The Work of Learning:
The Stories of a Group of Undergraduate University Students

by
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Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Education in the Educational Leadership Program Faculty of Education

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SIMON FRASER UNIVERSITY
Spring 2019
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Ethics Statement

The author, whose name appears on the title page of this work, has obtained, for the research described in this work, either:

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or

b. advance approval of the animal care protocol from the University Animal Care Committee of Simon Fraser University

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Abstract

The research presented in this thesis was in the form of a qualitative inquiry into the perceptions by a group of senior undergraduate students of their learning processes and experiences in the Faculty of Health Sciences (FHS) at Simon Fraser University (SFU). The research goal was to explore what students understood of their learning and their lives as learners. The research aimed to gain an in-depth understanding of the ways in which students approached learning tasks, their awareness of study tactics, their styles of working, and their use of particular practices, tools, and routines.

The research invited senior year FHS students to describe and reflect on the ways in which they cultivated and developed their approaches to learning and study and how they regarded the various learning environments they had experienced during their time in the FHS. It also elicited students’ thoughts about self-regulated learning, quality teaching and meaningful assessment, and the degree of confidence or enthusiasm they brought to learning challenges. They were also asked about their orientations toward further learning or about learning outside formal institutional structures.

As the research for this thesis progressed through the series of interviews, it became evident that the participating students led very full lives beyond their work at the university, and that their work in learning and their views of the nature of knowledge and the scope of the field of health sciences were all affected by their overall life circumstances and experiences. The research found notable students’ abilities to balance and manage their competing priorities and effectively align their complex “life spaces” with often demanding academic requirements. The study’s findings suggest that improvements to students’ experiences in university learning require that those involved in curriculum and program design, learning supports, and general student services, give serious consideration to the remarkable diversity of students’ lives.

**Keywords**: diversity of student lives; hermeneutic phenomenology; learning strategies; studenting; studying and self-regulation; teaching and assessment
Dedication

This is for You.

For You who showed me that impossible never existed.

For You who taught me that unbelievable happens only when I stop believing.

For You who are able to do anything and everything at any time. I’m still learning that from you.

For You who were always cheery when convincing me that learning new is not that cruel.

For You who knew that I will be here, writing this, despite of all my disobediences.

For You who went to the Moon and back for me, and never felt tired or jet lagged.

This is for You.

Ivona
Acknowledgements

I want to acknowledge the immense help, teaching, and support of Dr. Milton McClaren. He has been a lighthouse in the storms of all my dilemmas, uncertainties and insecurities. He has been my inspiration to know and to be more. He has been a prophet and a magician of the eternal perseverance, wisdom and curiosity that helped me complete this EdD voyage. Thank you, Dr. Milton McClaren, for all you have done for me.

Special appreciation also goes to Dr. Doug Hamilton, Dr. Heesoon Bai, Dr. Allan MacKinnon and Dr. David Zandvliet for their supportive and thoughtful comments and ideas, and for their mindfulness and encouragement. They all have valued my research and have wholeheartedly welcomed me to the community of educational scholars and practitioners.

Linda Hegland, thank you for your friendship and for your perpetual cheerfulness through this long journey.

I am grateful to the following people who contributed to this thesis (in alphabetical order): Irene Burrell (SFU Faculty of Education), Lloyd Cain (Transcriber), Liny Chan (SFU Institutional Research and Planning), Arlette Stewart (FHS Academic Advisor), and James Warren (Editor).

Lastly, I want to acknowledge and thank the twenty-two student participants who shared their stories with me. They made all of this possible.
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<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>BA</td>
<td>Bachelor of Arts</td>
</tr>
<tr>
<td>BC</td>
<td>British Columbia</td>
</tr>
<tr>
<td>BCIT</td>
<td>British Columbia Institute of Technology</td>
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<tr>
<td>BSc</td>
<td>Bachelor of Science</td>
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<tr>
<td>CEPH</td>
<td>Council on Education for Public Health</td>
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<tr>
<td>CGPA</td>
<td>Cumulative Grade Point Average</td>
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<tr>
<td>Co-op</td>
<td>Co-Operative Education</td>
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<tr>
<td>DL</td>
<td>Distance Learning</td>
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<tr>
<td>FHS</td>
<td>Faculty of Health Sciences</td>
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<tr>
<td>GPA</td>
<td>Grade Point Average</td>
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<tr>
<td>IHRE</td>
<td>Institute for Health Research and Education</td>
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<td>IRP</td>
<td>Institutional Research and Planning</td>
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<tr>
<td>LMS</td>
<td>Learning Management System</td>
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<td>MPH</td>
<td>Master of Public Health</td>
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<td>Master of Science</td>
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<tr>
<td>NSSE</td>
<td>National Survey of Student Engagement</td>
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<td>PhD</td>
<td>Doctor of Philosophy</td>
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<tr>
<td>SFU</td>
<td>Simon Fraser University</td>
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<td>UBC</td>
<td>University of British Columbia</td>
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<td>WWW</td>
<td>World Wide Web</td>
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Chapter 1.

Introduction

Prologue

No two students are the same. Each and every one has a very unique, inimitable story. Each student is a story.

Students’ life stories are important because they define and internalize students’ observations, experiences, beliefs, and values. Stories affect how students develop their fears and hopes, make plans, encourage their dreams, and draw boundaries. Stories determine and actualize students’ sense of fairness and relevance. They shape the ways in which students learn and how they connect their learning with knowing, meaning, and understanding. Students’ life stories not only personalize learning, they contextualize it.

Many of our students never tell us their stories. Also, most of the stories are rather elusive and implicit, so that they remain in the shadows of more pressing and structured issues related to curriculum and graduation requirements.

The following are three stories that I wanted to share with you.

One

Rachel, a 23-year-old first-year student, came to Canada from a civil war-torn African country. She and her mother fled the war’s disasters, first on foot and then on various boats, frequently changing countries and leaving behind her arrested father and many relatives who had been killed in the conflict. After living in countless refugee camps and shelters, where running water was scarce and food was delivered only once or twice per week, she eventually landed in Vancouver. When Rachel came to see me for an advising session for undeclared students, she told me in her very fluent English that her ultimate goal was to get a university education in a North American country. When I asked why, Rachel told me that the university knowledge she would get from Simon Fraser University (SFU) would help her become a complete person; it would
change her social attitudes and eliminate her fear of differences. It would, she continued, educate her to become a more personally aware and responsible democratic citizen. Rachel’s mother, to whom I spoke on several occasions, shared with me her perspectives on the importance of Rachel’s education. With Rachel acting as translator, her mother stated, “Education is about freedom that helps students shape their human values.”

Two

Bryan was 12 years old when his father died in a farming accident. Three years later, he moved with his mother and sister from a small town in the British Columbia (BC) interior to Surrey, a large suburb of Vancouver. Shortly after the move, Bryan’s mother developed a mental illness and had to leave both her full-time and two part-time jobs. Bryan and his sister realized that they would need to take charge of paying for the rent, food, and their mother’s medical bills. In addition to attending school, they both worked in coffee shops, small food kiosks, car wash outlets, and many other places. Bryan was in his second year in the Faculty of Health Sciences (FHS) when he came to see me after he had been placed on academic probation. Although he had at that time decided to give up on his university education, we eventually worked out a rather slow but effective plan to improve his grades. During numerous advising sessions, Bryan never mentioned the adversities he was going through, and he never attempted to apply to withdraw from courses due to extenuating circumstances. It was almost two years later, when he was back in good academic standing, that I learned about his family difficulties and crises when his older sister, a psychology major, brought me a thank you card. With teary eyes, she told me their story of hardship and resilience, a story I would have never imagined only by reading Bryan’s academic transcript.

Three

Gloria, a 36-year-old, second-degree student came to SFU’s FHS from China. Several years previous, while browsing the Web in a Chinese Internet café, Gloria came across a particular SFU faculty member’s research interests. The professor’s research on global and population health so inspired Gloria that she decided to make a huge life change by quitting her job in China and moving to Canada to study in the Bachelor of Arts program in health sciences. Although Gloria had received her Pharmacy degree
from the Peking University School of Pharmaceutical Sciences, she was dedicated to continuing her education in the field of public health. She wanted to investigate the social determinants of health, to understand the ways diseases are spread and the ways they could be prevented and controlled. She particularly wanted to learn about the behavioral and environmental risks of developing a disease. During one of our advising sessions, Gloria told me,

There is always a need for more education, for more learning. It is the knowledge in us that makes us better, that always helps and enriches us to know more about ourselves and the world that we need to take care of.

After immigrating to Canada with her five-year-old son and elderly parents, Gloria worked in a factory that made ceramic tiles in order to support her family and her education. Despite her factory work, Gloria earned places on the university's President's Honour Roll twice and the Dean's Honour Roll three times. She has just started her fourth year in the FHS.

