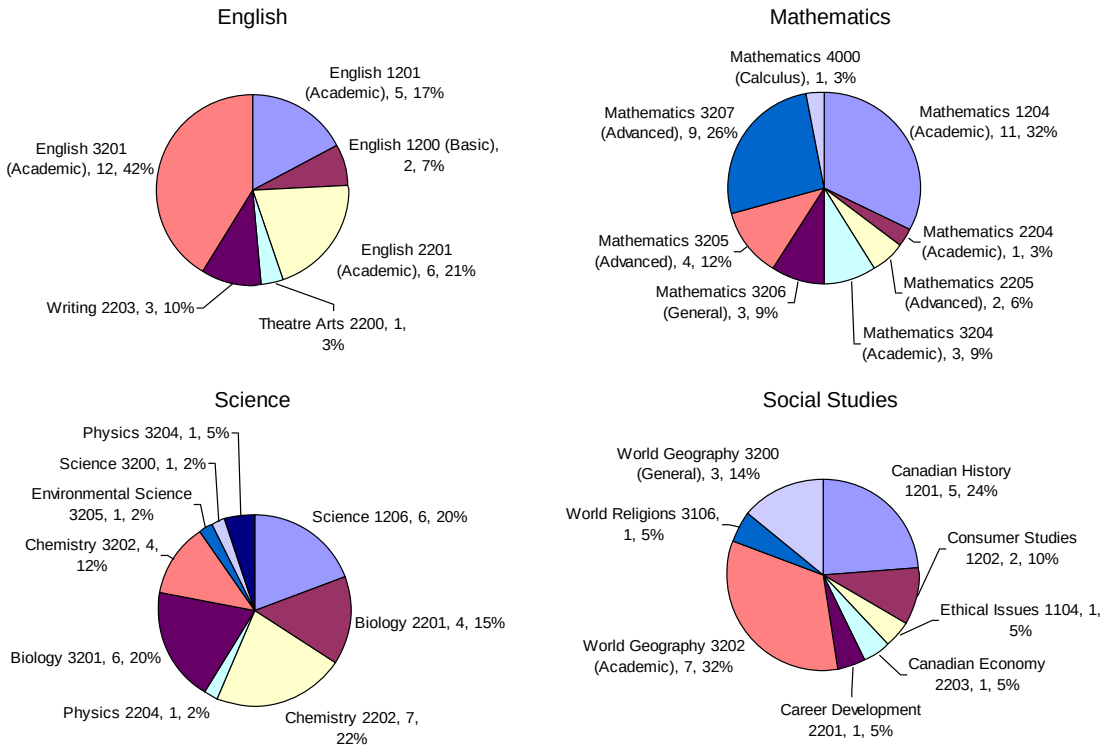


Figure 15. Courses described by students in the Final Survey.
What course does the teacher whose practice you described teach? Percentages refer inside the category; for example, 32% or 7 of 22 described Social Studies courses were World Geography 3202.

5.3 Long-term or Course Situations

Long-term situations were defined as those which extended throughout the year, across unit boundaries, or were difficult to measure as part of a class period. One example of this was multi-course classes. Twelve percent of Final Survey (FS) student participants attended this type of class, 9% attended classes in which the face-to-face (F2F) teacher taught two or more courses simultaneously and 8% attended classes in which others took online or distance education (DE) courses. Note the 5% overlap representing students whose classes were complicated by both additional F2F and DE students.

Course Preparation

Course Preparation was defined as the time before a course begins between the start of work and when students and teachers met in the classroom for the first time. Students were asked to choose three items from a list of 11 (Table 62) to describe what they asked others about and *commonly* indicated (r = 140) they asked if the course was easy or difficult (69%). They occasionally indicated asking about how friends did in the course the previous year (43%), course workload or assignments (31%), course topics (27%), and/or if the course was needed to graduate (25%). Some asked who taught the course (24%), if the teacher was interesting (21%), about the teacher's personality (16%), if the course will help with a career (13%), and/or the teacher's methods or practices (12%). Students rarely asked if the course was offered online or onsite (8%); however, they may have known this and did not need to ask. The single open-response suggested asking others if the course was necessary for university or college.

Table 62

Example Association Matrix (FS Student Course Preparation)

Response Frequencies

Frequency Table

Attribute	***code***	***n***	***ratio***
Responses	*#*	*140*	*1.00*
Missing	***?***	*0*	*0.00*
Other	*o*	*1*	*0.01*
If the course is easy or difficult	c	96	0.69
How they did in the course last year	a	60	0.43
The course workload (i.e., how many assignments)	h	44	0.31
The course topics (i.e., what the course is about)	g	38	0.27
If I need the course to graduate	b	35	0.25
Who teaches the course	k	34	0.24
If the teacher is boring or interesting	f	29	0.21
The teacher's personality (i.e., are they easy to talk to)	i	23	0.16
If the course will help a career	e	18	0.13
The teacher's teaching methods (i.e., what do they like to do in class)	j	17	0.12
If the course is offered online or in school	d	11	0.08

Response Associations

F107	**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**	**k**
if a=1	**1.00**	*0.22*	0.68	*0.07*	*0.08*	*0.15*	*0.17*	*0.20*	*0.15*	*0.08*	*0.12*
if b=1	0.37	**1.00**	0.63	*0.06*	*0.11*	*0.11*	*0.14*	0.26	*0.14*	*0.06*	*0.23*
if c=1	0.43	*0.23*	**1.00**	*0.04*	*0.11*	*0.21*	*0.23*	0.31	*0.14*	*0.06*	*0.21*
if d=1	0.36	*0.18*	0.36	**1.00**	*0.09*	*0.18*	*0.18*	0.36	*0.09*	*0.18*	0.27
if e=1	0.28	*0.22*	0.61	*0.06*	**1.00**	*0.11*	0.56	*0.00*	*0.17*	*0.00*	*0.11*
if f=1	0.31	*0.14*	0.69	*0.07*	*0.07*	**1.00**	*0.21*	*0.21*	*0.07*	*0.14*	0.31
if g=1	0.26	*0.13*	0.58	*0.05*	0.26	*0.16*	**1.00**	0.26	*0.05*	*0.11*	*0.16*
if h=1	0.27	*0.20*	0.68	*0.09*	*0.00*	*0.14*	*0.23*	**1.00**	*0.20*	*0.09*	*0.20*
if i=1	0.39	*0.22*	0.57	*0.04*	*0.13*	*0.09*	*0.09*	0.39	**1.00**	*0.13*	*0.17*
if j=1	0.29	*0.12*	0.35	*0.12*	*0.00*	*0.24*	*0.24*	*0.24*	*0.18*	**1.00**	0.35
if k=1	*0.21*	*0.24*	0.59	*0.09*	*0.06*	0.26	*0.18*	0.26	*0.12*	*0.18*	**1.00**

Note. Final Survey Question F107. What do you *usually ask others* about a course *before it begins*? Students were asked to choose three or fewer responses. Lower case letters were used as response codes during data analysis. Key – number of responses (n), ratio of response to number of participants (ratio) for example, a proportion of 0.69 or 69% of students indicated they asked "if the course is easy or difficult." Missing indicates zero students failed to answer the question. Other indicates one student gave an open-response. The matrix is read from left to right not top to bottom, for example if a=1 then b=0.22 which indicates that 22% of students who chose response "a" also chose "b." Association values less than 0.25 (viz., rare) in italics; values equal to or greater than 0.75 (viz., frequent) in bold.

Five of the nine common (X=1►0.50≥Y>0.75) associations were well-represented (X & Y ≥ 25%), meaning that students who asked friends how they did in the course, about workload, topics, if it was needed to graduate and/or who taught the course *commonly*► asked if the course was easy or difficult. For example, using the matrix in Table 62, 68% (0.68) of students who asked how friends "did in the course last year" asked if the course was "easy or difficult" (a=1 0.68► c). Note that, for most associations described in the text, the symbols *frequently*► or *f*►, *commonly*► or *c*►, and *occasionally*► or *o*► replace values.

Comparing the rank of popular Development Study (DS) and Final Survey (FS) responses: ask if the course was easy or difficult (1^{st}>1^{st}); gather supplies (2^{nd}>M) was moved to FS Course Start; how friends did (3^{rd}>2^{nd}); if it was boring or interesting (4^{th}>7^{th}); workload (5^{th}>3^{rd}). For the first item, course difficulty, 1^{st}>1^{st} or no change in rank between samples suggests that item popularity was stable in the population. With respect to how friends did, the change in rank from 3^{rd} to 2^{nd} was not considered to be significant. A significant change was one of five or more ranks. Note that "gather supplies" was an example of a DS item moved due to redevelopment. Some moves (M), additions (A), or drops (D) led to a reconsideration of established equivalencies and minor adjustments to the final copy.

Course Start

Course Start was defined as the time between the first meeting of a teacher and students until when they began to work inside a curriculum block, unit, or theme. The most indicated student practices, in choosing four of 13 items, were to gather or organize supplies (73%) and/or organize or prepare a notebook (52%). Students occasionally indicated they skim through the textbook (40%), read the course description (35%), get to know the teacher (32%), and/or classmates (26%). Some students also indicated they try to make a good impression (16%) and/or write a few jot notes about the course (10%). Students rarely reviewed notes from a previous course (7%) and/or talked to the teacher about their interests (5%). Of

the 16 students who described DE courses, nine indicated they checked email, seven exchanged pictures, and four learned about the online environment at Course Start. One of the two open-responses was “nothing really,” which accounted for 19% of the DS response in corresponding questions. Students who indicated they prepared a notebook *frequently* (viz., X=1►Y≥ 0.75) indicated they organized supplies, and those who organized supplies *commonly* (viz., X=1►0.50≥Y>0.75) prepared a notebook, hence notebook ◄0.59 & 0.83► supplies. Those who got to know classmates ◄0.52 & 0.64► got to know the teacher. Students who read the course description *frequently*► organized supplies. Those who skimmed the textbook, got to know the teacher and/or got to know classmates *commonly*► organized supplies. Students who read the description c► skimmed the textbook and those who skimmed c► prepared a notebook. (Note that causal relationships were not assumed despite the simplification of the text.) Comparing the rank of popular DS and FS responses: gather supplies (1^{st}>1^{st}); get to know the teacher (2^{nd}>5^{th}); organize a notebook (3^{rd}>2^{nd}); read the course outline (4^{th}>4^{th}); skim the textbook (7^{th}>3^{rd}).

The most common student choices to describe teacher practice at Course Start (i.e., limit of 5 of 16) were to talk about the outline and main topics (56%), the evaluation or mark scheme (53%), and/or the textbook or supplies (53%). Students indicated that teachers occasionally talked about how to keep marks up (42%), their expectations (34%), and/or summer holidays (29%). Some students were asked to introduce themselves (24%) and/or indicated that teachers checked their names on lists (15%). Some teachers were described as talking about activities and projects (12%), student interests (11%), and/or what previous students said about the course (11%). Fewer were described talking about interesting careers (8%) and/or ways students liked to learn (8%). Of the 16 teachers described by DE students, 12 provided contact information such as email or telephone number, 10 exchanged pictures, and many explained the DE classroom. Two of the four open responses indicated the students had transferred into the course after it had started. The reflexive association between talking about course evaluation ◄0.71

& 0.74► main topics was stronger than that between evaluation ◄0.49 & 0.62► how to keep marks up. Another well-represented common association was teacher expectations *commonly*► outline. Evaluation, summer holidays and/or how to keep marks up c► outline. Student introductions and/or teacher expectations c► how to keep marks up. Comparing the rank of popular DS and FS responses: outline and main topics (1^{st}>1^{st}); evaluation and mark scheme (2^{nd}>2^{nd}); welcomed us and introductions (3^{rd}>7^{th}); outcomes (4^{th}>1^{st}), if discussing the outline included outcomes; skimmed the textbook and talked about supplies (5^{th} & 15^{th}>3^{rd}) because of the coding error; how to keep marks up (12^{th}>4th) which rose significantly.

Unit Start

Unit Start was defined as the first few classes when a teacher introduced a theme or topic to be explored according to a long-term plan. Students were asked to choose three or fewer of nine items to describe Unit Start and the most popular choice to start a new page or section in a notebook (73%). Students occasionally indicated they highlight textbook definitions (33%), write definitions in a notebook (33%), read objectives (30%), complete work from the previous unit (26%), and/or skimmed the textbook (25%). Some think (16%) and/or write jot notes (11%) about the unit, and a few Google key terms (4%). Five open-responses were given, including two who responded with “nothing really” and two who mentioned listening in class or having a discussion. Students who made sure to finish work from the previous unit, wrote definitions in a notebook, skimmed the textbook, highlighted definitions, and/or read unit objectives *commonly*► started a new notebook section or page. Comparing the rank of popular DS and FS responses: start a new page or section (1^{st}>1^{st}); highlight definitions (2^{nd}>2^{nd}); finish work from the previous unit (3^{rd}>5^{th}); write definitions in a notebook (4^{th}>3^{rd}).