1.1. Study Premise

Conscious, directed learning is a constructive, intentional cognitive activity that involves a learner engaging with the learning process. It often involves different psychomotor and affective elements. It also involves social interactions, whether in physical or virtual space, or both (Ambrose et al., 2010; Bransford, Brown, & Cocking, 2000; Dirksen, 2012; Dunlosky, Rawson, Marsh, Nathan, & Willingham, 2013; Dweck, 2006; Nisbett, 2015; Taylor, Cranton, & Associates, 2012). Like any other form of work, learning is more effective and efficient when the worker, a learner, has developed an understanding of task requirements, has knowledge of and skill in using and connecting certain tools and processes, and is able to self-regulate and to adjust their activities to the requirements of the tasks. Effective learners are both strategic and reflective. In sum, learners who demonstrate these attributes can be described as “metacognitive.” They are able to demonstrate self-awareness and intentionality related to their own learning (Flavell, 1976, 1979; Papaleontiou-Louca, 2014; Tarricone, 2011; Velzen, 2016).

The work of learning happens within the complexities and unpredictability of the “everydayness of daily life experiences,” a perspective that is commonly overlooked by educators and is unjustifiably considered to be “less worthy of our academic attention”
(van Manen, 2014, p. 42). However, the “everydayness” of students’ lives has a remarkable impact on their motivations to learn, on their approaches to learning tasks, and also on their senses of self-competence, autonomy, and direction. The overall contexts of their learning affect the quality of their relationships with instructors and their perceptions of the learning experience in the FHS and at SFU. In the following chapters, I describe my attempt to understand and grasp the meaning of students’ lifeworlds for their work of learning at the university.

1.2. Focus of the Study

University students are required to engage in a variety of assignments and activities that require learning. The research described in this thesis was focused on the metacognitive attributes of a group of students enrolled in the last year of a four-year university degree program in the FHS at SFU. A phenomenological inquiry was used as the research approach; learners were asked to reflect on and describe their own learning experiences and views of their approaches to the complex work of learning in the context of postsecondary education.

1.3. Research Questions

The research described in this thesis was framed by the following questions:

• What experiences and perceptions are reported by a group of fourth-year students in the FHS with regard to their learning processes and tactics?

• How do students describe the ways they adjust their approaches to learning in response to a variety of different task requirements and learning environments?

1.4. Goals and Purposes

The goal of the research was to develop understanding in the following topical questions:

• How do students understand and describe their learning styles or approaches to various types of learning assignments?
• How do students connect new information to their existing knowledge and prior experiences? How do they organize their learning in ways that allow them to obtain, retrieve, and apply knowledge?

• Do students differ from each other in their engagement with similar learning activities?

• What levels of awareness do students demonstrate with regard to adjusting their learning processes in response to varying task requirements?

• What descriptions do students offer of the different formats in which they have been required to demonstrate their learning? Do students adjust their learning processes in direct response to the requirements of those demonstrations, expected outcomes, or manners of assessment?

• What repertoire of learning tactics do students describe? Do students have personal preferences for particular tactics for learning, and why do they believe those preferences are the most useful or appropriate?

• Do students describe differences between their approaches to, and engagement with, formal (assigned/required) learning versus informal, avocational, or recreational learning?

• In general terms, do students believe they have been well prepared through their cumulative school experiences to perform as lifelong learners in a variety of contexts?

• In what regard do students hold the various learning environments in which they have spent four-to-five years during their university experience? For example, what are their views about lectures, seminars and tutorials, laboratories, field experiences, online learning, and other curricular and instructional elements?

• How do they regard the effects of new media and information tools on their learning processes?

These questions represent the core of my research interests and were the topics that I used to broadly structure my interviews with the research participants. The questions were developed in an attempt to gain a comprehensive understanding of both the ways in which the students in the study group approached learning tasks and their self-awareness of their study strategies, styles of working, and use of processes, tools, and rituals. I further intended that students who participated in the study might better understand their learning processes and themselves as learners. I hoped that this developed comprehension might be beneficial in shaping the participants’ future plans for personal learning.
1.5. The Researcher's Personal Context

As the Manager of Undergraduate Programs in the FHS, I do not have a formal assignment as a teacher. Yet, I meet with students every day. I approve their majors and second degrees, course repeats and overloads, and I sign off on their withdrawals and graduations. I explain the rules and requirements that frequently do, but sometimes do not, make perfect sense. I try to calm their frustrations and complaints, even when I find them to be groundless. I inform and support students’ decisions, attempt to relieve their fears, encourage their hopes, and inspire their dreams. I try to help them to forget their regrets and respect their dilemmas, to recognize their mistakes and eventually to learn from them.

In our meetings we talk, laugh, argue, sit silent, make plans and abandon them, and listen to and learn from each other. Both the students and I are saddened because of their missed deadlines or because part-time jobs may have been lost without obvious causes. And, yes, we celebrate good exam grades together, their successful cooperative education (co-op) placements, or anything else that makes them proud. We dress nicely and take photos with their families and friends on convocation days. The students and I sail together through their so unpredictable academic journeys, regardless of how amazingly diverse and distinctive each and every voyage is.

1.6. Importance of the Study to the Researcher

I play an important role in curriculum development, student retention activities, and students’ academic and extra-curricular experiences in the FHS. I began the research described in this thesis with a firm belief that the findings could help me understand how students perceive their personal circumstances and how they make connections between their particular contexts and their learning. Analyzing and reflecting on the data obtained in this research allowed me to further recognize and celebrate the students’ diversity and improve my everyday efforts to empower each student’s unique voice in building their knowledge and their overall success in university.
1.7. Potential Importance of the Study to the Faculty

The findings of the research described in this thesis have potential value for adjustments and improvements of the current educational programs and practices in the FHS with regard to curriculum design and delivery of programs, and the ways we engage students inside and outside of classrooms. While students previously have had some input regarding the structure and operation of the Faculty’s programs, to date no systematic attempt has been made to conduct an extensive study of FHS undergraduate students’ experiences and views of their skills in and perceptions of learning processes. It was a goal of this research to involve current students in extended and wide-ranging discussions of their approaches to the organization and management of their learning.

While I hoped that the results of the research might be of practical value in the development of the student learning experience within the FHS and SFU, I did not design the research as a program review or evaluation. As the research progressed, the students’ reports and reflections of their experiences can be seen to have implications for the overall program of the FHS. I will consider some of those implications in the closing chapters of the thesis, but my major goal in this study was to develop a rich understanding of the students’ appreciation of their learning experience and processes in the FHS program and in their general university experience.

1.8. Study Methods and Procedures

My qualitative research invited FHS students to describe and reflect on the ways in which they cultivate and develop their approach to learning and study practices and how they regard the various learning environments they have experienced during their time in the FHS. It was also intended to elicit students’ reflections on self-regulated learning, on the degree of confidence or enthusiasm they brought to learning challenges, and on their orientations toward further learning or about learning outside of formal institutional structures.

I chose van Manen’s hermeneutic phenomenology as the approach to facilitate my in-depth understanding of students’ true, immediate, and unhindered learning experiences as they were lived, perceived, and interpreted. Phenomenology as a method of inquiry enabled me to think through and to “feelingly understand” (van Manen,
2014, p. 249) the research’s main propositions. It also provided me with an “attentive awareness to the things of the world as we live them rather than as we conceptualize or theorize them, and as we take them for granted” (van Manen, 2014, p. 41).

I chose a hermeneutic model as the “theory and practice of interpretation” (van Manen, 1990, p. 179) to reflect on and interpret students’ perspectives of their experiences as workers of learning. A hermeneutic approach helped me to make my “phenomenological analysis, explication, and description possible and intelligible” (van Manen, 2014, p. 26). It is important to mention that while observing and interpreting students’ lived experiences, I did not try to re-experience them. I only attempted to understand and articulate the reported experiences (van Manen, 1990).

Data collection in this research involved conducting one-on-one, in-depth, semi-structured interviews, using open-ended questions reflective of the research questions described above. Participating students were asked to bring to the interview samples of textbooks, lecture notes, and other artifacts they considered to be useful to their learning. The primary objective of the interviews was to achieve a two-way communication with students that would enable them to sensibly and richly portray their individual experiences about the complex work of learning. The study methods are described in detail in Chapter 3.

1.9. Organization of the Thesis

This thesis presents a structured inquiry into students’ learning in a particular context—a university degree program. It is organized into the following chapters.

Chapter 1 provides a general introduction and overview of the study. The study’s premise and a discussion of its focus are followed by the main research questions as well as topical questions that were used to define the study’s general goals and purposes. The researcher’s personal context and the importance of the study for the researcher and to the FHS are discussed next. The chapter also includes a broad overview of study methods and procedures used in the research. A summary of the organization of the thesis concludes the chapter.

Chapter 2 offers a review of the relevant literature about student learning. The review focuses on two major bodies of existing research and scholarship. First, the
review surveys research on learning in general and its connections to students’ intellectual and social development as well as to course climate and learning environments. Second, the review overviews research that addresses students’ approaches to the processes of learning, including cognitive strategies, metacognition, executive function, and self-regulation.

Chapter 3 describes the research methodology and design of the study. The chapter begins with an analysis of qualitative research, Max van Manen’s hermeneutic phenomenology framework, and the reasons for using that framework. Next, the chapter offers a general description of the study’s setting at SFU and in the FHS. The chapter also describes the strategies employed for the recruitment of participants, followed by participant profiles and details about the organization and conduct of the research interviews. The chapter also outlines the approach to data analysis in relationship to the main research questions and ends with a discussion of the issues of the study’s validity and truthfulness.