The most popular student-described teacher practices for Unit Start (i.e., limit of 4 of 13) were to suggest how long the unit should take to complete (47%), start right away (43%), and/or give out unit objectives (37%). Some students

indicated teachers compared the unit to others (24%), gave a handout of all unit notes (23%), talked about the major assignments (18%), engaged them in brainstorming topics (17%), skimmed the textbook (16%), tested their knowledge (14%), related topics to everyday life (13%), and/or talked about needed supplies (12%). Students rarely indicated that teachers began by reviewing a previous course (9%) and/or discussing a famous person (6%). Students who indicated teachers compared the unit to others *frequently*► indicated teachers also talked about how long it should take to complete. Teachers who distributed unit outlines or objectives also *commonly* talked about how long the unit should take. Comparing the rank of popular DS and FS responses: how long to complete (1^{st}>1^{st}); start right away (2^{nd}>2^{nd}); the unit outline (3^{rd}>3^{rd}); teacher expectations (4^{th}>M) was moved to Course Start.

Unit Assignments

When students were asked to choose four of 13 items to describe Unit Assignments, they commonly chose in-class seatwork (65%) and/or finishing seatwork at home (52%). They occasionally chose quizzes or unit tests (48%) and/or question sheets (33%). Some students chose lab or experiment reports (22%), class activities (19%), portfolios (18%), group or team projects (17%), case studies (15%), Internet research (13%), class presentations (12%), and/or creative writing (11%). They rarely chose hands-on projects (4%). The single open response stated there were no assignments in the course. Students who chose finishing seatwork at home (viz., homework) 0.74► in-class seatwork, and seatwork 0.59► homework. Planned quizzes or tests and/or problem sheets *commonly*► seatwork and/or homework. Comparing the rank of popular DS and FS responses: quizzes or unit tests (1^{st}>3^{rd}); finish class work (2^{nd}>2^{nd}); in-class seatwork (3^{rd}>1^{st}); take-home assignments such as problem sheets (4^{th}&11^{th}>4^{th}). Although quizzes and unit tests may not be typically categorized as assigned work, they were included because the question was focused on evaluation.

Unit End

Unit End was defined as the last few classes of a unit when a teacher focused attention away from new information and/or skills and towards evaluation. When asked to choose three or fewer of 12 items to describe Unit End, the most popular student choices were to ask the teacher for a review sheet (49%), review class (43%), and/or about the test (41%); to make sure they knew how to do everything (38%) and/or had a complete set of notes (29%). Some made sure they completed the review (21%) and/or others stayed after school for extra help (11%). Six of 16 DE students indicated they went online for extra help. A few students indicated they participated in class discussions about the unit (9%) and/or wrote questions for the teacher (4%). Asking for a review class was *commonly* associated with asking for a review sheet and/or asking the teacher about the test. Student efforts to make sure they knew how to do everything and/or that they had a complete set of notes was occasionally ($X=1 \blacktriangleright 0.25 \geq Y > 0.50$) associated with asking for a review sheet. Comparing the rank of popular DS and FS responses: get ready for the test (1^{st}>D) was dropped because a subsequent question asked about details of getting ready; ask about the test (2^{nd}>3^{rd}); ensure a complete set of notes (3^{rd}>5^{th}); ensure knowing everything (4^{th}>4^{th}); ask for a review sheet (6^{th}>1^{st}).

When specifically asked to choose five of 16 items to describe Unit End Test Preparation, students commonly indicated they do practice questions and problems (53%), organize notes and handouts (51%), read notes to memorize (49%), and/or reviewed notes (49%). They occasionally made up a study guide or jot notes (36%), reviewed key topics and definitions (33%) and/or reviewed assignments to correct mistakes (31%). Some read important textbook sections (23%), created memory devices (22%), brainstormed test contents (20%), practiced using old tests (19%), and/or reread unit outcomes (18%). Students rarely work with a friend to test each other (9%), make a schedule for study time (7%), and/or draw diagrams (5%). Seven of 16 DE students reviewed recorded classes or posted files. Four of five open-responses suggested no practice, stating

"nothing really" or "I just do not study" (S383). Students who indicated they practice questions ◄0.57 & 0.55► organize notes, and those who organize ◄0.60 & 0.57► read to memorize. Those who correct mistakes in assignments and/or make a study guide c► practiced questions and/or organized notes. Those who make a study guide c► read to memorize. Comparing the rank of popular DS and FS responses: read notes over and over (1^{st}>3^{rd}) was equivalent to memorization; memorize what I need (2^{nd}>3^{rd}); do practice questions or problems (3^{rd}>1^{st}); gather and organize notes (4^{th}>2^{nd}); review assignment and correct mistakes (5^{th}>7^{th}).

The most popular student-described teacher practice at Unit End (i.e., limit 4 of 14) was to describe the unit test and how much each section was worth (55%). Students occasionally indicated teachers had review classes (37%), encouraged the completion of assignments (35%), gave an in-class review assignment (31%), study guide (28%), had a discussion to answer questions (28%), and/or gave a study period for one-on-one questions (24%). Some students indicated teachers went over examples (18%) and/or expected students to review on their own (15%). A study period with friends (8%) and practice test taking (5%) were rare, as was the absence of a unit test (8%) and simply proceeding to the next unit (5%). Of the 16 DE students, five indicated their teacher reminded them to review recorded classes. Students who indicated teachers encouraged them to finish assignments 0.72► indicated the teacher described the test and how much each section was worth. Students who indicated the teacher had review classes, an in-class review assignment, a study guide, class discussion, and/or study periods to ask questions one-on-one *commonly*► the teacher described the unit test. Comparing the rank of popular DS and FS responses: class discussion to answer questions (1^{st}>6^{th}); remind us of the approaching unit end (2^{nd}>D) which was dropped but relisted; tell us what we need to study (3^{rd}>5^{th}); encourage completing unit assignments (4^{th}>3^{rd}); describe the test (6^{th}>1^{st}); review classes (A>2^{nd}) which was added.

Course End

Response lists to describe student practice at Unit and Course End, and for Unit Test and Course Exam Preparation, were almost identical. The Course End list also included the choice of asking for a make-up assignment to boost the course mark which was ranked 10th at 12%. The only significant differences in rankings were that students placed a higher priority on ensuring a complete set of notes at Course End (5th at 29% > 3rd at 48%) and/or attached a lower priority to review sheets (1st at 49% > 4th at 43%). In comparing preparation, organizing (2nd at 51% > 1st at 60%) and reviewing (4th at 49% > 2nd at 58%) notes received a higher priority for exams and making a study guide (5th at 36% > 8th at 26%) received lower priority. In addition, practicing with unit tests from previous years was significantly less important than practicing with previous exams (11th at 19% > 6th at 30%). When asked when they started to study for the exam, the most popular responses were a few weeks before (37%), a month before (21%), and a week before (18%). Comparing the rank of popular DS and FS responses: a few weeks before (1st>1st); a week before (2nd>3rd); after Easter holidays (3rd>5th); a month before (4th>2nd). A short-term start such as the day before or a few days before was admitted by a greater percentage (8%>13%) of FS than DS students.

Course Close

Course Close was defined as the time between the last lesson and the start of the next semester for semesterized courses or summer holidays. In choosing two of eight items, the most popular was to celebrate, have fun, or party (42%). Students occasionally chose to relax and let it all go (34%), burn or throw away notes (33%), get ready for summer work (32%), and/or save notes needed for next year (26%). Some students indicated they worried about the exam (12%) and a few gave notes to a friend (9%) and/or deleted course files (1%). The single open-response figuratively suggested “Eat them” (S323). Students who chose to burn or throw away notes occasionally ◄0.36 & 0.46► chose to celebrate, have fun, or party. Those who saved notes occasionally ◄0.36 & 0.44► got ready for summer

work. In addition, burning notes was *never* ◄0.00 & 0.00► associated with saving notes. Comparing the rank of popular DS and FS responses: relax (1^{st}>2^{nd}); celebrate (2^{nd}>1^{st}); save notes (3^{rd}>5^{th}); get ready for work (4^{th}>4^{th}); burn notes (6^{th} & 8^{th}>3^{rd}) with "burn" and "throw out" notes as equivalents.

5.4 Short-term or Lesson Situations

Short-term or lesson situations were defined as those which exist inside the timeframe of a class period, such as Class Start or Group Work. For example, 13% of Final Survey (FS) students chose group work as a student practice during the Main Part of Class and 29% indicated that teachers had a practice of asking students to work in pairs or groups. When asked to choose three of 12 listed items to describe their practice in Group Work, students commonly indicated they listened to what the rest of the group had to say (53%). They occasionally indicated they made suggestions about the project (40%), helped organize and get everyone working (37%), did whatever was needed (32%), and/or helped organize a presentation (28%). Some students collected and analyzed data (22%), added visuals to presentations (18%), took notes and wrote the report (17%), finished their part before sharing (13%), and/or added audio (10%). A few students indicated they liked to move around (8%). Of the 16 who described distance education (DE) courses, one preferred to meet others in breakout rooms. The only open-response was to "do my share" suggesting completion of individual responsibilities but an unwillingness to do extra. Students who added suggestions and/or helped organize the group *commonly*► listened to what the rest of the group had to say. Those who helped organize the presentation c► helped organize the group. Comparing the rank of popular Development Study (DS) and Final Survey (FS) responses, the top three choices did not change; however, taking notes and writing the report dropped significantly (4^{th} at 37% > 8^{th} at 17%) without any change in wording. The negative DS response "whatever no one else wants to do" was

reworded positively as “whatever needs to be done” and resulted in a significant increase (11th at 11% > 4th at 32%).

Class Preparation

Class Preparation was defined as practice outside the classroom between the end of one lesson and the start of the next in an effort to facilitate achievement of curriculum outcomes; the homework question. Students indicated, in choosing three of nine items, the most popular time to focus on homework, assignments, study, and/or preparation was after supper in the evenings (76%). Some students also indicated they did assigned work during classes with teacher permission (47%) and/or on weekends (40%). Some students worked after school before supper (24%), during recess or lunch (18%), and/or during classes without the teacher knowing (11%), and only a few worked early in the mornings (6%). Nineteen percent indicated they do not do or have homework. All DE students indicated they have offline periods scheduled for homework and preparation. Students who indicated doing homework on weekends *frequently* 0.87► did homework after supper. Those who indicated they did homework during classes with permission and/or before supper *commonly*► did it after supper as well. Comparing the rank of popular DS and FS responses: after supper (1st>1st); during classes with permission (2nd>2nd); no homework (3rd>5th); weekends (6th >3rd).

The most common student homework or preparation practices (i.e., choose 4 of 14) were to get notes from a friend if a class was missed (63%) and/or do assigned written work (56%). Students also indicated they finished incomplete class work (45%), do assigned readings (27%), compare answers with friends (27%), only homework due the next day (26%), and/or organize and pack books (26%). Some students discuss assignments and projects with friends (19%). Students rarely indicated they review class notes (10%), study ahead of time for tests (9%), use the Internet to further investigate class topics (6%), practice problems from class (5%), and/or read ahead of the teacher (2%). Five of the 16 who described DE classes listened to recorded classes. The three open-

responses stated that nothing was done; “I do not really prepare just show up in class” (S293). Students who did assigned readings *frequently*► did written work. Those who organized books f► got notes from a friend if they missed a class. Students who did written work, finished seatwork, and/or compared answers *commonly*► collected missing notes. Students who only did homework due next day c► finished seatwork and/or collected missing notes. Comparing the rank of popular DS and FS responses: get notes if missed class (1^{st}>1^{st}); finish class work (2^{nd}>3^{rd}); study for tests (3^{rd}>10^{th}); assigned written work (4^{th}>2^{nd}). The significant drop in the “test study” item was probably due to inequivalent rephrasing when “study for tests by myself” (DS) became “study ahead of time for tests” (FS).

The most popular student choices as indicators of Teacher Preparedness (i.e., choose 4 of 13) were teacher ability to tell students if the class was ahead or behind in the course (48%) and/or what the class will be doing the next day (46%). Teachers who really know what they are talking about (36%), correct assignments and tests quickly (33%), describe assignments in advance (29%), and/or set up equipment before class (28%) were also considered prepared. Some students indicated that teachers who had photocopies ready (22%), textbook questions chosen (21%), online resources chosen (19%), notes posted (17%), and/or an in-class activity planned (15%) appeared to be prepared. Students rarely indicated that describing a lesson plan (8%) was evidence. Students who indicated that a teacher who knew if the class was ahead or behind schedule was prepared *commonly* ◄0.61 & 0.58► also indicated that one who had a plan for the next lesson was prepared. Students who indicated that a teacher who knew the subject and/or corrected quickly was prepared c► also indicated that one who had a plan for next class was prepared. Students who indicated that a teacher who could describe assignments in advance was prepared c► also indicated one who really knew the subject was prepared. Comparing the rank of popular DS and FS responses: plan for the next day (1^{st}>2^{nd}); can tell if ahead or behind (2^{nd}>1^{st}); knowledgeable (3^{rd}>3^{rd}); questions chosen for class (4^{th}>8^{th}); correct quickly (5^{th}>4^{th}).