Chapter 4 reports the research findings, with support from relevant passages of the students’ authentic responses and statements they voiced during interviews. The chapter is organized according to four major themes that emerged from the analysis of the interviews’ transcripts. Part one demonstrates the remarkable diversity of students’ personal circumstances. Part two relates students’ perspectives of their learning contexts, experiences, and learning environments. Part three describes students’ general learning strategies and their particular study tactics. Part four presents students’ opinions on the relevance of personal knowledge and their views of themselves as learners.

Chapter 5 summarizes and analyzes the research findings and discusses their implications. The beginning of the chapter introduces the notion of “studenting” for conceptualizing the work of learning and students as workers of learning. The chapter then identifies the five paradigms of studenting that are central to the research findings: living, learning, studying and self-regulation, teaching, and reflecting. The chapter suggests several implications for curriculum development and student services and also outlines the limitations of the study. The chapter closes with a conclusion in the form of a personal reflection on my learning from the research.
Chapter 2.

Literature Review

2.1. Introduction

The intention of this chapter is to provide an overview and critical review of research and scholarship about learning that is broadly related to perceptions of the processes of learning by undergraduate students enrolled in postsecondary education. Within that context, the chapter covers research on learning in general and its connection to students' intellectual and social identity development. Further consideration is given to research on course climate and learning environments, students’ approaches to learning and cognitive strategies, metacognition and self-regulated learning.

2.2. Scope and Limits of the Review

My main research goal was to discover the personal views and understandings of a group of upper division undergraduate students in the Faculty of Health Sciences (FHS) at Simon Fraser University (SFU) about themselves as learners and about their approaches to learning tasks. My goal was to appreciate how the students understood and interpreted the work of learning and themselves as workers engaged in that work.

There is a wealth of research on student academic performance that it is very focused on test results and achievements and on the relationship between academic performance and student behaviours. In other words, many studies have tried to understand which practices, skills, or behaviours lead to academic success. These studies are largely focused on first-year university students and their transitions from high-school to university learning. My study was concerned with students who had demonstrated competence and academic achievement and were enrolled in their final academic terms, very close to graduation.

There is also extensive research on the causes of student attrition, drop out, or shifts in major areas of study (Francis, 2016). The students in my research were not in any danger of dropping out and they were all very near completion of their chosen
programs. There is some research on academic choices and the reasons students offer for their selections of academic major. Although my study briefly examined the reasons that students described for choosing the FHS and their particular programs of study within it, this topic was not the main focus of my study. My aim was to take a holistic view of the complex and vibrant life experiences of a selected group of university students.

There is substantial research and theory on student cognition and the learning process in general. Some of this research is grounded in psychology, especially cognitive psychology, constructivist theories, and social psychology. Recently, there has been more research on brain-based models of learning, which attempt to understand the underlying neurophysiological bases of learning, that is, how learning tasks change the brain at a functional and structural level. While this research is relevant and exciting, my approach was very much phenomenological in its attempt to understand how students viewed themselves as learners in the context of their general life experiences.

There is also research on the relationship between teaching methods, instruction, and teacher behaviour and student achievement, motivation, and attitudes toward learning. The focus of much of this research is on teachers and teaching, and learner performance is simply an outcome variable. My research offers views of teaching, but as seen through the eyes of students and their personal views of what constitutes effective teaching.

There is considerable research on students’ views of their university experiences. A large body of this research involves survey methodologies, with the results often being used in program reviews as well as in rating and comparing different universities and colleges or particular programs and faculties. My approach was focused on a selected group of students in a particular program, who were at a defined point in their studies. I did not look for students’ opinions of campus life, resources, tuition costs, or other factors that might be used in a general evaluation of the university or faculty that were the settings for the study. The results of my study might allow some inferences to be made about how this selected group of students viewed their overall experiences in their chosen FHS programs, but it was not a goal of the research to conduct a program evaluation or make a broad assessment of the quality of the university overall.
While I initially designed my research with a focus on the processes and tools that the students used in their work as learners, I quickly discovered that I needed also to consider the students’ life situations and contexts in addition to researching their approaches to learning and the tools and tactics they used in their learning in the FHS and at SFU.

The scope of this literature review was generally delimited in time to studies published later than the 1980s, although some research on learning, self-knowledge, development, and direction was selected from a wider time period. In terms of the student experience, this review focused on studies conducted since 2000.

2.3. Research on Learning in General

2.3.1. Learning

Conceptions of learning have been developed through research conducted over many decades and within various domains and disciplines: from quantitative and qualitative studies in children and adult education to research in philosophy, psychology, sociology and anthropology, linguistics, neuroscience and computer science, as well as in many areas of health care, management, and in a range of settings related to industry and vocational training (Bransford et al., 2000; Cassidy, 2004; Committee, O. A. F. S. F., 1999; Dweck, 2006; Entwistle, Hughes, & Mighty, 2010; National Academies of Sciences, Engineering, and Medicine, 2018; Rose, 2016;).

Learning has been explored through various disciplines and diverse lenses with foci and emphases on the complexities of human thinking, believing, knowing, experiencing, recalling and remembering, reasoning, understanding, reflecting, problem solving, and a variety of other cognitive and metacognitive processes associated with human learning (Anderson & Krathwohl, 2001; Bowden & Marton, 1998; National Academies of Sciences, Engineering, and Medicine, 2018; West, Farmer, & Wolff, 1991). Some approaches have attended to overt behaviours as indicators or outputs of learning and instruction while others have looked introspectively at learners’ meanings and interpretations.

Bransford et al. (2000) wrote that thinking, reasoning, and understanding are central to learning and education (p. 8). Marzano et al. (1988) identified the five
dimensions of thinking that are relevant for learning: thinking processes, core thinking skills, critical and creative thinking, the relationship of content-area knowledge to thinking, and metacognition (p. 17). Marzano et al. also made further important points: first, that many of these five dimensions of thinking exist and happen simultaneously; second, that these dimensions represent various domains of thinking and are not intended to form a taxonomy or a hierarchy; third, these five dimensions of thinking are closely associated with students’ cognitive development and their attitudes and dispositions (p. 18); and, finally, understanding these dimensions of students’ thinking affects educators’ collective efforts in curriculum design, assessment methods, and overall pedagogy (pp. 20-21). Similarly, Ritchhart, Church, and Morrison, (2011) claimed that the learning process is never sequential or hierarchical: rather, it is incremental and evolving in nature, and is a direct consequence of thinking (p. 6, p. 261).

In “How People Learn,” Bransford et al. (2000) proposed that the “science of learning” unites the perspectives of behaviorism, gestalt and cognitive psychology, and constructivism, as well as studies of learning, knowing, brain-functioning, learner development, and culture in a way that could “improve significantly people’s abilities to become active learners who seek to understand complex subject matter and are better prepared to transfer what they have learned to new problems and settings” (p. 13).

Learning has also been studied through the processes of self-evaluation and self-regulation, mindfulness and meaning-making, motivation, achievement, engagement, innovation and creativity, belonging, identity forming, and through teaching others as well as selves (Bowden & Marton, 1998; J. S. Brown & Duguid, 2002; Cassidy, 2004; Dweck, 2006; Fry, Ketteridge, & Marshall, 2009; Kuh & Documenting Effective Educational Practice (Project), 2005; Marton et al., 1997; National Academies of Sciences, Engineering, and Medicine, 2018).

Knowledge acquisition has recurrently been described as a result of learners’ cognitive activities that are shaped and contextualized within particular sociocultural settings, norms, and expectations (Committee, O. A. F. S. F., 1999; Fry et al., 2009; National Academies of Sciences, Engineering, and Medicine, 2018). According to Vygotsky (1978), “in the internalization of the process of knowing—the particulars of human social existence are reflected in human cognition” (p. 132). “There is broad consensus that the context of cultural and social norms and expectations influence
people’s acquisition and uses of knowledge in powerful ways” (Committee, O. A. F. S. F., 1999, p. 24).

Additionally, Wilson and Peterson (2006), researched learning as a process of active cognitive and behavioral engagements, as well as a social phenomenon that includes a perceived sense of belonging to or lack of alienation from the group. Reaffirming that the learning process is “both individual and social,” Wilson and Peterson recommended using students’ differences as resources for teaching and learning, arguing that “students are resources to be tapped, not obstacles to be overcome” (p. 7).

Nisbett (2015) discussed the concepts of “construal understanding” through learners’ inference and interpretation, as well as conditions in which thinking and learning take place (p. 15). While Nisbett recognized the role of conscious reasoning for identifying problem structure, he also emphasized the importance of rational unconsciousness for thinking and learning, particularly in the domains of creative and critical thinking, inventive problem solving and discovering possible solutions (pp. 65-66). For a long time, creative and critical thinking were studied as distinctively different thinking processes. Creative thinking used to be seen as irrational, undirectable, and unteachable, while critical thinking was understood as a completely different form of thought (Paul, Elder, & Foundation for Critical Thinking, 2004).

However, many scholars have echoed Marzano et al.’s (1988) statement that “critical and creative thinking are not separate processes, they are descriptions of the way processes are carried out” (p. 32). Paul et al. (2004) wrote that imagination and reason are inseparable, adding that creativity seen as thinking generative power and criticality seen as thinking judiciousness “can be separated only artificially. In the process of actual thought, they are one” (p. 6).

Learning has often been understood as a cognitive process that causes meaningful changes in students’ knowledge, but also in students’ beliefs, behaviors, and attitudes. Dirksen (2012) described learning as a journey resulting not only in students knowing more but in doing more with the acquired knowledge. For Dirksen (2012), learning context is equally important as learning content, emphasizing the need for learners’ understanding of when and how to use their knowledge and skills.
In summarizing studies about thinking, learning, and knowing, Ambrose et al. (2010) proposed seven basic principles of learning.

- Prior knowledge influences current and future learning.
- The way students organize knowledge influences how they learn and how they apply what they know.
- Motivation determines, directs, and sustains learning.
- Students develop learning mastery by acquiring particular component skills and practicing combining and integrating them.
- Goal-directed practice and explicit targeted feedback facilitates learning.
- Emotional, social, and intellectual climate factors influence learning.
- Metacognitive monitoring of learning processes improves current learning and facilitates further learning (pp. 4-6).

These principles align with the study by Bransford et al. (2000) and the recent report, "How People Learn II," by the National Academies of Sciences, Engineering, and Medicine (2018), which have highlighted three major findings from the broad research on learners and learning, and on teachers and teaching. Bransford et al.’s (2000) first finding emphasizes the importance of students’ prior perceptions and understandings for their effective classroom learning. Although these initial understandings and preconceptions may range from fairly accurate knowledge to misconceptions, stereotypes, and simplifications (p. 15), students’ initial knowledge and conceptions should not be ignored, and “if their initial understanding is not engaged, they may fail to grasp the new concepts and information that are taught, or they may learn them for purposes of a test but revert to their preconceptions outside the classroom” (pp. 14-15).

Bransford et al.’s, (2000) second finding indicated that having a solid grasp of discipline-specific factual knowledge plays an important role for students’ successful learning with understanding. They further argued that learning with understanding could transform “factual information into usable knowledge,” which could help students to identify patterns, relationships, and meanings (pp. 16–17). Understanding facts and ideas, they claimed, would enable students to organize knowledge in a way that could help them to quickly identify, categorize, and retrieve the relevant subject matters they learn in classrooms (pp. 16-17). Their final finding stressed the significance of helping students become self-regulated learners who could match their learning approaches and
tools with the learning tasks at hand and then monitor progress in achieving their learning goals, including taking adequate corrective actions (p. 18).

Pascarella and Terenzini (2005) recognized that learning processes involve distinctive cognitive and affective aspects of students’ development and change. They indicated that the notion of student development referred to the premises or potentials for students’ growth and maturity related to their educational, but also psychological and moral, growth (p. 17). According to Pascarella and Terenzini, the concept of student change could be viewed as both a quantitative and qualitative construct that refers “to alterations over time in students’ cognitive skills, affective characteristics, attitudes, values, or behaviors” (p. 17).

Based on Astin’s Taxonomy of Outcomes (Astin, 1973), Pascarella and Terenzini (2005) argued that students’ learning could be viewed through the intersection of the following dimensions:

- Cognitive-psychological;
- Cognitive-behavioral;
- Affective-psychological;
- Affective-behavioral (p. 7).

For Pascarella and Terenzini, the cognitive dimensions of learning referred to the content specific knowledge, critical thinking, and general educational attainment, while affective dimensions were associated with attitudes, values, and personal choices and learning orientations (p. 7).

Ambrose et al. (2010) further discussed students’ learning from both developmental and holistic perspectives.

(a) learning is a developmental process that intersects with other developmental processes in a student’s life, and (b) students enter our classrooms not only with skills, knowledge, and abilities, but also with social and emotional experiences that influence what they value, how they perceive themselves and others, and how they will engage in the learning process (pp. 3-4).

When referring to Chickering’s model, also articulated as the vectors of student development (Chickering, 1969), Ambrose et al. (2010) state that students’
developmental changes throughout their university education result in a cumulative
development of competence, identity, autonomy, purpose, and integrity, as well as
gaining capacities for managing emotions and freeing interpersonal relationships (pp. 160-162). Although students’ learning and development at university could be viewed through various perspectives and disciplines, I would underscore Ambrose et al.'s (2010) notion that “learning doesn't happen in a vacuum but in a course and classroom context where intellectual pursuits interface with socioemotional issues” (p. 180). Therefore, I will discuss next the students’ development of intellectual and social identities, as well as the importance of a course’s overall climate.

2.3.2. Learning and Intellectual Development

Although research on students’ intellectual development differs in the number of and the correlation between the steps of the development, most studies have described students’ intellectual development as a “trajectory from simplistic to more sophisticated ways of thinking” (Ambrose et al., 2010, p. 163). Ambrose et al. (2010) stated, “A student’s movement forward is usually propelled by a challenge that reveals the inadequacies of the current stage” (p. 163).

Perry’s scheme of student intellectual development demonstrated the student developmental trajectory by categorizing nine positions of the developmental process. In the lowest position of the developmental scheme, knowledge was perceived as a polarization between right and good versus wrong and bad, and true and accurate answers were believed to exist with teachers only (Perry, 1998). According to Perry, the trajectory from the lowest to the highest position in the developmental scheme was characterized by changes in students’ awareness and acceptance of uncertainty and relativism, pluralism and diversity of opinions, and by students’ ability to develop the agency and independence of their own thinking and learning. For Perry, the nine positions of the intellectual development scheme repeat and rotate during students’ learning at university, and they are central to students’ ethical development. Baxter Magolda (1992) indicated that a student's intellectual development was also impacted by peer relationships and peer organizations, institutional academic advising and counselling, co-operative education and internship opportunities, and international and any other learning programs beyond regular classroom activities.
2.3.3. Learning and Social Identity Development

Many studies have pointed out that social and emotional dimensions of students’ learning play an important role in students’ development, and when they interact with the overall classroom climate, these dimensions could strongly impact students’ learning and performance (Ambrose et al., 2010; Andres, 2004; Bransford et al., 2000; Marzano et al., 1988). Andres (2004) discussed the “dynamic relationship between students as agents within societal institutions and institutions as living structures that impact on the lives of students” (p. 3).

According to Ambrose et al. (2010), development of social identity “involves psychological changes that affect behaviors (such as social interactions), including those in the classroom” (p. 166). Pascarella and Terenzini (2005) claimed that students’ identity development is mainly related to: their identity formations; changes in academic and social self-concept and self-esteem; building autonomy and an internal locus of control; and, an overall increase of the sense of their own accountability, improvement of leadership skills, and enrichment of interpersonal relationships (pp. 228-249).

2.3.4. Learning and Course Climate

While many studies indicate that disciplinary and sociocultural aspects play a significant role in the intellectual and social identity development of university students, Kuh and Documenting Effective Educational Practice Project (2005) have argued that postsecondary institutions were responsible for creating effective educational practices and cultures that will foster and promote students’ personal development in addition to the higher levels of learning.

Ambrose et al. (2010) defined course climate as “the intellectual, social, emotional, and physical environments in which our students learn” (p.170). According to Ambrose et al., course climate has a profound impact on students’ learning, although it strongly depends on students’ perceptions: some students would recognize a particular course climate environment as explicitly or implicitly marginalizing, though others would have completely opposite perceptions (p. 171). Course climate, as described by Ambrose et al., could be seen as a complex grouping of the interconnected aspects of students’ learning, as in: faculty-student and student-student interactions; the
pedagogical tone that instructors establish in courses; class demographics and cases of stereotyping, and the cognitive and motivational threats associated with it; and the range and level of complexity and sensitivity of the course being taught (pp. 170-179).

2.3.5. Learning Activities

Vermunt (1996) described learning activities as thinking activities used for learning, and distinguished between cognitive, affective, and regulative or metacognitive types of activities (pp. 25-26). Cognitive activities, argued Vermunt, are “thinking activities that people use to process learning content. They lead directly to learning results in terms of knowledge, understanding, skill” (p. 26). Vermunt (1996) claimed, “Affective learning activities are directed at coping with the feelings that arise during learning, and lead to an emotional state that may positively, neutrally or negatively affect the progression of a learning process” (p. 26). Regulative or metacognitive learning activities were explained by Vermunt as activities that were “directed at regulating the cognitive and affective learning activities and therefore indirectly lead to learning results” (p. 26). Flavell (1979) proposed that metacognition could be conceptualized as thinking about thinking. This description still has common use. Further, metacognition is conceptualized as being comprised of two factors: knowledge (what individuals know about their own cognition and cognition in general) and monitoring/regulation (the set of activities that help students control their learning) (Flavell, 1979; Schraw & Moshman, 1995).

2.3.6. Approaches to Learning

Research on students’ learning has also been presented in terms of students’ approaches to learning. Cuthbert (2005) considered approaches to learning as students’ “conscious choices for learning,” and as very particular “intentions for different learning tasks depending upon the nature of the task and the context” (p. 239). Cuthbert proposes three main claims from the research related to students’ approaches to learning.

- Different approaches to learning cause differences in the learner’s engagement characteristics. These differences are described as: learning for understanding, learning for reproducing, or learning for achievement (p. 239).
Approaches to learning depend on students’ intentional selections of learning tools and rituals. Although students “may have habitual patterns of study behaviour that are derived from their prior experiences, study practices are situationally specific” (p. 239).

Since students’ approaches to learning are seen to be highly contextualized and task related, “it may be possible to ‘manipulate’ students’ intentions and achievement by manipulating the task and the context in which learning is to be carried out” (p. 239).