Class Start

Class Start was defined as the first ten minutes of a lesson from the entrance of the teacher or first student to the time when the teacher introduced new topics or concepts. When asked to choose four or fewer items from a list of 14 to describe their practice at Class Start, students commonly indicated they got ready to take notes (63%). Students occasionally indicated they pass in homework that is due (37%), prepare needed supplies (36%), listen for information about assignments (30%), wait for the teacher to start (30%), ask questions about homework or assignments (27%), listen to the teacher trying to settle the class (27%), listen to attendance (26%), and/or open the textbook to the correct page (26%). Some students ask a friend about what they will be doing (17%), listen to the teacher tell jokes (13%), tried to finish homework (5%), and/or listen to the teacher's reason why the lesson is important (3%). All DE students indicated they log in to the online classroom. The two open-responses suggested chatting with friends. Students who opened to the correct textbook page *frequently*► got ready to take notes. Those who prepared supplies, waited for the teacher, listened to attendance, listened for information about assignments, asked questions about homework, and/or passed in homework *commonly*► got ready to take notes. Comparing the rank of popular DS and FS responses: find out what we are doing (1^{st}>10^{th}) because during redevelopment two apparently equivalent items were merged as "ask a friend what we are doing;" get ready to take notes (2^{nd}>1^{st}); prepare supplies (3^{rd}>3^{rd}); pass in homework (4^{th}>2^{nd}); open textbook to correct page (5^{th}>9^{th}) dropped without any change in wording; prepare notebook (6^{th}>1^{st} & 3^{rd}).

The most popular student-described teacher Class Start (i.e., choose 5 of 16) practice was to take attendance (52%). Students also indicated that teachers collect assignments if they were due (46%), talk about today's plan (41%), asked if students had any questions about assignments or deadlines (38%), checked and corrected homework (31%), asked students to calm down and stop talking (29%), and/or returned corrected work (25%). Some students indicated that teachers start

the lesson or notes right away (22%), tell funny jokes or stories (19%), review topics from the previous lesson (17%), and/or test what students remember (14%). A few students indicated teachers spend time setting up equipment (6%). Ten of 16 DE students indicated teachers wait for other students to log in before starting, five indicated teachers granted privileges and one that they troubleshoot technical problems. Students who indicated teachers take attendance *commonly* ◄0.59 & 0.52► teachers collect assignments. Teachers who check homework and/or return corrected work c► take attendance and/or collect assignments. Those who talked about today's class and/or asked students to stop talking c► take attendance. Those who asked if students have questions c► collect assignments. Comparing the rank of popular DS and FS responses: take attendance (1^{st}>1^{st}); talk about the plan for today (2^{nd}>3^{rd}); collect assignments (3^{rd}>2^{nd}).

Main Part of Class

The Main Part of Class was defined as the time on task between the Class Start and Class End, when participants were focused on curriculum objectives and outcomes. Students frequently indicated (i.e., choose 5 of 17) that they copied notes from the whiteboard or PowerPoint slides (78%) and commonly indicated they listened to the teacher explain a topic (60%). Occasional choices included participate in discussions (38%), work on assigned seatwork (37%) and/or ask questions (25%). Some indicated they asked friends questions if the teacher is busy (24%), try to understand what the teacher is explaining (23%), highlight in textbooks (21%), check answers to assigned questions (20%), ask the teacher to repeat an explanation (17%), write down anything the teacher repeats (17%), ask for an example (14%), and/or work in groups (13%). A few write their own thoughts on a topic (5%) and/or surf the Internet for information (2%). Six of 16 DE students indicated they text or chat and one shared applications. There was only one open response and it did not suggest an unlisted practice; the response universe was saturated. Students who listened to teacher explanations, participated in class discussions, did assigned seatwork questions, and/or asked a friend if the teacher

was busy *frequently*► copied notes. Those who participated in discussions, did seatwork, asked questions, and/or copied notes *commonly*► listened to the teacher. Comparing the rank of popular DS and FS responses: copy notes (1^{st}>1^{st}); listen to explanations (2^{nd}>2^{nd}); participate in class discussions (2^{nd} >3^{rd}); work on assigned questions (3^{rd}>4^{th}); ask questions (4^{th}>5^{th}).

The most popular student-described teacher practices during the Main Part of Class (i.e., choose 10 of 30) were asking questions to learn if students understood an explanation (48%), giving class time or study periods to work on assignments (41%), giving worksheets of practice problems (40%), and/or pointing out important definitions (40%). Students occasionally indicated teachers also stopped to explain ideas (37%), gave notes, notes, and more notes (35%), made sure everyone was listening (32%), made sure everyone understood (31%), worked out problems on the whiteboard (31%), had students work together (29%), helped students remember information (28%), read aloud from the textbook (27%), and/or tried to help students one-on-one (26%). Some students indicated teachers start discussions (24%), draw diagrams (21%), ask for examples (20%), ask students to participate in activities (20%), try to involve everyone (20%), bring in interesting resources (15%), relate ideas to their experiences (13%), point out the completion of outcomes (12%), give personal feedback (12%), and/or just sit and watch students work (10%). A few students indicated that teachers did not give enough notes (7%) and/or made notes about students during seatwork (5%). Only 3% indicated the teacher made sure everyone was safe. Eleven of 16 DE students indicated teachers permitted private response and five indicated the teacher used application sharing. Two of four open responses suggested the teacher read a novel along with the class.

Students who indicated teachers gave time to work on assignments *commonly* ◄0.56 & 0.54► indicated teachers gave worksheets. Teachers who stopped and explained ideas ◄c► gave “notes, notes, and more notes.” Teachers who made sure everyone was listening, stopped to explain, gave worksheets, and/or time c► asked questions to learn if students understood. Those who helped

students remember information c► asked questions and/or pointed out definitions. Teachers who read aloud from the textbook c► pointed out definitions. Those who had students work together c► gave time for assignments. Those who helped students one-on-one c► pointed out definitions, asked questions, and/or gave worksheets.

Comparing the rank of popular DS and FS responses: give examples (1^{st}>5^{th}) became stop, explain, and give examples; take the time to help (2^{nd}>5^{th}) became stop, explain, and give examples; ask to learn if students are paying attention (3^{rd}>7^{th}); give time to work on assignments (4^{th}>2^{nd}); stop writing and explain (5^{th}>5^{th}); ask to learn if students understand (6^{th}>1^{st}); give worksheets with practice questions (9^{th}>3^{rd}) increased due to the addition of "practice questions." No explanation was determined for the significant change for "point out important definitions" (28^{th}>4^{th}). Note that three of the five top-ranked DS items were merged as facets of "stop, explain, and give examples" with the effect of maintaining the lowest DS ranking. The item was re-divided for the final copy to distinguish taking time and giving examples.

Class End

Class End was defined as the last ten minutes of a lesson from when the teacher decided not to introduce new curriculum to the bell and everyone had left the room. The most common student choice for Class End (i.e., chose 4 of 13) was to pack up books (55%); however, students also indicated they chatted if the last 10 minutes was designated free time (45%), completed seatwork (43%), watched the clock (40%), asked the teacher questions about the lesson (33%), and/or made sure they had all the notes (28%). Some students asked about the next class (24%), listened to the teacher's lesson summary (20%), wrote down homework and due dates in their planner (17%), and/or made sure they were prepared for the next period (14%). A few indicated they did "whatever we want because the teacher usually loses control" (5%). Nine of the 16 DE students asked about offline classes and five thought about logging out early if possible. Students

who indicated they chat if given free time *commonly* ◄0.60 & 0.53► indicated they waited for the bell. Those who completed seatwork and/or made sure they had all the notes c► packed books. Those who ask questions and/or made sure of notes c► completed seatwork. The top four FS choices ranked identically with DS items.

The most common student-described teacher practice at Class End (i.e., choose 5 of 15) were to remind students of deadlines for assignments (57%) and answer questions about the lesson (49%). Students also indicated teachers assigned questions or readings for homework (42%), told them about the next class (42%), let them relax and chat with friends (35%), and/or summarized the lesson (28%). Some students indicated certain teachers kept giving notes until the bell rang (23%), told students if they planned to be away the next class (21%), corrected questions on which students had been working (18%), started a discussion (15%), and/or reminded students of necessary supplies for next class (11%). A few students indicated teachers also asked them to clean any mess they had made (8%). Eight of the 16 DE students indicated teachers reminded students of necessary work during offline periods and four to review the class recording. The absence of any open-response suggested choice saturation. Students who indicated teachers remind them of deadlines *commonly* ◄0.61 & 0.53► indicated teachers answered questions about the lesson. Teachers who summarize the lesson, assign homework, and/or describe the plan for next class c► answer questions and/or remind students of deadlines. Comparing the rank of popular DS and FS responses: remind us of deadlines (1^{st}>1^{st}); describe the plan for next class (2^{nd}>4^{th}); finish giving notes (3^{rd}>7^{th}) which dropped; answer questions about the lesson (4^{th}>2^{nd}); let students relax and chat (5^{th}>5^{th}); assign homework (14^{th} & 17^{th} >3^{rd}) which increased significantly.

Study Periods

The concept of a Study Period emerged from the Exploration Phase (EP) data when students and teachers had difficulty describing Special Classes. Study Periods were defined as independent or group seatwork which took place while the

teacher was engaged in other activities. Offline or asynchronous classes were considered to be an example. Students described this happening once or twice during the year (29%), once a month (29%), once every 14-day cycle (12%), or once a week (10%). Nineteen percent indicated they never had a Study Period. The most popular student-described teacher practices during Study Periods (i.e., choose 3 of 9) were to check to make sure students were working (41%), answer questions one-on-one (39%), correct assignments or homework (35%), do their own work while we do ours (27%), and/or help students find resources such as websites (24%). Some students indicated teachers also checked for inappropriate behaviour (11%) and a few that the teacher met with groups (7%). Ten of the 16 DE students indicated teachers monitored the virtual classroom to talk with students and eight that the teacher answered questions through email. Significantly, all 18 students (13%) who used the open-response facility stated that they did not have Study Periods so the negative choice was reinstated in the final copy. Students who indicated teachers answered questions one-on-one, helped them find resources, and/or corrected assignments *commonly*► checked to make sure students were working. Comparing the rank of popular DS and FS responses: explain what we should be doing (1^{st}>D) which was dropped because focus groups argued that this would have been done before the Study Period; their own work (2^{nd}>4^{th}); help us find what we need (3^{rd}>5^{th}); make sure students are working (4^{th}>1^{st}); answer questions one-on-one (5^{th}>2^{nd}); correct assignments (7^{th} >3^{rd}). "Explain what we should be doing" was reinstated in the final copy.

Special Classes

A Special Class was defined as one involving unusual preparation, start, main, and/or end practices. For example, formal debates, math competitions, science labs, and orienteering were considered to be special. The negative DS response "never" was retained as a choice to describe frequency because of significant student reaction at 64%. "Never" was also the most popular FS response (43%). Other students indicated Special Classes happened once or

twice per year (34%), once a month (15%), once per 14-day cycle (7%), or once a week (2%). Because the "never" or "I don't have Special Classes" choice was not retained for the practice part of the question, the most popular student-described teacher practices (i.e., choose 5 of 15) were to discuss or plan the activity (32%) and/or put students into groups (31%). Some students indicated teachers helped them find resources (21%) and/or set up equipment (21%). Teachers also arranged site activities during field trips (19%), asked students to read something special (13%), listened to a guest speaker (12%), explained safety rules (12%), noted inappropriate behaviour (13%), reminded students of necessary materials or fees (12%), collected permission slips (11%), and/or changed the classroom arrangement (10%). A few students indicated teachers helped students experience the material (7%) and/or requested prepared notebooks. Five of 16 DE students indicated teachers arranged for local supervision of an activity. Significantly, in 23 of 26 open-responses, students stated they did not have Special Classes and 24 of 140 responses were missing, which resulted in the lowest Response Index of any question (0.45). Students who indicated teachers explain or discuss an activity occasionally indicated teachers also put them in groups. Comparing the rank of popular DS and FS responses: "I don't have Special Classes" (1^{st}>D) which was retained in the frequency question but dropped from the practice question; help set up equipment (2^{nd}>4^{th}); put students in groups (3^{rd}>2^{nd}); explain or discuss the activity (5^{th} & 13^{th} >1^{st}). "I don't have" was reinstated in the final copy.

5.5 Situational Perceptions

Situational perceptions were beliefs, feelings, or opinions, as opposed to practices. For example, when students were asked if a high school (HS) teacher had tried to learn how the student leaned best, 34% (n = 140) indicated no teacher had ever asked. Twenty-seven percent indicated that a few had that year, 19% that teachers had asked but not that year, 19% that one teacher had asked that

year, and one percent that all their teachers had asked that year. This statistic was chosen to introduce student perceptions of effective and ineffective practice, teacher-student relationships and suggestions for change. Fifty-three percent of student participants had not been asked that year (or ever) about their learning preferences.