These authors conceptualized students’ approaches to learning as having two distinguishing approaches: surface and deep. The surface approach has often been described as ways of simplistic and dualistic thinking, where knowledge is seen to be a binary division between right and wrong, and learning is understood to be an instrumental effort to accurately reproduce information received from instructors (Cuthbert, 2005). Entwistle, Hanley, and Hounsell (1979) associated surface approaches with “operation learning,” where students focus on learning step-by-step while concentrating on an accurate grasp of details and procedures. These learning approaches could be related to what Pask and Scott termed “serialist learning” (Pask & Scott, 1972, as cited in Entwistle et al., 1979).

The opposite of the surface or operation learning performed by serialist learners (Pask & Scott, 1972) has been characterized in the literature as a deep, or, alternatively, “holistic” or “comprehensive,” approach to learning. This deep approach has been related to more sophisticated, transforming, contextual, and relativistic thinking. Some authors have described learning as deep when it explores logic and evidence and becomes an intrinsic quest for knowledge attainment, understanding, and application (Biggs & Tang, 2007; Bowden & Marton, 1998; Entwistle et al., 1979; Entwistle & Ramsden, 1983; Marton & Säljö, 1997; Pask & Scott, 1972; Rhem, 2009).

As Rhem (2009) wrote:

Thus, it comes as no surprise that students who reflect a deep approach to their studies are also the students who take greater responsibility for their own learning (self-regulation) and not only continually monitor their own studying, but put forth a more organized effort in it (para. 8).

Later in this chapter I will return to consider Rhem’s statement here in the discussion of metacognition and self-regulated learning.
Once studies about students’ learning expanded their focus from researching different levels of cognitive processing to exploring learning contexts, particularly the role of learning assessment, a third general approach to learning was identified as a “strategic” or “achieving” approach to learning (Entwistle, 1997). Strategic learning was related to students’ “perceptions of what they will be assessed on and how they will be assessed” (Rhem, 2009, para. 2), and to the students’ intention to “determine the implicit rules of the assessment game” (Entwistle et al., 1979, p. 366). Strategic learners put consistent effort into efficient studying, while being able to manage their time and effort effectively. They were described as being aware of the perceived teaching preferences and assessment requirements and criteria, and they could succeed in finding the right conditions and tactics for learning. As Ramsden (1979) stated, “the most striking single characteristic of students who use this approach is the ability to adapt, in a positive way, to the demands made by the context of learning” (p. 425).

The principal criticism of the scholarship on learning approaches is related to the validity and reliability of outcome measurement instruments. As Cuthbert (2005) has said, “the two constructs of Deep and Surface approaches appear to be generally supported, but that there is still some doubt about the ‘Strategic’ approach” (p. 246). Additionally, the research documented attempts to relate the deep-surface-strategic constructs with other models, such as self-regulated learning and need for cognition, were not quite successful (Cuthbert, 2005, p. 246). Cuthbert, (2005) made an important conclusion. “Clearly the Approaches to Learning School have paid too much attention to the learning context and too little attention to the importance of the ‘student context’ [emphasis added], thus providing a mirror image of the views of the Learning Styles School” (p. 246).

The intention of my research for this thesis was to address this claimed gap, and to focus on the student as a key element in the context of learning: by trying to understand learning as a profoundly contextualized and multifaceted activity that is shaped by student’s intertwined living, learning, studying, studenting, reflecting, and teaching contexts.
2.3.7. Learning Styles

There is a wealth of research on students’ learning styles. In 2004, Coffield, Moseley, Hall, and Ecclestone identified 71 different learning styles that had been articulated in the published literature. However, Coffield et al. indicated that “many proposed ‘styles’ consist of rather minor adaptations of one of the leading models and therefore lack influence on the field as a whole” (p. 1).

A substantial part of the research on learning styles was concerned with categorizing students’ learning based on how they receive and process information. The research was often narrowed to discipline-specific constructs instead of being more open to students’ and instructors’ reflections on learning. Moreover, it frequently over-emphasized measurements and inventories. The research on learning styles was also related to students’ implicit preferences, which could be focused less on learning and cognition and more on curriculum, instruction, and assessment. As Coffield et al. (2004) claimed, “the learning styles field is not unified, but instead is divided into three linked areas of [research] activity: theoretical, pedagogical and commercial” (p. 1).

Conflicting ideas about students’ learning and cognition in general have resulted in conflicting comprehensions and presentations of learning styles. According to Coffield et al. (2004), some research on learning styles originated from studies on brain functioning, for example, books on hemispheric specialization (left brain vs. right brain thinking). There was also a considerable body of research that explained learning styles through psychological theories related to intellectual abilities and personal traits; some researchers preferred the idea of fixed learning styles that could be accurately defined and measured while the others proposed that learning styles were flexible and contextualized, and even task specific. Other studies argued that researching “learning biographies rather than styles or approaches” had more value and relevance for student learning (Coffield et al., 2004, p. 2).

Cassidy (2004) pointed to the fragmentary and ambiguous nature of the research on learning styles, claiming that “the terms ‘learning style’, ‘cognitive style’ and ‘learning strategy’ are—understandably—frequently used imprecisely in theoretical and empirical accounts of the topic” (p. 420). Although Riding and Cheema (1991, as cited in Cassidy, 2004), distinguished between cognitive and learning styles, they regarded cognitive style
as an important component of learning style (p. 421). Hartley (1998, as cited in Cassidy, 2004) defined learning styles as strategies that are selected by learners to deal with different tasks. In addition, Martinsen and Kaufmann (2011) argued that the validity of the “construct of cognitive styles” depends on further understanding cognitive abilities, personality and motivational dispositions, and on differentiating task-specific strategies from higher-order strategies (pp. 214-216). Cassidy (2004) concluded that a learning style had a structure, but the structure is “responsive to experiences and the demands of the situation (process) to allow change and to enable adaptive behaviour” (p. 421).

When discussing general approaches to learning styles, Sadler-Smith (2001, as cited in Cuthbert, 2005) implied that the concept of learning styles was used too extensively in attempts “to describe a variety of individual difference constructs” (p. 243). As per Sadler-Smith, there were “too many conceptual frameworks and little agreement on how to assess styles” (p. 243).

Learning styles as a concept has been criticized on several grounds:

- The construct lacks a clear and explanatory framework because each identified learning style was likely to have its own distinct conceptual framework;
- Measurements of learning styles have been mostly connected to rank ordering, and there are problems with the ultimate reliability and validity of such measurements;
- There has been a failure to link learning styles to learning outcomes and achievement (An & Carr, 2017, pp. 410–412).


The appeal of this approach, which has gotten substantial public attention, is the premise that all students can succeed if the instruction is customized. However, experimental research has consistently shown that learning styles do not exist as described by the concept’s proponents, so categorizing and teaching children according to such styles is problematic. (Dembo & Howard, 2007; Pashler, McDaniel, Rohrer, & Bjork, 2008, as cited in National Academies of Sciences, Engineering, and Medicine, 2018, p. 137)
2.3.8. Cognitive Strategies

Criticisms of the general literature on learning have been directed at the use of such terms as "learning styles," "cognitive styles," "learning strategies," and "cognitive strategies," which have been described as often being used indistinguishably. For Martinsen and Kaufmann (2011), cognitive styles should be seen as "consistent individual differences in the ways people experience, perceive, organize, and process information" (p. 214) and cognitive strategies as "systematic methods people use to process information and solve problems" (p. 214). It should be noted that the now generally discredited construct of learning styles proposed those styles as individual differences that are not chosen by the learner or taught to them. On the other hand, cognitive or learning strategies are seen as teachable and developed through learning and experience.

The following section on students’ cognitive strategies focuses on the work of West, Farmer, and Wolff (1991), who define cognitive strategies as “a repertoire of ways to learn” (p. 26). West et al. remark further that cognitive strategies are a “collection of known ways that people learn” (p. 26.) They add that “some of these strategies will be familiar even though their names are not [emphasis added]” (p. 26). The cognitive strategies that they present and categorize are, they add, “true strategies used by real people [emphasis in original], by either novices or experts and sometimes by both” (p. 26).

Flavell (1979) makes a distinction between metacognitive strategies and cognitive strategies. “Cognitive strategies are invoked to make cognitive progress” [on the work of learning], “metacognitive strategies to monitor it [emphasis in the original]” (p. 909). Griffin, Wiley, and Salas, (2013) make further notice of the relationships between metacognition and cognition, as follows, “So while metacognitive knowledge contributes to cognitive processing, only monitoring of the ongoing learning experience has the quality of processing information about cognitive processes that defines metacognitive processing” (p. 21).

West et al. (1991) conceptualized their research on cognitive strategies by distinguishing between three types of knowledge and knowing.
• Declarative knowledge, also referred to as factual or propositional knowledge, they described as “knowledge that…” or “knowledge about…” (p. 15). For West et al., (1991), declarative knowledge connected facts, concepts, and principles into interactive and “seemingly endless networks” (p. 15).

• Procedural knowledge, which was associated with learning that was order specific and time dependent, was described as “knowing how…” (p. 16). According to these authors, procedural knowledge required starting and completing learning tasks and subtasks in a very particular and required order (p. 16).

• Conditional knowledge was seen by West et al. (1991) as a kind of hypothetical knowledge because it was related to understanding the conditions and task demands before deciding on applying particular learning strategies. They described conditional knowledge as “knowing when and why a particular cognitive strategy is appropriate” (p. 16).

West et al. (1991) also claim, “It is clear that procedural knowledge contains declarative knowledge so that these categories are not mutually exclusive” (p. 17). According to these authors, knowledge structure is also important for developing learning strategies. However, unlike many other researchers, West et al. did not believe that knowledge structure was domain or discipline specific. Instead, for them knowledge structure was characterized by the presence of logical order and an underlying theory or theories that could “allow general principles to be developed from facts and observations—which ultimately allow predictions” (p. 17).

West et al. (1991) grouped cognitive strategies into four “families”: chunking, spatial, bridging, and general-purpose (p. 20).

*Chunking strategies* were explained as a group of organizing strategies. West et al. (1991) claim that chunking strategies can help students with “intellectual management of large amounts of data or very complex processes or events” (p. 20). They emphasize the organizing attribute of chunking strategies and referred to chunking as grouping, clustering, arranging, classifying, and structuring with the goal of meaningfully organizing complex learning structures (pp. 36-38). “These chunking strategies are often ‘preparatory’ to other strategic processing” (p. 36).

*Spatial strategies* were interpreted by West et al. (1991) as learning strategies that used different forms of visual representations to organize fragmented facts and concepts to be learned. They state, “these strategies generally consist of patterns which may be visually displayed and consist of a ‘big picture’ displaying and organizing
substantial amounts of information” (p. 20.) They listed the following learning tactics as parts of spatial strategies:

- Frames, Type One and Type Two. Frames were described by West et al. (1991) as “matrices or grids which allow organizing relatively large number of facts, concepts or ideas” (p. 78). In Frames Type One, learners would populate grid slots with the information that they were able to recall from the instruction or reference to it; in Frames Type Two, learners would mainly rely on their previous knowledge that could be related to the new facts and ideas (pp. 78–79).

- Concept Maps. West et al. considered this tactic to be an important strategy for transferring the narrative or textual format of the major taught concepts into visually comprehensible structural arrangements. “Lines are drawn between associated concepts, and relationships between the connected concepts are named” (p. 21).

**Bridging strategies** were presented by West et al. (1991) as cognitive strategies that are able to help students “recall what they know and transfer that knowledge to new topics” (p. 114). These authors pointed to the importance of bridging strategies to students’ ability to retrieve and apply their previous knowledge, particularly because the “instruction proceeds from unit to unit, course to course or lesson to lesson with little or no connection, or bridging” (p. 114). They specified the following learning tactics associated with bridging strategies:

- Advance Organizer. This tactic was intended to provide a transition between learning prerequisites and the outline of the new content. According to West et al. it was “the task of the designer or teacher” and not of the students (p. 21).

- Metaphor, Analogy, and Simile. As bridges from something known to something new and unknown, these tactics could help “to sensitize students to similarities across knowledge arrays” (p. 21).

**General purpose strategies** were named “general purpose” by West et al. because they could be used in various teaching and learning contexts and disciplines. General purpose strategies include the following learning tactics:

- Rehearsal. Rehearsal strategies are learning tactics that are specific to students, and related to students’ note-taking, selecting and underlining, self-testing, clarifying, and predicting future assignments and exam questions, as well as to reviewing and summarizing (pp. 21-22, pp. 151-162).

- Imagery. West et al. viewed imagery as a very powerful learning tool that could be used by both instructors and students. They viewed imagery as a
powerful method for mental visualization of facts and concepts. They write, “imagery is a major way of storing knowledge in mind” (p. 22).

- **Mnemonics.** West et al. claim that mnemonics are “artificial aids to memory” (p. 22). They are used to encode new information in a way that will allow its easier and more effective storing and retrieval. West et al. identified four major mnemonic types: keywords; chains and links of strings and images that could generate a rhyme, story, or a picture; method of loci, which used the familiar places and locations to aid remembering of the unfamiliar (pp. 192-194); and single-use coding, which involves “using the first letters of each word to be remembered to create another word or a sentence” (p. 194).

It is important to note that West et al.’s comprehensive approach to learning strategies, although widely regarded and frequently quoted, was written for instructors and instructional designers only and was exclusive of research on students’ perspectives of their own learning tactics.

These authors also disregarded the impact of students’ very personal life and cultural contexts and the complexities of particular learning environments as influences on students’ understanding and selection of learning strategies. However, West et al. (1991) claimed that it was possible, and desirable, to teach students how to recognize and develop cognitive strategies while also teaching them discipline-specific content. They termed this teaching approach “reciprocal teaching,” where “strategy learning improves content learning and vice versa” (p. 18).

**2.3.9. Metacognition**

“Metacognition, in the sense of both regulation strategies and mental models of learning, plays a central role in regulating student learning in higher education” (Vermunt, 1996, p. 45). Velzen (2016) stated, “To prepare today’s students for their future life, they need to become independent learners who can further advance their own learning” (p. 1).

When discussing various components of metacognition Papaleontiou-Louca (2014) refers to different cognitive paradigms: theory of mind, metamemory, self-regulated learning, executive functions of brain areas, human interactions, and reflection on thoughts and actions. Research about metacognition, in a manner similar to the disciplinary diversity associated with the research on cognitive strategies and learning styles, is spread across several decades and over many research domains:
developmental psychology; experimental and cognitive psychology, as well as educational psychology, clinical and neuropsychology; social cognition and the studies of regulation of behavior and cognition. Papaleontiou-Louca claims that current approaches to metacognition “have rather vague boundaries” (p. 4), while Scott and Levy (2013) have pointed to a lack of clarity in defining metacognition (p. 120). Papaleontiou-Louca (2008) even stated that psychological theories are “presently awash in a ‘meta flood’ (metacognition, metamemory, metaperception, metalanguage, and so on)” (p. 1).

In a broad sense, the theory of metacognition proposes a two-component model, which involves knowledge and regulation. This theory relates metacognitive knowledge to knowledge of cognition, and metacognitive regulation to metacognitive skills and experiences (Scott & Levy, 2013; Tarricone, 2011). Metacognitive knowledge was first described by Flavell as “one’s knowledge concerning one’s own cognitive processes and products” (Flavell, 1976, as cited in Scott & Levy, 2013, p. 232). Metacognitive knowledge is linked to knowledge or personal beliefs that individuals have about their own learning. It is associated with self-knowledge, awareness, and reflection on one’s own knowledge, and is described as involving internal reasoning (Flavell, 1979; Papaleontiou-Louca, 2008; Pask & Scott, 1972; Tarricone, 2011; Velzen, 2016). Bransford et al. (2000) stated that metacognition refers to “people’s abilities to predict their performances on various tasks … and to monitor their current levels of mastery and understanding” (p. 12.). They also claim that research has shown that teaching practices that assist students in developing their capacities for metacognition and cognitive strategies “have been shown to increase the degree to which students transfer their learning to new settings and events” (p. 19).

In a very recent report, the National Academies of Sciences, Engineering, and Medicine have produced an extensive updating and revision of “How People Learn” by Bransford et al. (2000). The new report, titled “How People Learn II: Learners, Contexts, and Cultures,” has developed further descriptions of metacognition, self-regulation, and executive functioning. This report by the National Academies of Sciences, Engineering, and Medicine (2018) proposes three major processes as being important to understanding learning, learning environments, and instruction: metacognition, executive functioning, and self-regulation.
In the National Academies of Sciences, Engineering, and Medicine (2018) report, metacognition is described as “the ability to monitor and regulate one’s own cognitive processes and to consciously regulate behavior, including affective behavior” (p. 70). Metacognition is also proposed to encompass “the awareness individuals have of their own mental processes (cognitive and affective) and their consequent ability to monitor, regulate, and direct their thinking to achieve a desired objective” (p. 70). It is important to note that metacognition does not simply involve operational knowledge of cognitive strategies but includes an important affective dimension—how learners feel about and monitor their learning processes and continually assess their progress and effectiveness.

The National Academies of Sciences, Engineering, and Medicine (2018) report identifies executive function as an element more frequently addressed by psychologists and neuroscientists. Executive functioning refers to “cognitive and neural processing that involves the overall regulation of thinking and behaviour and the higher order processes that enable people to plan, sequence, initiate, and sustain their behaviour toward some goal, incorporate feedback, and make adjustments” (p. 70). Attributes such as persistence, patience, self-confidence, and resilience may be considered in the realm of executive functioning.

For the National Academies of Sciences, Engineering, and Medicine (2018), self-regulation refers to learning that is focused by means of metacognition, strategic actions, and motivation to learn. As the National Academies of Sciences, Engineering, and Medicine (2018) stated, “Self-regulation is seen as involving the management of cognitive, affective, motivational, and behavioral components that allow the individual to adjust actions and goals to achieve desired results” (p. 70).