Effective Practice or a Good Class

Students defined, in the Exploration Phase (EP), a good class or lesson as one in which teachers helped students understand a topic through a focus on explanations and/or discussions. Students who wrote the Final Survey (FS) commonly indicated (i.e., choose 4 of 13) a good class was one in which they could "have a laugh and wasn't boring" (64%) and/or one in which everything was explained well (62%). Occasionally, it was defined as one in which they finished all seatwork or homework (41%), it was quiet and they could really listen (27%), and/or it was different from what they usually did (26%). Some students liked lots of discussion they could understand (23%), lots of useful notes (22%), learning different ways of doing something (17%), hands-on work (15%), the opportunity to do planned activities (12%), and/or topics connected to life outside school (12%). A few focused on the teacher being engaged and not so laid back (9%) and/or having lots of time to practice examples (9%). Students who indicated a good lesson was different *frequently*► indicated they had a laugh and it wasn't boring. Students who had a laugh ◄*commonly*► indicated everything was explained well and they understood. Those who finished work, found class quiet enough to really listen, and/or different c► indicated everything was explained well. Comparing the rank of popular Development Study (DS) and FS responses: everyone paid attention or it was quiet (1^{st}>4^{th}); interesting (2^{nd}>1^{st}); good explanations led to understanding (3^{rd}>2^{nd}); work finished (4^{th}>3^{rd}); not boring (5^{th}>1^{st}).

When asked, what teachers did to Making Learning Easy, many students indicated (i.e., choose 6 of 19) their teacher assigned work after they knew how to do it (41%), pointed out important topics for the exam (35%), explained examples

after students had them copied (32%), and/or drew diagrams (30%). Students also indicated that teachers created a relaxed class (29%), ask lots of questions (28%), give step-by-step instruction (28%), relate subject matter to everyday life (26%), explain topics in a way they can understand (26%), explain notes over and over (25%), and/or help them one-on-one (25%) to make learning easy. Some students found that teachers who take time for class discussions (24%), refer to the textbook (23%), give good notes (22%), involve students in activities (20%), distribute notes (18%), let students get creative (16%), focus on them (15%), and/or follow a routine (10%) made learning easy. The six open-responses gave a negative assessment such as “he does not do any of those things” or “the teacher does not make it easy to learn.” A negative item was added to the final copy. Students who indicated a teacher made learning easy by explaining examples after students have copied them down, drawing diagrams, asking lots of questions, and/or giving step-by-step instructions *commonly*► also indicated assigning work after students knew how to do it. Students who indicated teachers make it easy by explaining notes over and over if needed c► liked teachers who explained examples after students had copied them down. Comparing the rank of popular DS and FS responses: explain examples after copying (1^{st}>3^{rd}); good attitude or relaxed class (2^{nd}>5^{th}) which were considered to be equivalents by a focus group; points out possible exam questions (3^{rd}>2^{nd}); willing to re-explain notes (4^{th}>10^{th}); assigns work after students know how to do it (6^{th} >1^{st}).

When asked if their teacher had ever called a class good, students indicated sometimes (37%), almost every day (25%), once a week (19%), never but they seem to enjoy it (10%), once so far (5%), or “never - they don’t seem to enjoy it” (4%). The most popular student perceptions of why their teacher called a class good (i.e., choose 4 of 13) were because all students had completed the assigned work (48%) and/or everyone was attentive and interested (48%). Students also believed teachers found their class to be good because all students understood what the teacher was talking about (33%), the teacher did not have to speak over a noisy class (32%), and/or the class caught up with the schedule. Some students

believed teachers liked that certain students were absent (23%), all students were present (23%), that the lesson had interesting discussions (21%), and/or was in a good mood (23%). A few believed the teacher like to participate in their class (5%) and/or liked small classes (3%). Eleven of 16 students who described distance education (DE) classes believed the teacher called a class good when there were no technical problems. The six open-responses stated that their teacher had never called their class a good class and a negative response was reinserted into the final copy. Students who believed the teacher liked the lesson because everyone completed the assigned work ◄0.49 & 0.49► indicated they also believed the teacher liked that everyone was attentive and interested. Those who believed the teacher liked that everyone understood and/or cooperated c► indicated completing assigned work and/or being attentive was also important. Those who believed the teacher liked it when they didn't have to speak over a noisy class c► indicated completing assigned work was also a factor. Those who believed catching up to the schedule pleased the teacher c► also indicated being attentive was important. Comparing the rank of popular DS and FS responses: everyone cooperated (1^{st}>6^{th}) which dropped; everyone was attentive (2^{nd}>2^{nd}); good attendance (3^{rd}>7^{th} & 8^{th}); not a noisy class (4^{th}>4^{th}); teacher was in a good mood (5^{th}>9^{th}); everyone completed assigned work (6^{th} >1^{st}) increased significantly.

Ineffective Practice or a Poor Practice

When asked to choose a practice that was ineffective or poor (i.e., choose 3 of 10), students indicated a lack of understanding of class discussions (45%), too much noise that interrupted the teacher (44%), too much work assigned at the same time (43%), a lack of teacher explanation for new notes (40%), not enough time to do an in-class assignment (35%) and/or a belief that copied notes will not be needed (35%). Some did not have a good class because there were insufficient samples to understand how to solve a problem (23%). A few students indicated that groups in which they had to do all the work (9%) or were left out (4%) were not good. Eight of the 16 DE students pointed to technical problems. The two open-

responses suggested the lesson was not good when student inattention created a need for teacher re-explanation. Students who indicated they did not understand some class discussions occasionally ◄0.48 & 0.43► indicated that the teacher did not give good explanations. Those who indicated there was too much noise ◄o► indicated that they did not understand some class discussions and/or that the teacher did not explain notes. Students who indicated there was not enough time to do in-class assignments also o► indicated they did not understand class discussions. Those who believed they copied lots of unnecessary notes o► indicated there was too much work assigned. Comparing the rank of popular DS and FS responses: too much noise or interruptions (1^{st} & 5^{th}>2^{nd}); too much work at the same time (2^{nd}>3^{rd}); no explanations for new notes (3^{rd}>4^{th}); quick explanations or no understanding class discussions (4^{th} & 9^{th}>1^{st}); lots of unnecessary notes (6^{th}>6^{th}).

Students indicated teachers Made Learning Difficult (i.e., choose 5 of 15) when they did not understand the reason for doing something (39%) and/or when the teacher assumed students understood what was being talked about (27%). Some students indicated they found some tests and assignments confusing the way they were written (23%) and/or classes confusing when “dragged out” (20%). Teachers who answer by asking questions (17%), use unknown words (17%), wander off topic (16%), fail to give examples (12%), read passages students cannot see in textbooks (11%), write notes fast to beat the bell (11%) and/or use new terms inside new definitions (10%) were also found to be confusing by some students. A few students indicated that a lack of opportunity to ask questions (9%), unexplained notes (7%), and/or terms with unexpected meanings (7%) Making Learning Difficult. The 13 open-responses suggested a need for a positive choice. “None of these. It is never hard to learn in this class” was reinstated in the final copy. Students who indicated they were confused by teachers who assumed students knew what they are talking about *commonly*► indicated they sometimes I did not see the point of what they were doing. Similarly, students who indicated they were confused with the way some assignments or tests were written also

commonly► indicated they sometimes missed the point. Comparing the rank of popular DS and FS responses: none of these or nothing (1st>D) was dropped but later reinstated; teacher assumptions about student knowledge (2nd>2nd); classes dragged out and boring (3rd>4th); the point is lost (8th>1st) increased significantly.

Strengths and Talents

Strengths and talents were defined as personal attributes or behaviours which facilitated learning. Talents were also discussed in focus groups as tools which could help a student achieve despite the ineffectiveness of a class. Many students believed that their greatest Strength or Talent (i.e., choose 3 of 11) was the ability to ask questions in class when they were unsure of something (39%). Students also described themselves as very organized (35%), able to remember what they hear (32%), able to create ways to remember (30%), unafraid to ask for extra help (27%), and/or able to remember what they see (27%). Some felt they were good at memorizing text (22%), relating new ideas to what they already knew (22%), remembering formulas (20%), studying with friends (15%), and/or keeping focused while studying (14%). The single open-response was a claim to kinetic memory: “I am very hands on and when I do something once or twice usually I can do it again” (S172). Students who indicated they were unafraid to ask for extra help *commonly*► indicated they asked questions in class when unsure of something. Those who could remember what I saw also c► indicated they could remember what they heard. Students who indicated they were organized occasionally► indicated they ask questions. Comparing the rank of popular DS and FS responses: remember what I hear (1st>3rd); unafraid to ask questions (2nd>1st); able to create ways of remembering (3rd>4th); not afraid to ask for extra help (4th>5th); very organized (6th >2nd).

Relationships

When asked what kind of personal relationship they had with the teacher of the described course, students commonly chose “I am comfortable going to

classes" (53%), "I like and respect this teacher" (39%), and/or "this is my favourite teacher" (29%) were occasionally chosen. Some indicated that the teacher encourages them to do their best (21%), and/or they trust the teacher's advice on how to improve (19%). A few chose "I dread or hate going to class" (12%) and/or "I am afraid of this teacher" (2%). One student suggested he did not have a relationship because the teacher was online. The funniest response to any question during this research was "this teacher is my cousin." Students who indicated they liked and/or respected the teacher occasionally► indicated they were comfortable going to classes. Comparing the rank of popular DS and FS responses: like (1^{st}>2^{nd}) was combined with respect; respect (2^{nd}>2^{nd}); comfortable going to class (3^{rd}>1^{st}); encourages students to do their best (4^{th}>4^{th}); trust the teacher's advice (5^{th}>5^{th}); my favourite teacher (6^{th} >3^{rd}).

Students commonly chose encourages all students to learn (62%), respects students' efforts and feelings (54%), and/or treats all students equally and fairly (52%) to describe the Teacher-Class Relationship (i.e., choose 4 of 14). Students occasionally indicated the teacher tried to encourage respect for everyone (31%). "Becomes involved with all of us so he knows us and our behaviour" (S335 on Math 3207). Some students indicated the teacher maintained discipline in the classroom (21%), favoured some students more than others (18%), was hard on students when they deserve it (15%), talked to students privately about their behaviour (13%), made an example of some students (12%), criticized some students for no reason (10%) and/or said things which were inappropriate (10%). A few students indicated the teacher may send students out of class (9%), look down on most students (5%), and/or give detentions for inappropriate behaviour (4%). Students who indicated the teacher treated all students equally and fairly also *commonly* ◄0.64 & 0.76► indicated the teacher encouraged all students to learn. Teachers who encouraged learning also *commonly* ◄0.72 & 0.63► respected efforts and feelings. Those who respected efforts and feelings *commonly* ◄0.72 & 0.69► treated students equally and fairly. In addition, teachers who encouraged respect c► encouraged students to learn, respected student efforts and feelings, and/or

treated students equally and fairly. Comparing the rank of popular DS and FS responses: encourage students to learn (1st>1st); treats students equally (2nd>3rd); treats students fairly (3rd>3rd); encourages mutual respect (4th>4th); respects student efforts and feelings (5th>2nd).

When asked what a teacher did Outside the Classroom (i.e., choose 3 of 10) that helped them be a better teacher inside the classroom, students commonly indicated teachers chatted with students in the hallway or online (64%). Students occasionally indicated that teachers gave tutorials if a student needed help (46%), treated them like adults (33%), and/or coached or sponsored a sports team (25%). Some students indicated the teacher supervised in the gym during recess or after school (18%) and/or helped with the student or school council (12%). A few students noted that the teacher worked on a committee (e.g., graduation, yearbook) (9%), had course meetings (5%), and/or ran a school club. Eight of 16 DE students indicated the online teacher made a school visit. Four (of seven) open-responses were negative, such as the teacher "does not do any of these things" (S263). Students who indicated teachers gave tutorials and/or treated them like adults *commonly*► chatted in the hallways or online. Teachers who coach or sponsor a sports team c► chat and/or give tutorials. Comparing the rank of popular DS and FS responses: hallway chat (1st>1st); give tutorials (2nd>2nd); coach or sponsor a sports team (3rd>4th); gym supervision (4th>5th); treat us like adults (5th >3rd).

Change Suggestions

Students were asked, as suggested by a Finish Line (FL) question, about their comfort level in talking to a teacher to discuss problems with an instructional approach. A majority, 57%, strongly agreed (32%) or agreed (25%) that they were comfortable starting a conversation. Twenty-six percent disagreed (19%) or strongly disagreed (7%), meaning they were too uncomfortable to approach the teacher. Hence, if the survey percentages reflected a typical HS class, 14 of 25 might be confident enough to approach the teacher to ask for a change.

When asked what Change in Teacher Practice (i.e., choose 5 of 15) could result in them achieving higher marks, the most popular choices were to ask the teacher to make class so interesting that students would want to learn (29%) and/or to go over notes and explain things better (27%). Some students would ask teachers to explain topics in-depth (23%), give time for students to understand (23%), let students pay attention to explanations instead of needing to multi-task (21%), help students understand how to do things (21%), give a lighter workload (18%), explain the correct way of doing problems before the test (18%), explain what to write and not just how (17%), do more activities (15%), help with the transition from notes to test (14%), give students a second chance to understand explanations (11%), give more time to finish tests (11%), and/or not have so many long answers to tests (11%). Three DE students would request the online teacher to speak more often with onsite teachers. Seven (of 15) open-responses suggested no change was necessary; hence, that choice was reinstated in the final copy. Eight (of 15) suggested longer tests to reduce question value, advice on how to raise marks, or that teachers recognize student workload. The Response Index was 0.52, the third lowest. Students who would ask teachers to go over notes and/or explain things better *commonly* ◄0.57 & 0.49► would ask for explanations to be more in-depth. Comparing the rank of popular DS and FS responses: “Nothing. The teacher is doing a good job.” (1^{st}>D) was reinstated; explain notes and ideas better (2^{nd}>2^{nd}); nothing - always asking (3^{rd}>D) was reinstated; make it more interesting (7^{th} & 12^{th} >1^{st}) benefitted from elimination of the negative choices.