The National Academies of Sciences, Engineering, and Medicine (2018) report offers the following summary: “Understanding the integration and interplay of these various levels of processing is important to understanding how learners orchestrate their learning in the context of their complex cognitive and social environments” (p. 70). They also claim that the integration and interrelation of these three dimensions is “critical for deeper or higher-order learning, and for the development of complex skills and knowledge such as reasoning, problem solving, and critical thinking” (National Academies of Sciences, Engineering, and Medicine, 2018, p. 70).
Of particular relevance to this thesis is the statement that “The growing body of research in this area [self-regulation] has highlighted how difficult it is for people to regulate their own learning in formal educational settings and the corresponding value of training to improve this capacity” (National Academies of Sciences, Engineering, and Medicine, 2018, p. 73).

In essence, self-regulation includes cognitive strategies such as those described by West et al. (1991), as well as metacognition, or the ability to monitor learning processes and assess their effectiveness while also considering one’s own responses and allocation of resources, including time and effort. In effect, self-regulation involves thinking for one’s learning, while metacognition involves thinking about one’s learning and one’s self as a learner.

The concept of declarative, procedural, and conditional knowledge, as used by West et al. (1991) in describing different learning strategies, have also been used in defining metacognitive knowledge. Taricone (2011) referred to them as: declarative meta knowing, procedural meta knowing, and conditional meta knowing. Additionally, metacognitive knowledge was grouped into three distinct classes: knowledge about person, knowledge about task, and knowledge about strategy (Brown, 1987; Scott & Levy, 2013; Taricone, 2011).

As Papaleontiou-Louca (2008) explained:

The person category encompasses everything that you might believe about the nature of yourself and other people as cognitive processors. It can be further categorized into beliefs about intraindividual differences, interindividual differences, and universals of cognition…. The second category is knowledge of task variables. The individual learns something about how the nature of the information encountered affects and constrains how one should deal with it…. Strategy variables are about what strategies are likely to be effective in achieving what goals in what sorts of cognitive undertakings. (p. 13)

Flavell (1979, as cited in Papaleontiou-Louca, 2008) classified metacognition into four categories: metacognitive knowledge, metacognitive experiences, goals or tasks, and actions or strategies.

The following is the summary of the perceived intersection between declarative metacognitive knowledge and person/task/strategy classes.
Declarative knowledge about person was presented as: knowledge of self and others, including self-esteem; personal beliefs about memory and learning abilities; awareness of own prior knowledge, skills, and experiences; knowledge of own strengths and weaknesses; knowing when and what one knows, does not know, and needs to know; knowledge about own emotions and motivation related to learning; and, judgments and reflections about oneself (Brown, 1987; Tarricone, 2011).

Declarative knowledge about task was described as: knowledge and beliefs of task objectives, demands, and complexity; knowledge about task detailed information, structure, and context; and knowledge about task objectives, which could include identifying possible solutions (Brown, 1987; Tarricone, 2011).

Declarative knowledge about strategy was seen as: knowledge, sensitivity, and beliefs about particular cognitive actions and strategies (Brown, 1987; Tarricone, 2011).

The following is a summary of the perceived intersection between procedural metacognitive knowledge and person/task/strategy classes.

Procedural knowledge about person was presented as: knowledge about how to select learning strategies and their effectiveness and limitations; knowledge about how to plan cognitive actions that would match self-knowledge and self-awareness of prior learning experiences and one’s cognitive capabilities (Brown, 1987; Tarricone, 2011).

Procedural knowledge about task was described as: knowledge about how to identify, select and employ task-specific strategies; awareness of strategy applicability to meet particular task objectives; knowledge of meta-task (Brown, 1987; Tarricone, 2011).

The following is a summary description of conditional metacognitive knowledge, as offered by Brown, (1987) and Tarricone, (2011). Conditional metacognitive knowledge has also been termed contextual knowledge and competence. Conditional meta knowing was seen as: knowledge and awareness of the conditions that affect learning, including strategies’ effectiveness, appropriateness, and applicability (Brown, 1987; Tarricone, 2011).

Metacognitive experiences, also presented as regulation of cognition, include regulation of metacognitive skills, executive functioning, and metacognitive experiences. It has also been proposed that metacognitive experiences involve regulatory abilities and
processes such as: predicting, planning, reality testing, controlling, monitoring, coordinating, revising, and evaluating. Regulation of cognition implicated reflective awareness of control, and regulation as well as following, reviewing and monitoring strategy efficacy (Brown, 1987; Papaleontiou-Louca, 2008; Tarricone, 2011).

Velzen (2016) noted: “Flavell considered metacognitive knowledge to be crucial for students. He meant by this that students who can learn of their own accord, would be students who are capable of thinking through their general knowledge of the learning process” (p. 16).

Papaleontiou-Louca (2003) referred to Brown (1987) when she noted that:

Knowledge about cognition can be ... information that human thinkers have about their own cognitive processes, which usually remains relatively consistent within individuals.... Regulation of cognition refers to the activities used to regulate and oversee learning. One may show self-regulatory behavior in one situation but not in another (p. 11).

As Velzen (2016) wrote, “the theories of both Flavell and Brown indicated that metacognitive knowledge consists of an awareness and an understanding that can help learners to learn effectively” (p. 17).

2.3.10. Self-Regulated Learning

This review of research on metacognition will be concluded by discussing the notion of self-regulated learning. According to Zimmerman, Bonner, and Kovach (1996), “academic self-regulation refers to self-generated thoughts, feelings, and actions intended to attain specific educational goals, such as analyzing a reading assignment, preparing to take a test, or writing a paper” (p. 2).

There has been considerable confusion and argument in some literature about the differences between metacognition and self-regulation, with the two terms sometimes being treated as synonymous. Metacognition can be seen as being within the realm of the mind and with much less concern about the human-environment interaction. On the other hand, concepts of self-regulation emphasize the importance of person-environment interactions (Bandura, 1977). Self-regulation consists of “higher order control of lower order processes responsible for the planning and execution of behavior”
in addition to emotional control (Banfield, Wyland, Macrae, Munte, & Heatherton, 2004; Efklides, 2006, as cited in Schwartz, Scott, & Holzberger, 2013).

The National Academies of Sciences, Engineering, and Medicine (2018) report notes that self-regulation is a “key element of the broader concept of metacognition, the capacity to reflect on and monitor one’s own cognitive processes” (p. 73). It also claims that self-regulation is a self-directive process and a set of thought patterns through which learners organize their activities to build skills. “Successful self-regulated learners have developed the skills and habits to be effective learners exhibiting effective learning strategies, effort, and persistence” (p. 73).

The National Academies of Sciences, Engineering, and Medicine report cites Carver and Scheier’s (2017) description of self-regulation as the “self-corrective adjustments [that] are taking place as needed for the learner to stay on track, whatever the [learner’s] purpose is” (National Academies of Sciences, Engineering, and Medicine, 2018, p. 73).

Zimmerman et al. (1996) developed a cyclic model of self-regulated learning, comprised of the following interrelated learning processes:

- **Self-evaluation and monitoring** are related to students’ self-evaluation of their learning effectiveness. As per Zimmerman et al., self-evaluation and monitoring could benefit from self-testing and feedback from instructors, peers, and parents (p. 12).

- **Goal setting and strategic planning** includes students' analysis of learning tasks, setting the goals, and deciding on the strategy to achieve the goals.

- **Strategy-implementation monitoring** happens during implementation of the chosen learning strategy and involves self-monitoring of the implementation progress. Zimmerman et al. proposed that the students’ continuing practice and concrete, explicit feedback were important for this step (p. 12).

- **Strategic-outcome monitoring** happens during students’ attempts to determine the learning effectiveness by connecting their attention with learning outcomes. Zimmerman et al. claimed that the learning task and context, as well as personal factors, could impact the successful completion of this step (p. 13).

Zimmerman et al. also argue that their model of self-regulated learning is cyclic “because self-monitoring on each learning trial provides information that can change subsequent goals, strategies, or performance efforts” (p. 13). In addition, they claim that
“the self-regulatory cycle gives students a sense of personal control that has been shown to be a major source of intrinsic motivation to continue learning on one’s own” (p. 3). The National Academies of Sciences, Engineering, and Medicine (2018) report also notes that there is a need for extensive research on the complex processes that are involved in self-regulation, including memory and learning and the relationships between self-regulation and executive functioning.

2.4. Learning Environments

The focus of the research for this thesis is on how learners view themselves as learners and understand and appreciate the range of factors that affect their approach to different learning tasks. Brown and Duguid (2002) state that learning is a meaning driven, identity forming, and socially situated process. Learning environments, in the broadest sense, can affect the development of learner’s conceptions of themselves as learners and their acquisition of skills in self-regulation and self-direction. Bransford et al. (2000) indicate that “the design of learning environments is linked to issues that are particularly important in the processes of learning transfer and competent performance” (p. xvi). They state further, “those processes are in turn, affected by the degree to which learning environments are student centered, knowledge centered, assessment centered, and community centered” (p. xvi).

Learning Environments have also been considered from the perspectives of student experiences. The PLACES Inventory (Zandvliet, 2012) has been used in research examining student perceptions of learning environments, with particular reference to the social climate established between teachers and students and among students. The psychosocial factors considered in the PLACES inventory are Cohesiveness, Shared Control, Open Endedness, Relevance, Involvement, and specific educational attention to local biophysical and sociocultural environments.