When asked about teachers in general, and what they asked teachers to do to help them learn (i.e., choose 6 of 19), the most popular student requests were to break down explanations step by step (65%) and/or go through questions they did not understand (53%). Students also asked teachers to give advice on how to remember ideas (38%), make sure students understood before moving on (36%), let students work during class time to take advantage of teacher help (32%), give different example problems (30%), use diagrams to explain things (27%), and/or

take the time to have class discussions (25%). Some also asked teachers to give choice when it comes to assignments and projects (24%), wait until notes are copied before explanations are given (24%), find another way to help if their explanation is not understood (22%), describe experiences from outside school (21%), meet after class to help one-on-one (18%), let students learn hands-on (15%), repeat explanations (15%), demonstrate a variety of ways to do something (14%), and/or reword explanations to increase understanding (12%). Students who asked teachers to ensure explanations were understood before moving on *frequently*► asked teachers to break down explanations, which was *commonly* ◄0.66 & 0.54► associated with going through questions until the answers were understood. Students who asked for ways to remember c► asked to go through problems and/or break down explanations. Asking for ways to remember *commonly* ◄0.62 & 0.49► asking for a different example. Asking to work during class, for a different example, diagrams, class discussions, assignment choice, and/or not multi-tasking c► asking to break down explanations. Comparing the rank of popular DS and FS responses: example problems or explain problems (1^{st}>2^{nd}); review sheets (2^{nd}>M) was moved to Test Preparation; review for the test (3^{rd}>M); good or different examples (4^{th}>6^{th}); break down explanations step-by-step (5^{th}>1^{st}); course outlines (6^{th}>M) was moved to Course Start; give hints or ways to remember (14^{th}>3^{rd}); ensure understanding before moving on (9^{th} & 13^{th} >4^{th}). Many DS responses were merged to reduce the list from 48 to 19.

CHAPTER 6: CONCLUSIONS

The purpose of this research was to develop a survey instrument to measure student practice and perception of teacher practice in long-term or course and short-term or lesson situations in Newfoundland Labrador (NL) high school (HS) classrooms. Student practice was assumed to be a response to teacher management (i.e., behaviourist, cognitivist) or leadership (i.e., constructivist), or to autonomous self-regulation (i.e., humanist). A framework of practice based on leadership approaches was proposed and included the dimensions of preparation, administration, socialization, instruction, evaluation, and reflection. An integrated model of perception, cognition, and practice across approaches was further used to frame student descriptions and choices. Research struck a balance between relying on the literature and allowing participants' views to emerge.

Recognition of the need to explore variety in practice before survey development led to a two-phase approach: a qualitative, questionnaire-style Exploration Phase (EP) and a quantitative, survey-style Development Phase (DP). The assumption that many perspectives and descriptions of practice were necessary to achieve data saturation resulted in a project-based approach. A research website was developed to host research projects, facilitate participant data entry, and facilitate active administration. Designed question duplication, member checks, response rate, and missing data analyses were applied throughout as validity or credibility checks.

Rich open-ended descriptions of situational practice were collected from a large teacher sample during the Teacher Description of Practice (TP) project (n = 80 of 98) and chosen by subject area teachers during the Teacher Focus (TF) project (n = 10 of 16) as representative. These descriptions were used as a base and compared to student perceptions of teacher practice as observed in the Student Journal project (SJ; n = 69 of 75) and noted in 94 journals and 116 summary descriptions. *Student Description of Practice* (SP; n = 51 of 60) were also collected and combined with teacher perceptions of student practice to create

theme lists. Project pilots and focus groups helped validate administration and many students (n = 94 of 157) contributed additional questions for consideration (e.g., Teacher-Class Relationships).

As development work began, teacher descriptions of practice were critiqued by students during the *Student Explanation of Teacher Descriptions* project (SE; n = 37 of 60) as an exercise in perspective and to identify misconceptions. A subsequent *Development Study* (DS) (n = 53 of 60) was used to question aspects of the exploration data (e.g., prevalence of cross-curricular practice), reduce the number of sections and questions, and identify infrequent, equivalent and associated responses in theme lists. For example, students who wrote the DS were asked to choose as many responses for each question as they felt were necessary. This technique bridged the gap between EP open description and *Final Survey* (FS) forced choice. Sixty students who participated in EP projects also participated in the DS to facilitate mixed methods validity checks, such as comparing same-student description and checklist data. Three focus groups helped identify administration issues and response associations.

The FS (FS; n = 140 of 180), entitled *Student Practice and Perception of Teacher Practice in Onsite and Online Classrooms*, was tested by 120 students who had participated in the EP and 60 students who had no previous knowledge of the research. Response choice was limited to 25% of those given to force students to prioritize choices. The researcher does not claim that conclusions reached through this demonstrated use of the instrument represent all NL students but offers the instrument as a tool to map baseline data and the effects of change. Change was understood to be more than the development of awareness and to include change in perception, cognition, understanding, and practice. One source of envisioned change was external initiatives by organizational leaders.

6.1 Situational Practice

Conclusion: Student practice and perception of teacher practice is situational.

Table 63

FS Frequent Practices and Perceptions

Situation	Frequent Practices and Perceptions
Course Preparation	Students ask about difficulty (69%), a friend's performance (43%), and/or workload (31%).
Course Start	Teachers outline topics (56%), explain evaluation (53%), and/or explain how to keep marks up (42%). Students gather supplies (73%), prepare their notebook (52%), and/or skim the textbook (40%).
Unit Start	Teachers explain the timeline (43%), start right away (43%), and/or distribute objectives (37%). Students start a new notebook page (73%), highlight textbook definitions (33%), and/or write definitions in their notebook (33%).
Unit Assignments	Teachers assign seatwork (65%), to finish it for homework (52%), and/or quizzes or tests (48%).
Unit End	Teachers describe the test and section value (55%), hold a review class (37%), and/or encourage assignment completion (35%). Students ask for a review sheet (49%), for a review class (43%), and/or about test (41%).
Unit Test	Students practice questions or problems (53%) and/or organize (51%), memorize (49%), and/or review notes (49%).
Course End	Students ask for a review class (54%), ask about the exam (53%), ensure a complete set of notes (48%), ask for review sheets (43%), and/or ensure they know how to do everything (40%).
Course Exam	Students gather or organize (60%), review notes (58%), memorize notes (53%), and/or practice questions or problems (48%).
Course Close	Students celebrate (42%), relax (34%), throw away notes (33%), and/or get ready for summer work (32%).
Class Preparation	Teachers could tell students if they were ahead or behind in the course (48%), describe the next class (46%), and/or were knowledgeable (36%). Students get notes from a friend (63%), complete written work (56%), and/or finish seatwork (45%) in the evenings (76%), during class with teacher permission (47%), and/or weekends (40%).
Class Start	Teachers take attendance (52%), collect assignments (46%), and/or explain the lesson plan (41%). Students get ready to take notes (63%), pass in homework (37%), and/or prepare supplies (e.g., calculator) (36%).
Main Part	Teachers ask questions (48%), give time for assigned work (41%), assign practice problems (40%), and/or point out important definitions (40%). Students copy notes (78%), listen to explanations (60%), participate in discussions (38%), and/or do seatwork (37%).
Group Work	Thirty percent of the students indicated group work was Main Part practice. Students listen to others (53%), make suggestions (40%), and/or help organize responsibilities (37%).
Study Periods	Teachers give study periods once or twice per year (29%) or per month (29%). Teachers ensure that students are working (41%), answer questions one-on-one (39%), and/or complete other work (35%).
Special Classes	Teachers hold special classes never (43%), once or twice per year (34%). Teachers discuss or plan the activity (32%) and/or place students in groups (31%).
Class End	Teachers remind students of deadlines (57%), answer questions about the lesson (49%), assign homework (42%), and/or describe the next class (42%). Students pack their books (55%), chat with friends if permitted (45%), complete seatwork (43%), and/or watch the clock (40%).

Note. Final Survey (FS). Percentages indicate response inside a specific situation or question (i.e., the same paragraph). For example, for Class End, 57% of students indicated teachers remind students of deadlines. In a separate question 55% of students indicated they pack their books. Note that the data originates with the student FS and hence, "Teachers remind students" is shorthand for "students by their choices indicated that teachers remind students."

This conclusion began as an assumption based on the researcher's teaching experiences and developed as open-ended descriptions (TP & SP projects) and forced choice responses (DS & FS) demonstrated the uniqueness of practice in situations. For example, as shown in Table 63, with respect to Course Preparation, 69% of FS participants asked friends about course difficulty. Many (≥25%) student descriptions (SP project) and most (≥50%) DS choices indicated the same concern. However, students had opportunities to raise course difficulty as a concern during Course Start, Exam Preparation, Group Work, or any other scenario through open-response. The absence of "course difficulty" in open response of other scenarios suggests the issue was unique to Course Preparation. Similarly, for example, students indicated that teachers distribute unit objectives at Unit Start and did not indicate it happened any other time. They indicated teachers collected assignments at Class Start and did not indicate it happened any other time.

However, some practices were recognized as general, such as preparing supplies at the start of a course and lesson, and answering questions at the end of a lesson, unit, and course. Unit Test and Course Exam Preparation questions were designed with the same response lists to discover unique practices, but the data indicated the situations were similar. Students in both situations asked for review classes, sheets, and/or about the test (exam). Students at Course End were concerned about having a complete set of notes. Knowing how to solve problems appeared to be more important for unit tests.

6.2 Subject-specific Practice

Conclusion: Most student practice and perception of teacher practice is not subject-specific.

Teachers described their practice (TP project) with respect to a specific discipline (English (21), math (17), science (15), social studies (13)) however many also taught courses outside their area of expertise. All were asked to described

changes in approach they take to accommodate other disciplines. The most common response could be paraphrased as, “although there may be discipline-specific issues most the time I use the same approach.” Many teachers admitted to a standard practice across disciplines (e.g., giving notes, explanations) and many students who kept journals (SJ project) observed practices which could also be described as generic. For example, a good science teacher was so described because of the clarity of their explanations, not due to anything science-specific.

Lists of teacher descriptions (TP project) were compiled based on teacher-declared subject area expertise. Sixteen subject area specialists were asked to independently identify the three most and least representative descriptions of each situation in the Teacher Focus (TF) project). These representative descriptions were analyzed for themes, which were plotted on square Venn diagrams such as Figure 16. Subject-specific practices were located at the four corners of the diagram and general practices were located at the center. The figure indicates that all subject-areas were represented by descriptions, which included evaluation schemes, yearly plans, curriculum guides, and course schedules. It also indicates that representative math, science, and social studies descriptions included reference to a course outline but English teacher descriptions did not. Similarly, English and math teachers appeared to review student background files but science and social studies teachers did not. It became apparent, through member checking, that the analysis was flawed and that absence of a theme from subject-specific representative descriptions did not indicate absence of the practice.

To clarify the issue, students were asked four questions in the Development Study (DS) Section D: “What does a(n) (English, math, science, social studies) teacher do that makes (English, math, science, social studies) different from other subjects?” Each response list included the same 44 choices and the most popular choices (n = 47 of 60) (Table 64). The number of teacher practices chosen by at least 25% of the students was significantly higher for science (20) and math (19) than social studies (13) and English (12). Most students indicated that English language arts teachers (like science and social studies) had class discussions but,

more so than other teachers, worked on writing skills, tried to involve students in class, and/or asked for students' point of view. Most indicated that math teachers (like science) gave examples, explanations, and/or diagrams but, more so than other teachers, solved problems, used equations and formulas, explained solutions, solved word problems, challenged students with hard questions, and/or drew graphs. Science teachers (like English and social studies) had class discussions, (like math) drew diagrams, gave explanations and/or examples, and (like social studies) gave an abundance of notes but, more so than others, asked students to think things out. Social studies teachers (like English and science) had class discussions and/or (like science) gave an abundance of notes.

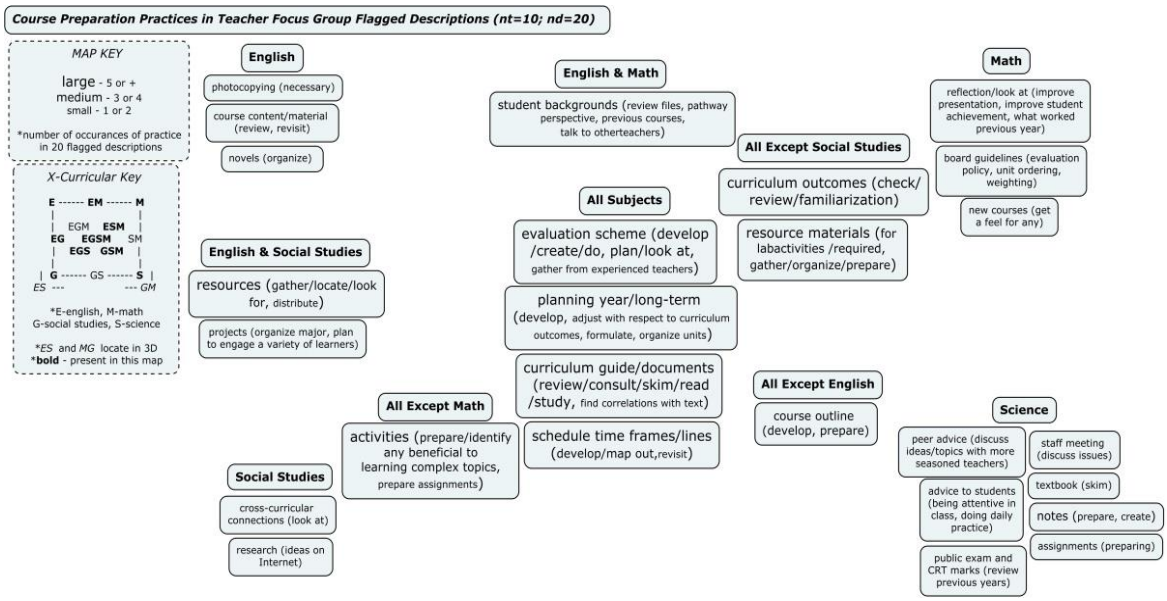


Figure 16. Example square Venn diagram.
Representative Teacher Focus (TF) project descriptions of Course Preparation. Items or themes were identified by the researcher. For example, the theme of "evaluation scheme" was identified in descriptions representative of English, math, science and social studies. In contrast, photocopying was only identified in descriptions by English teachers. The Map Key indicates the frequency of the identified theme by the print size. For example, frequent is large. The X-curricular key locates fields in the diagram (e.g., ESM as English, science and math or All Except Social Studies). The analysis was performed on all situations checked by the TF project but experience and common sense suggested the methodological flaw. The question of subject-specific practice was subsequently investigated in the Development Study (DS) and presented as Table 65 and Table 66.

Table 64

DS Subject-specific Student-described Teacher Practice

Frequency Table		En	Ma	Sc	So	Total	XC	Un
Attribute	*code*	*%f*	*%f*	*%f*	*%f*	*%f*	*%fd*	*%fd*
Responses	#	*98*	*98*	*94*	*73*	*90*	*25*	*0*
Missing	?	*2*	*2*	*6*	*27*	*10*	*25*	*21*
Other	o	*11*	*2*	*0*	*3*	*4*	*11*	*8*
Give more explanations	t	32	57	47	29	**42**	*28*	*10*
Give more examples	s	23	70	42	23	**41**	*47*	*28*
Have more class discussions	w	43	17	42	46	**36**	*29*	*3*
Ask us to think things out	i	38	30	42	29	**35**	*13*	*4*
Try to get us involved in class	F	53	28	24	31	**34**	*29*	*22*
Ask us to put more effort in	g	30	34	33	31	**32**	*4*	*4*
Give more notes	v	21	17	51	43	**32**	*34*	*8*
Give more assignments or projects	p	26	34	29	34	**30**	*8*	*0*
Challenge students with harder questions	k	19	51	27	9	**28**	*42*	*24*
Give more feedback about our work	u	36	28	24	17	**27**	*19*	*8*
Solve examples / questions on the board	A	4	62	36	0	**27**	*62*	*26*
Ask us to work in groups	j	38	17	24	26	**26**	*21*	*12*
Draw more diagrams on the board	l	4	45	47	6	**26**	*43*	*2*
Help students 1-on-1 more often	y	28	34	27	11	**26**	*23*	*6*
Review a lot more	6	19	36	27	20	**26**	*17*	*9*
Show us how to use formulas	9	0	60	36	0	**25**	*60*	*24*
Ask what we remember of other courses	K	17	30	29	20	**24**	*13*	*1*
Explain how to solve word problems	n	2	60	22	6	**24**	*58*	*38*
Write more notes on the board	H	19	17	29	31	**24**	*14*	*2*
Use equations and formulae	I	0	60	29	0	**24**	*60*	*31*
Ask us to give our point of view	d	45	2	18	29	**23**	*43*	*16*
Refresh skills from previous courses	5	15	36	27	11	**23**	*25*	*9*
Draw more graphs	m	2	45	27	9	**21**	*43*	*18*
Ask us to make smart guesses	f	21	19	36	3	**21**	*33*	*15*
More work in groups	q	21	15	18	14	**17**	*7*	*3*
Ask us to be prepared for special classes	b	19	23	18	3	**17**	*20*	*4*
Help us improve our writing skills	z	57	2	0	3	**17**	*57*	*54*
Highlight definitions in our textbook	1	11	9	20	31	**17**	*22*	*11*
Ask us to fill in tables	c	2	32	22	6	**16**	*30*	*10*
Ask us to read our work out loud	h	32	2	13	17	**16**	*30*	*15*
Ask how they can help us learn	a	11	11	18	9	**12**	*9*	*7*
Show more videos	8	6	0	18	29	**12**	*29*	*9*
Set up models or demonstrations	7	2	6	36	0	**11**	*36*	*30*
Take us to the lab or library more often	C	15	0	18	14	**11**	*18*	*3*
Ask us to listen to the news	e	4	2	7	37	**11**	*35*	*30*
Have more "special" classes	x	6	2	24	3	**9**	*22*	*18*
Talk about the outdoors	D	11	0	9	20	**9**	*20*	*9*
Nothing - It's the same as other classes	3	9	4	11	11	**9**	*7*	*0*
More chances to work with our hands	r	0	6	20	3	**7**	*20*	*14*
Make us copy notes we'll never use	2	2	2	11	17	**7**	*15*	*6*
Use words I don't know	J	4	2	7	11	**6**	*9*	*4*
Try to get us to act in class	G	13	2	2	0	**5**	*13*	*11*
Play more games	4	4	4	4	3	**4**	*1*	*0*
Take us on more field trips	B	2	0	2	9	**3**	*9*	*7*
Talk about safety	E	0	0	11	0	**3**	*11*	*11*

Note. Development Study (DS) Section D (DD). Key – English (En), math (Ma), science (Sc), social studies (So), cross-curricular (XC), unique or subject specific (Un), percent frequency (%f), percent frequency difference (%fd). Lower and upper case letters and numbers were used as response codes. Total % Frequency is the cumulative frequency of the four subjects. XC index calculated by subtracting lowest from highest values, 57 – 29 = 28 for "give more explanations." UN index calculated by subtracting highest values, 57 – 47 = 10 for "give more explanations." Missing indicates number of students who did not answer a subject-specific question; 27 students were not taking a social studies course during the research. Other indicates the number of open-response replies (e.g., 11 for English).

A cross-curricular practice (XC) index was calculated by subtracting the highest and lowest frequencies for each item. For example, for the highest ranking general practice, “give more explanations,” the XC index was 57 minus 29, or 28. Low index values were considered to indicate cross-curricular practice. Hence, the best-indicated (viz., total % frequency > 10) general teaching practices were to ask students to give more effort (4%), how they could help students learn (9%), to think things out (13%), and what they remembered of other courses (13%); group work (7%), to give assignments projects (8%), and write notes on the board (14%). Conversely, a unique practice (Un) index was calculated by subtracting the percent frequencies of the two highest values; for example, for “more explanations,” the Un index was 57 - 47 = 10. Higher values were considered to indicate unique practice. The best-indicated unique or subject-specific teaching practices were to help students improve writing skills (54%), get involved in class (22%), and give their point of view (16%); to solve word problems (38%), use equations (31%), set up models or demonstrations (30%), ask students to listen to the news (30%), give examples (28%), solve questions on the board (26%), use formulas (24%), and challenge students with harder questions (24%).

With respect to student practice, students were asked during the SP project if they had practices or did things in some courses they did not do in other courses. Some were surprised at the question and that their practice might be general across courses. Many described subject areas as “obviously different” but few described unique practices.

Consequently, in DS Section D, students were asked, “What do YOU do that makes [subject] different from other subjects?” Given the same list of 25 practices for each subject (Table 65), students indicated that their practice in English language arts (like science) was to think about course topics but, more so than other subjects, they listened carefully out of interest. Most indicated that, in math (like science), they put effort into their work, completed homework, and/or practiced problems until they understood but, more so than other subjects, they wrote equations and formulas and/or did problems on their own. In science (like

English), students thought about course topics, (like math) put effort into their work, completed homework and/or practiced until they understood. In science, (like social studies) students reviewed class notes and/or read the textbook but, more than other subjects, participated in class discussions. Most indicated that, in social studies (like science), they read the textbook and/or reviewed notes. Altogether, students chose more items at greater than or equal to 25% frequency to describe their practice in science (12) than other disciplines (6) and more students believed science recognized special classes.

Table 65

DS Subject-specific Student Practice

Frequency Table		**En**	**Ma**	**Sc**	**So**	**Total**	**XC**	**Un**
Attribute	***code***	***%f***	***%f***	***%f***	***%f***	***%f***	***%fd***	***%fd***
Responses	*#*	*100*	*98*	*94*	*71*	***100***	29	2
Missing	***?***	*0*	*2*	*6*	*29*	***22***	29	23
Other	*o*	*0*	*0*	*0*	*3*	***1***	3	3
Complete more homework	b	33	40	36	29	**35**	*11*	*4*
Put more effort in	u	23	40	49	24	**34**	*26*	*9*
Review my notes more	w	15	23	44	38	**29**	*29*	*6*
Do more thinking about the topics	e	38	17	38	24	**29**	*21*	*0*
Participate more in class discussions	s	29	13	38	32	**28**	*25*	*6*
More practice until I understand how to do it	p	8	38	36	18	**25**	*30*	*2*
Listen more carefully; it's more interesting	j	35	15	31	18	**25**	*20*	*4*
Read more of the textbook	v	15	13	36	41	**25**	*26*	*5*
Help friends more often	h	27	28	27	15	**25**	*13*	*1*
Copy more notes from the board	c	19	17	31	32	**24**	*15*	*1*
Do more examples or problems on my own	d	8	45	31	3	**23**	*42*	*14*
Chat to my friends more	a	17	23	16	29	**21**	*13*	*6*
Nothing - I study the same way for all courses	q	23	19	16	21	**20**	*7*	*2*
Write equations and formulas	z	2	49	22	0	**20**	*49*	*27*
Keep my notes when I'm finished the course	i	17	19	24	6	**17**	*18*	*5*
Watch videos	y	19	0	22	21	**15**	*22*	*1*
Rewrite my notes more often	x	8	4	24	18	**13**	*20*	*6*
Prepare my notebook for activities	t	8	6	20	21	**13**	*15*	*1*
Participate in "special" classes	r	6	11	27	3	**12**	*24*	*16*
Draw more diagrams on my own	f	4	23	11	9	**12**	*19*	*12*
Write notes about what the teacher says	1	6	4	11	15	**9**	*11*	*4*
Make up my own practice questions	l	2	15	16	0	**9**	*16*	*1*
Make up my own stories	m	27	2	0	0	**8**	*27*	*25*
Make journal entries or write down thoughts	k	17	0	2	9	**7**	*17*	*8*
More hands-on activities	n	8	2	11	0	**6**	*11*	*3*
Gather materials from home to use at school	g	6	4	7	3	**5**	*4*	*1*

Note. Development Study (DS) Section D (DD). Key – English (En), math (Ma), science (Sc), social studies (So), cross-curricular (XC), unique or subject specific (Un), percent frequency (%f), percent frequency difference (%fd). Letters were used as response codes during data analysis. Responses listed by Total % Frequency, which is the cumulative frequency of the four subject areas. XC index calculated by subtracting the lowest from highest subject values, for example 40 – 29 = 11 for "complete more homework." UN index calculated by subtracting two highest values, for example 40 – 36 = 4 for "complete more homework." Missing indicates number of students who did not answer a subject-specific question; 29 students were not taking a social studies course during the research. Other indicates the number of open-response replies (e.g., three for social studies).

The best-indicated (total >10%) general or cross-curricular (XC) practices were “Nothing. I study the same way for all courses.” (7%), to complete more homework (11%), help friends more often (13%), chat to friends more (13%), copy more notes from the board (15%), and prepare a notebook for activities (15%). The best-indicated unique (Un) or subject-specific practices were to write equations (27%), participate in special classes (16%), do more examples independently (14%), and draw more diagrams independently (12%).

In summary, 31% (14 of 45) of XC indices for student perception and 36% (9 of 25) for student practice were categorized as low (<16%). Twenty-nine percent (13 of 45) of UN indices for student perception and 52% (13 of 25) for student practice were categorized as high (>15%). This suggested that students perceived their own practice to be subject-specific. This conclusion was important because it suggested many students did not envision a general set of practices or that practice learned in one subject could be transferred to another. Teachers may have inadvertently modeled a subject-specific mindset for students.

6.3 Online or Distance Education Practice

Conclusion: The important point is not that a few DE-specific practices are needed to teach into multiple sites using technology but that distance changes some classroom interactions.

A study of online or distance education (DE) was not the purpose of this research. Instead, DE was a recognized form of education within the geographic area from which participating students and teachers were drawn. All schools, except one, offered DE courses as part of their HS curriculum. Most students did not take DE courses and those who did usually took only one or two of a six-course load. The label DE *student* distorted the fact that these students took most their programme onsite and that their practice developed in a face-to-face (F2F) environment.

Questions in Exploration Phase (EP) projects were written generally to capture descriptions of the most significant situational practices. It was assumed that, if a DE-specific situational practice existed, it would emerge from teacher and student description. Most DE teacher descriptions (n = 10 of 80; 12.5% TP project) and student observations (n = 17 of 75; 23% SJ project) did not contain DE-specific practices relating to multi-site or technology issues. For example, teacher explanation of evaluation schemes and whiteboard use occurred in both environments. Course and Class Start required a few DE-specific practices (e.g., synchronizing schedules, technical troubleshooting); however, the difference between posting to a homepage and photocopying appeared to be trivial, compared to the shared practice of lesson development. The most significant difference involved simultaneously teaching students from both Newfoundland and Labrador. Some teachers described a half-hour lesson for Newfoundland students followed by the same half-hour lesson for Labrador students. Others made lessons 90 minutes long, if possible. Saving electronic copies of lessons also helped. Many teachers were also bothered by unsynchronized school schedules, which resulted in dwindling numbers of students during the final ten minutes. Online students logged out when or before school bells rang to visit lockers and walk to classrooms.

Part of the Development Study (DS) Section D was dedicated to DE. Each question included an open-response option to identify additional practices, but this rarely happened. The results indicated that students attended DE classes in a dedicated room (31%), a multi-course classroom (19%), or a computer lab (19%), and used the same room (88%) for offline classes. Students used offline classes to complete assigned work (88%), catch up on readings (53%), look through whiteboards (53%), review recorded classes (53%), email the teacher (41%), reread notes (41%), read the textbook (35%), study notes (35%), and/or meet the teacher for extra help (29%). Teachers answered questions through e-mail (94%), online (59%), after-school tutorials (41%), and/or the telephone (29%). The only long-term situation described, using DE-specific practices, was Course Start.

Teachers explained the virtual classroom (82%), asked for student photographs (76%), asked students to introduce themselves (71%), provided contact information (65%), explained the website (59%), demonstrated online resources (59%), and/or discussed connectivity issues (35%). Class Start practices included waiting for students to login (81%), granting privileges (44%), and/or troubleshooting technical problems (38%). Teachers asked for checkmark responses confirming understanding (88%) during the Main Part of Class. They also let students answer questions privately (65%), shared applications (59%), hid responses (41%), and/or used breakout rooms for groups (35%). Students were reminded to watch class recordings (76%) at Class End.

DE-specific practices from DS questions were reintegrated into situation questions for the FS. This allowed the student to choose if the DE practice was the most significant in each situation. The researcher used FS data from students who described DE (n = 13 of 140) and F2F (n = 127 of 140) courses to contrast situational differences. The null hypothesis was that the proportion of students who chose a particular response would be the same in DE and F2F classes. Proportions were frequently within a 0.10 difference; however, the researcher chose to only highlight differences greater than 0.20.

In describing their own practice with respect to long-term or course situations, proportionately more DE students prepared by asking friends about course workload and fewer asked about course difficulty. More checked email and/or exchange photos at Course Start. More read the textbook and/or reviewed recorded classes for Unit Test Preparation but fewer made up study guides and/or corrected assignment mistakes. At Course End, proportionately more DE students attended tutorials and/or participated in discussions but fewer enjoyed courses without exams. More started studying for exams a month early. More worried about the exam but fewer celebrated the end. With respect to short-term or lesson situations, proportionately more DE students prepared for class during study periods or before supper but fewer did homework on weekends. More prepared by completing written work and/or listening to recorded classes, and more started

class by listening for information about assignments. Fewer checked answers to assigned questions and/or asked a teacher to repeat an explanation during the Main Part of Class. More finished their part alone before sharing and/or listened to others during group work, and more asked about homework at Class End.

In describing teacher practice with respect to long-term or course situations, proportionately more DE students indicated teachers explained how the online classroom worked, exchanged pictures, required introductions and/or provided contact information at Course Start but fewer indicated teachers skimmed the textbook, described how they liked to teach, and/or talked of summer holidays. More described teachers starting lessons right away at Unit Start but fewer described teachers brainstorming ideas related to unit topics. More described teachers using lab reports and/or unit tests to determine their mark; however, most described DE courses were science. At Unit End, more described teachers arranging for one-on-one help, reminding students of recorded classes, and/or having class discussions. With respect to short-term situations, when asked for evidence of the teacher being prepared for class, proportionately more DE students noticed teacher notes were on the whiteboard as they entered, the teacher had a plan for the next class, and/or assignments corrected quickly but fewer noticed teacher course knowledge and/or photocopies. More described teachers waiting for students to log in, asking about their day, asking about assignments, and/or granting software privileges at Class Start but fewer were described collecting assignments, asking students to stop talking, checking homework, and/or returning corrected work. More described teachers letting them answer questions privately, draw diagrams, work out problems on the whiteboard, ask questions, and/or shared applications during the Main Part of Class. Fewer indicated teachers had students work together, gave time for assignments, and/or made sure everyone was listening. At Class End, more described teachers setting offline work and/or giving notes until the bell rang but fewer described teachers letting students chat with friends.

In contrasting responses of students who described DE and F2F courses, the surprise was the differences in general practice. Some practices were chosen by proportionately more or fewer DE students, suggesting a pedagogy beyond the obvious, requiring further investigations. For example, why do fewer students in DE courses describe teachers assigning group work?

6.4 Practice Framework Revisited

Conclusion: Preparation and administration practices dominated many course and class situations. A lesson could be described as teaching and learning preceded and followed by administration.

A six-dimensional framework of practice (Table 4) was developed from the leadership literature before data collection began and was refined as data were analyzed. The six dimensions included preparation or getting ready psychologically (e.g., asking about the teacher); administration or management of structures, roles, time, and resources (e.g., rushing notes to beat the bell); socialization or fostering positive relationships, class norms and expectations (e.g., making an impression), instruction using behavioural, cognitive, constructivist, and humanistic approaches (e.g., giving explanations); evaluation or judging academic performance (e.g., teacher questioning), and reflection or judging self (e.g., introspection).

Throughout the program of research, the data suggested that the theoretical dimensions were multi-faceted (Table 66). For example, it became necessary to distinguish between preparation and instruction when the purpose of some Main Part of Class practices was recognized as preparation for evaluation such as note-taking, rewriting, and review. Hence, the definition of instruction (Table 3) was modified from “imparting knowledge and/or skills” to “imparting new knowledge and/or skills” and preparation for instruction was recognized as distinct from preparation for evaluation. In a similar manner, socialization and instruction were distinguished based upon whether the purpose of the interaction was relationship-

building or learning. Hence, dimensions were recognized as multi-faceted and the practice framework (Table 3) became a matrix of practice (Table 66). Intersections of similarly labelled rows and columns in the matrix (e.g., P x Preparation, A x Administration) corresponded to the original framework dimensions.

Table 66

Framework Matrix

	Preparation	Administration	Socialization	Instruction	Evaluation	Reflection
P	**get ready physically or psychologically**	*plan to learn or study, scheduling*	*make an impression, check with friends*	*copy notes, homework, re-learn, review*	*question self, "to make sure I know," study*	*visualize, brainstorm, connect ideas*
A	plan course and timeline, "they can tell us"	**manage structures, roles, time, resources**	*gather from friends, work together*	*organization, integrate information*	*plan, gather help, memorization*	*plan change, learn to learn*
S	ask about students, build relationships	maintain discipline, attention, and focus	**foster relationships, class culture, and norms**	*learn, question, discussion, group work*	*ask about the teacher, test a friend*	*recognize friends, respect*
I	plan a lesson, photocopy, book equipment	objectives and outcomes, sequence, pacing	teach, explanations, discussion, involvement	**new material, pedagogical approach, communication, and perception**	*instruction about evaluation, performance*	*link to experience, decision making, understanding*
E	outcomes, quiz, and test creation	manage student preparation, and review	expectations, praise, encouragement	formative, questioning, personal feedback	**judge performance, assess achievement**	*did it work, effectiveness*
R	recognize a need	plan change, long-term objectives	accept students, respect	relevance, accomplishment, achievement	course, class, topic effectiveness	**evaluation of a situation or change with respect to self**

Note. P - preparation, A - administration, S - socialization, I - instruction, E - evaluation, R - reflection. Cell contents reflect exploration, development, and survey data.

Some overlap in dimensions was noted as teacher and student data were analyzed and dimensions characterized. For example, students described teacher social-administrative practices (S x Administration), such as asking questions to manage student behaviour and focus attention. Students described their practice to re-learn or re-view in preparation for evaluation (P x Instruction). Note that, in the diagram, student practices appeared above the diagonal and perceptions of teacher practice appeared below the diagonal. For example, as distinct from P x

Instruction, I x Preparation represented student perception of teacher lesson planning, photocopying, and booking equipment. Hence, the table simultaneously showed both sides of the desk.

The original framework was posted in the Teacher Description of Practice (TP) project as a response guide. Teacher descriptions were the basis for all exploration and development, which ultimately led to Final Survey (FS) question and response lists. Hence, the existence of an item as a FS response choice suggested it had survived the development process, which included researcher analysis, focus groups, the DS, and redevelopment. Existence was used to indicate the relative importance of each dimension in each situation. The researcher considered each response item and asked how it could be an example of a dimension.

Table 67

Example Framework Analysis (FS Student Course Start)

Dimension	Value	Response	Response Item
Preparation	0.43	101 (73%)	Gather or organize my supplies (e.g., binders).
		72 (52%)	Organize or prepare my notebook.
		10 (7%)	Review notes from a previous course.
Administration	0.01	9 (6%)	Check my email if it's an online course.
Socialization	0.27	44 (32%)	Get to know the teacher.
		36 (26%)	Get to know my classmates.
		22 (16%)	Try to make a good impression.
		7 (5%)	Exchange pictures with the teacher if it's an online course.
		7 (5%)	Talk to the teacher about my interests in the course.
Instruction	0.28	55 (40%)	Skim through the textbook.
		48 (35%)	Read the course description or outline.
		14 (10%)	Write down a few jot notes about the course.
		4 (3%)	Learn about the online environment.
Evaluation	0.00		
Reflection	0.00		

Note. Final Survey (FS) Question F108 - What do you do at the *start of a COURSE* that is *special* to the beginning of a course? Values in parenthesis indicate a subdivision of a dimension. 140 respondents. Response choice limited to four of thirteen. Percentages reflect semi-independence of choice. For example, 73% of respondents chose “gather or organize my supplies” as one of their four possible responses. The response index is 0.77. Note that, although values were determined by FS data, categorization of response items was determined by the researcher.

For example, gathering supplies, preparing a notebook, and reviewing notes were student preparation practices at Course Start (Table 67). The three items

totalled 183 of 429 or 43% (0.43) of response choices. In contrast, checking email, the item categorized as administration, was chosen only 9 of 429 times (0.01 or 1%). Five items were categorized as socialization (e.g., get to know the teacher) and four as instruction (e.g., skim through the textbook).

Course Preparation, by definition, fit the preparation dimension of the framework; however, response items crossed dimensions at another level, as was indicated in the matrix. For example, as illustrated in Table 68, a student who prepared for a course by asking friends about workload was asking about course administration. Asking about difficulty was an attempt to predict success based on a knowledge of friends' abilities. Self-evaluation was equated to reflection. Facets of a dimension were indicated by parentheses in tables.

Table 68

Example Framework Analysis (FS Student Course Preparation)

Dimension	Value	Response	Response Item
Preparation	1.00		*All items are preparation practices.
Administration	(0.27)	44 (31%)	Course workload or number of assignments.
		35 (25%)	If I need the course to graduate.
		18 (13%)	If the course will help a career.
		11 (8%)	If the course is offered online or in school.
Socialization	(0.21)	34 (24%)	Who teaches the course.
		29 (21%)	If the teacher is boring or interesting.
		23 (16%)	The teacher's personality (e.g., easy to talk to).
Instruction	(0.14)	38 (27%)	The course topics (viz., what the course is about).
		17 (12%)	Teacher's teaching methods (viz., what they like to do in class).
Evaluation	(0.00)		
Reflection	(0.39)	96 (69%)	If the course is easy or difficult.
		60 (43%)	How they did in the course last year.

Note. Final Survey (FS) Question F107 - What do you *usually ask others* about a course *before it begins*? Values in parenthesis indicate a subdivision of a dimension. 140 respondents. Response choice limited to three of eleven. Percentages reflect semi-independence of choice. For example, 31% of respondents chose "course workload" as one of their three choices. The response index is 0.94. Note that, although values were determined by FS data, categorization of response items was determined by the researcher.

All FS questions were analyzed in a similar manner (Table 69). Some situations, such as Course Close, were found to be multidimensional with student practice including preparation (0.17), administration (0.37), socialization (0.22), and reflection (0.24). Other situations, such as Unit Start, had a single predominant

dimension - preparation (0.55). In general, preparation, administration and instruction (viz., teaching and learning) dominated student classroom practice and varied in predominance, depending on the situation. Self-evaluation, or asking oneself if a concept was understood, was significant in student suggestions of change in teacher practice and indicated the practice was more prevalent than was indicated in the table.

Table 69

Framework Analysis (Student Practice)

Situation	Preparation	Administration	Socialization	Instruction	Evaluation	Reflection
Course Preparation	1.00	(0.27)	(0.21)	(0.14)		(0.39)
Course Start	0.43	0.01	0.27	0.28		
Unit Start	0.55	0.10		0.24		0.11
Unit End	0.39	0.48		0.09		0.05
Unit Test	1.00 (0.67)	(0.02)	(0.02)	(0.10)		(0.19)
Course End	0.38	0.46		0.11		0.06
Course Exam	1.00 (0.69)	(0.04)	(0.02)	(0.09)		(0.16)
Course Close	0.17	0.37	0.22			0.24
Class Preparation	1.00 (0.48)	(0.27)	(0.14)	(0.09)		(0.02)
Class Start	0.27	0.49	0.16	0.09		
Main Part of Class	0.25		0.11	0.48	0.05	0.11
Group Work		(0.40)	1.00 (0.33)	(0.27)		
Class End	0.20	0.51	0.13	0.16		

Note. Final Survey (FS) Student Practice (F1). Values in parenthesis indicate a subdivision of a dimension; for example, Class Preparation was recognized as preparation, then subdivided per the Framework Matrix. Note that, although values were determined by FS data, categorization of response items was determined by the researcher.

Table 70 suggests that many instructional or teaching practices in High School were classified as preparation for instruction, preparation for evaluation, or administration of instruction, as opposed to the imparting of new knowledge and/or skills. For example, student perception of teacher practice at Course and Unit Start was predominantly administrative (0.58) while it was preparatory at Unit End. Instruction was most frequent during the Main Part of Class and may have been more so in other situations; however, many “learning” practices were categorized as preparation. Hence, the framework and matrix were thought of as being in the early stages of development.

Table 70

Framework Analysis (Perception of Teacher Practice)

Situation	Preparation	Administration	Socialization	Instruction	Evaluation	Reflection
Course Start		0.42	0.24	0.20		
Unit Start	0.03	0.58	0.05	0.23	0.05	0.06
Unit Assignments	(0.26)		(0.21)	(0.31)	1.00 (0.14)	(0.09)
Unit End	0.57	0.41	0.03			
Class Preparation	1.00 (0.11)	(0.60)		(0.19)	(0.10)	
Class Start	0.15	0.54	0.19		0.12	
Main Part of Class	0.19	0.21	0.18	0.30	0.12	
Study Period		0.57	0.08	0.35		
Special Class	0.25	0.32	0.20	0.20		0.03
Class End	0.18	0.42	0.14	0.21	0.05	

Note. Final Survey (FS) Student-described Teacher Practice (F2). Values in parenthesis indicate a subdivision of a dimension. For example, Class Preparation was recognized as preparation, then subdivided per the Framework Matrix. Note that, although values were determined by FS data, categorization of response items was determined by the researcher.

The conceptual framework suggested the importance of administration to instruction and preparation to evaluation. This was, in part, somewhat artificial and caused by researcher recognition of preparation situations; however, those situations were not invented by the researcher but merely named. Course Preparation led to a Course Start, which was described as a time for teacher administrative and student preparatory work and the establishment of social relationships. Unit Start was predominantly a teacher administrative and student preparatory event with introduction of learning and instructional practices. Unit Start was the situation most clearly defined by response categorization with greater than 0.25 difference between first and second place dimensions. Unit and Course End were times of preparation for evaluation (e.g., re-instruction, re-learning).

In the short-term, Class Preparation after school or that evening was described as a time to complete assigned work in preparation for the next day. Class Start was administrative for both teachers and students, as management and daily routines were used to prepare time and resources. The Main Part of Class was predominantly a learning and instructional event with minor social overtones if explanations became discussions and guided practice was done as group work. Minor evaluative overtones existed if teachers engaged in informal evaluations to determine levels of understanding. Class End was predominantly a

time for administration to ensure the completion of purpose and notes. Class Start (perception of teacher) and Class End (student) had differences greater than 0.25 between the two top categories. It was interesting to note that students perceived teachers to administer Class Start and themselves to administer Class End.

Hence, preparation characterized some situations, such as Course Preparation, and emerged from the data as the predominant dimension in others, such as Unit Start. Administration was the dominant component of student-described teacher Unit and Class Start. Socialization characterized Teacher-student and Teacher-class Relationships and was a component of student comfort in asking questions, Course Start and Group Work. Instruction characterized the Main Part of Class and suggestions for change. Evaluation characterized Unit Assignments and dominated Unit Test and Course Exam preparations. Reflection was a significant component of Course Preparation and identifying Strengths and Talents.

6.5 Behaviour and Autonomy

Conclusion: A lot of student practice is in response to teacher practice or attempts to manage cognition. Autonomous and self-regulatory student behaviour exists but may go unnoticed by teachers.

The developed model of teaching and learning helped the researcher map repeated teacher and student behaviours. Practices were understood to be the result of management and conditioning (e.g., student note copying), leadership and collaboration (e.g., brainstorming), or autonomy and choice (e.g., deciding importance). Exploration Phase (EP) data suggested that behavioural and cognitivist practices were frequent, constructivist practices were rare, and humanist practices were almost non-existent. Teachers always stopped short of describing how knowledge or use of curriculum content changed students and some were surprised by an expectation of student change.

Many descriptions suggested a short-term progression from management to leadership, such as explanation to discussion, as teachers did enough to get them started. The behavioural paradigm was typically expressed through administrative-preparation routines to organize learning (e.g., open your textbooks, copy these notes). Cognitive practices included teacher-guided recollection of previous content and explanation of new concepts in relation to old information to make sure "everyone was on the same page" or had a common starting point. Explanation-question-answer cycles focused on obtaining the "correct" understanding of a concept and seatwork was used to reinforce ideas or practice techniques. Few descriptions included playing with concepts or constructing knowledge beyond attempts to find relevance in the world outside school. Humanist practices which purposively led to student self-development or new meta-cognitive skill sets were generally absent from situational data; however, when asked about long-term skill development, a few teachers gave examples such as organization, social, expression, problem solving, study, test taking and self-confidence.

The rarity of constructivist and humanist practices contrasts with many teacher descriptions of strong interpersonal skills (e.g., relating to students, reading expressions) and abilities to promote change (e.g., creating interest, encouraging respect). Many of the teacher participants appeared to possess the skills necessary to promote student self-regulation, self-determination, and autonomy however described themselves as focused on curriculum delivery instead of student development. The survey tool could be used as a first step in the process of changing teachers' focus. Teachers could use the survey to ascertain the variety of practice in their classes and existent student mechanisms to "deal with" content. A rewrite of provincial curriculum documents to focus teacher attention on student development would need to be a future step in the process.

6.6 Future Directions

This research was a mixed methods design consisting of qualitative exploration (EP) and quantitative development (DP) phases. The qualitative sub-question, "What variety exists in student situational practice?" was answered in detail in Chapter 3. The quantitative sub-question, "Which situational practices are most frequent?" was answered for the research sample in Chapter 5. Hence, the first part of the overarching question, "Which situational practices do students have?" has been answered. However, it was understood that frequency of developed practice could vary from sample to sample depending on students' experiences. The second part of the overarching question, "How can these (i.e., practices) be influenced effectively?" is the subject of future research.

This program of research was understood to be the first step in a larger study. The next step would be to use the survey to establish a baseline of student practices and perceptions at a local high school and ask, "Would regular experimentation and feedback lead to changes in teacher and student practice?" Experiments could include instruction in test preparation, time management, peer respect, curriculum objective mapping, self-evaluation, and contribution to society. Initiatives could focus on student self-development, skill development, and increased efficiency in the teaching-learning process.

In addition, this research uncovered many interesting associations between situational practices in the Development Study (DS) and Final Survey (FS) data. These associations were never claimed to be causal, but investigations into causality may discover ways to make teaching and learning more effective.

Table 71

Specific Questions

Why do all students who prepare for a course by skimming the curriculum guide or textbook also feel the need to gather course supplies? Why did 75% or more of students who read the course description organize supplies?

Why do all students who ask someone about the career implications of taking a course also ask how friends did in the course?

Why did all students who recalled the teacher telling jokes and interesting stories at Course Start also recall the introduction of an evaluation scheme?

Why did all students who indicated the teacher talked about what students already knew at the start of a unit also indicate the teacher talked about how long the unit should take to complete?

Why did all students who indicated teachers started a unit by writing sample questions on the board also indicate the teacher started the unit right away?

Why did 75% or more of students who recalled teachers comparing the new unit with completed units also recall the teacher describing how long the unit would take to complete?

Why did all students who indicated they corrected their mistakes on unit assignments rely on memorization as a test preparation practice?

Why did all students who indicated teachers went over examples also indicate the teacher answered everyone's questions?

Why did all students who rewrote their notes per the study guide indicate they reviewed key topics and definitions?

If most students started studying for the exam weeks before the event, did they have a plan or sequence of practices?

Why did all students who checked on what homework they had to do always collect missed notes from friends? Why did all students who discussed assignments or compared notes with friends always ensure they had all notes from missed classes?

Why did 75% or more of students who read what was assigned also complete written work?

At Class Start, why did 75% or more students associate preparing notebooks and/or supplies with passing in homework?

Why did all students who indicated the teacher asked how their day was going also indicate the teacher never returned corrected assignments?

Why did all students who indicated they asked friends questions when the teacher was busy also indicate they copied notes from the board?

Why did all students who indicated their teacher gave worksheets also indicate the teacher gave examples when explaining notes?

Why do students have so few asynchronous classes or Study Periods in which they can work on course assignments? Which is more important, teacher time on task or student time on task?

Why are special classes so rare when different situations can lead to the development and use of different practices?

Why do all students who indicated a quiet class is a good class also believe everyone pays attention? Why do all students who indicated a good class as when the teacher comes down to our level also indicate everyone pays attention? Why do all students who indicated a mix of notes, discussion and seatwork make a good class also indicate everyone pays attention?

Why was there such good agreement (95%) between student perception of a good class and student perception of their teacher's attitude about the class?

Why do students who label a good class as different frequently also label it as "not boring?"

Why do some teachers never tell students they had a good class?

Why do all students who characterize good teaching as explanations "without big words" also recognize a teacher's willingness to re-explain notes? Why do all students who believe teachers make them the priority also notice a willingness to re-explain notes?

Why did all students who indicated teachers gave quick, confusing explanations also point to lots of unnecessary notes? Why did all students who indicated teachers gave quick, confusing explanations also point to in-class assignments due before the bell? Why did no student who pointed to quick confusing explanations indicate a problem with class discussions?

Why did no student who indicated they could not name a confusing teacher practice also believe teachers did not make assumptions about student understanding?

Why did 75% or more of students who felt the teacher encourages all students to learn also feel the teacher treated everyone equally?

Why did all students who indicated teachers coached sports teams, or gave up their lunch to supervise the gym, also indicate teachers chatted with them in hallways?

Why do such high numbers (77% EP, 46% DS, 54% FS) of students indicate their current teachers had not asked them how they prefer to learn?

Why did students who wished teachers made sure students understood concepts before moving on frequently wish teachers would break down explanations step-by-step?

These questions prompted general questions.

Table 72

General Questions

What triggers the recognition of a specific instructional practice?
Why do perceptions of teacher practice vary from student to student in the same situation? Why do students perceive teaching differently?
Why do some students observe a broad range of teacher practice in a situation and others observe a narrow range? Can they be trained in perception?
Does recognition of a wide range of teacher practice in one situation imply the recognition of a wide range in all situations?
What is the relationship between the range of observed teacher practice and the range of student practice in the same situation?
Does the ability to perceive a wide range in teacher practice correspond to an ability to bring a wide range of student practices to the situation?

To conclude, data collected through this program of research demonstrated that student practice and perception of teacher practice were more complex and varied than described in the literature. Practice was found to be situational (e.g., Class Start vs. End). Practice could be subject-specific (e.g., composition in English, monitoring news in Social Studies) but predominantly was not (e.g., teacher explanations, class discussions). Practice could be influenced by environment (e.g., multi-site, technology) but predominantly was not (e.g., whiteboard use, note taking). Practice could serve multiple purposes (e.g., questioning as preparation, administration, socialization, instruction, evaluation and a prompt for reflection). Practice involved both rote response and creative acts (e.g., variety in reaction to work assignment). Practice was managed, led, and autonomous (e.g., scripted review by teacher vs. student questioning). Variety in practice could support change (e.g., a better way to organize notes). Students who are successful in the system chose practices like tools to fit situations and solve problems (e.g., willingness to be literate, to look up definitions). Student failure may due to systemic reasons such as a lack of developed practice and an inability to judge situations to apply appropriate practices.

Teacher and student descriptions suggest that classrooms are influenced every day by participants' thoughts and emotions. Student practice and perception inside the box can lead to the achievement of curriculum standards but may better lead to the development of increased abilities to meet these standards. Knowledge of situational practice may be useful in helping individuals meet standards, not through prescription but through recognizing discovery and self-development. Educational organizations can help by reframing curricula around student transformation. They decrease the value of graduates to society by prioritizing content over self-development and self-determination. Of what value is knowledge about the water cycle if graduates have not developed the self-confidence to protect it? Of what value is knowledge of similes if graduates cannot appreciate multiple perspectives? Graduates need to know how to transform themselves in order to change society.

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