Learning environments are now to be found in a wide array of settings and arrangements, whether physical, digital, or virtual and there is now wide access to opportunities for learning across the spectrum of ages, genders, cultures. Former barriers of time, place, and available instruction are now being completely reconfigured. Definitions of schooling and curriculum are being redrawn.
2.5. Summary

Research on the nature of learning has a considerable history and continues into the present. Increasing attention is now being directed at the neurological or “brain-based” dimensions of learning and research on the learning of humans and animals is beginning to be applied to the fields of robotics, artificial intelligence, and machine learning. Questions on the nature of intelligence and consciousness, once very much the province of philosophy and psychology, are now relevant to medicine, engineering, and computer sciences. The role of experience and instruction, whether mediated or direct, in fostering and enabling human intelligence and performance continues to be a relevant area for research.

The focus of the research for this thesis is on seeing the learning experiences of a group of university students through their perspectives, meanings, and contexts and with an emphasis on how they perceive themselves as learners and describe how and why they approach the work of learning. The approach is very phenomenological and qualitative.

There has been considerable research on student responses to particular learning environments, but they have mainly been conducted using survey methods, often as an element of program or institutional evaluations. Other research has focused on student achievement, attrition, or post graduate successes, frequently using mixed method or qualitative survey-based approaches. Teaching and teachers, specific content, instructional tactics, or student achievement were not the focus of this work, although both content and instruction can play critical roles in how students approach and accomplish learning. Instead, my intent is that we will see teaching, content, and learning environments through the students’ eyes not with the purpose of evaluating teachers or programs but rather to gain an appreciation of how they affect students’ awareness and identities as learners.
Chapter 3.

Methodology

_Inquiry is not an abstract exercise but a living practice…. Usually we are too busy reacting that we do not stop to reflect and examine our response. Inquiry starts at this point of stop. From this place of stop, we question the necessity of “the way things are,” and address the possibility of seeing the world and the self differently and hence relating to the world differently._

(H. Bai, 2005, p. 47).

My research for this thesis was in the form of an inquiry into the perceptions by a group of senior undergraduate students of their learning processes and experiences in the Faculty of Health Sciences (FHS) at Simon Fraser University (SFU). In my own employment, I have been involved with students’ university learning for many years and in many different capacities: as an academic advisor, curriculum developer, and policy maker. This thesis is my place of stopping, questioning, internalizing, and reflecting.

3.1. Qualitative Research

_Qualitative inquiry cultivates the most useful of all human capacities: to learn._


The research for this study was in the genre of a qualitative inquiry because its goal was to explore what students understood of their learning and their lives as learners. It was not the purpose of this research to measure, test, quantify, compare, categorize, or generalize. Instead, the intent was to deepen my understanding and extend my knowledge of the students’ experiences as workers of learning and to interpret the “understandable meaning of these experiences” (Lindseth & Norberg, 2004, p. 146).

Etymologically, the word “qualitative” is derived from “qualis,” which means “whatness” (van Manen, 1990, p. 33). In this study I sought to understand the whatness of how particular students learn and how they describe and make meaning of their learning experiences. My purpose was to discover the whatness of the students’ specific
learning situations that constitute their experiences as well as the wholeness of that experience. I also chose a qualitative research approach because it could promote the discovery of lived realities, including their range, depth, variability, and numerous layers of meaning (Woods, 1992). The keyword in this discovery process is experience—the way we see, feel, and sense the world we live in; experience as being both “an interpretation and in need of interpretation” (Olesen, 1994, p.167).

Van Manen (2003) asserts that any unique human experience presents particular challenges and can become a valid topic of qualitative research. Our experiences originate from our distinctive interpretations of individual engagements with social and cultural symbols, practices, and forms that are and need to be contextualized within larger forces that shape them (Kincheloe & McClaren, 1994). As Woods (1992) writes, “people act on the basis of meanings that objects have on them. They do not respond to an objective reality or to how others perceive it but, rather, to how they interpret it” (p. 351).

Since the main goal of the study was to explore and understand the meaning and essences of students’ experiences as workers of learning, I chose a qualitative research approach because it cultivates this exploration and understanding by:

- concentrating on the wholeness of students’ perceived experience;
- appreciating students’ experience as central to understanding their learning behaviours and actions in an inseparable relationship of subject and object and of parts and whole;
- and framing the research problem and inquiries that reflect my particular research interests and commitments (Moustakas, 1994, p. 21).

Qualitative research and discovery through exploration, meaning making, and storytelling generally includes two broad worldviews: emic, owned by those within the observed group culture; and etic, owned by culturally “neutral” observers. These two worldviews are different, and our inquiry should be mindful of these dissimilarities and possible inconsistencies in empirical representations (Guba & Lincoln, 1994). The final goal is to use diverse individual experiences to understand the present and possible future, and “to distill a consensus construction that is more informed and sophisticated than any of the predecessor constructions” (Guba & Lincoln, 1994, p. 111).
Maxwell (2005) identifies five intellectual and three practical goals of qualitative studies. The five intellectual goals could help researchers to:

1. Understand the meaning of situations, experiences, and actions;
2. Understand the context and its impact on processes and participants’ actions;
3. Identify unanticipated phenomena and their influences;
4. Understand the processes that drive the actions;
5. Develop causal explanations.

The three practical goals allow researchers to:

1. Generate understandable and experientially credible research results;
2. Improve existing practice through understanding processes and situations;
3. Engage in collaborative or action research with practitioners or research participants (pp. 22-24).

The principal intellectual goal of my research aligns with Maxwell’s interpretations of qualitative studies, because my goal was to understand the meanings that students attached to their learning experiences in the FHS. I was interested in painting a comprehensive landscape of university students as workers of learning. I wanted to learn about the particular, very personal life contexts that may shape who they are as students. Furthermore, my goal was to understand how students make meaning of their learning within the broader conditions of their everyday lives and to understand the ways those complex and somewhat unpredictable conditions affected their learning at university. The main practical goal of my study was to develop an understandable and plausible narrative of my understandings of students’ learning that could inform and improve my administrative and pedagogical practices at SFU.

While SFU conducts regular institutional surveys of students’ university experiences, they are mostly oriented to students’ general perceptions and satisfaction with campus community and facilities, course availability, and the university’s policies and services. SFU’s Institutional Research and Planning (IRP) department conducts annual Undergraduate Student Surveys (UGSS), with the goal to collect broad
demographic information about undergraduate students and to provide student feedback on a variety of topics, ranging from course availability, variety, and scheduling to the university’s programs’ and courses’ curriculum and formats and to the university culture and environment as they affect students’ social connections and well-being (SFU Institutional Research and Planning, 2017a, 2017b).

From 2009, SFU has been participating in the National Survey of Student Engagement (NSSE), a comprehensive survey of American and Canadian postsecondary institutions. SFU claims, “The multi-institutional nature of the survey allows us to compare results between SFU and groups of comparator institutions” (National Survey of Student Engagement [NSSE], 2017, para. 1).

Also, every academic term SFU conducts university administered student evaluations of courses and teaching (Student Evaluation of Teaching and Courses, n.d.). Although these evaluations provide important student feedback on teaching and curriculum, they are typically designed as quantitative surveys in which students are asked to respond using a rating scale to questions created by faculties and departments. The evaluation surveys give students very limited opportunities to fully and profoundly reflect on their actual learning experiences.

A majority of these studies involve quantitative analyses and survey methodologies, measuring students’ satisfaction with teaching or with campus life, advising and counselling assistance, together with financial and other elements of student services and auxiliary support. However, no strategic attempts have been made by the university to conduct extensive qualitative studies that would solicit very detailed, vivid, as well as elusive, qualitative descriptions and explanations of students’ personal experiences and views of their learning skills and processes.

According to Creswell (2007), qualitative research approaches emphasize the relevance and usefulness of descriptions and explanations, which help acquiring a more profound understanding of the social world and the socially constructed nature of reality. Those qualitative descriptions and explanations are as much personal as they are embedded in specific collective experiences (Holstein & Gubrium, 1994).

I selected a qualitative research approach because my focus was also on the mystery of individuality (Gadamer, 1984) as it relates to the work of learning, students’
individual perceptions of their unique learning processes and contexts, and their very particular interpretations of their diverse academic, personal, and social approaches to learning. As Rose (2016), has pointed out:

Almost everything in traditional educational systems remains designed to ensure students receive the same exact standardized experience…. We continue to enforce a curriculum that defines not only what students learn, but also how, when, at what pace, and in what order they learn it (p. 188).

Instead of understanding students’ average or general approaches to completing learning tasks, the qualitative study for this thesis was trying to be responsive to the students’ very unique individual experiences.

My attempt was also to follow Preissle’s notion that qualitative researchers should, first, attempt to realize the balance between theories, methodologies, and practices as they observe, collect, and communicate information, and second, understand and interpret the world within chosen frameworks while documenting quests for deeper understandings and assess the quality and legitimacy of the findings Preissle, (2011).

Qualitative researchers are supposed to be reflective storytellers who “wonder, target audiences, strategically select material, consider format, keep the forest and the trees, acknowledge mutual influence, make each piece count, [are] pragmatic, and own the process” (Ellingson, 2011, p. 601). Qualitative researchers are practitioners and scholars. They are explorers who develop very delicate and complex relationships with their research subjects, participants, and stories. Researchers and participants complement each other in searching for systematic descriptions, explanations, and meanings (Olesen, 1994). “In a certain sense, participants are always ‘doing’ research, for they, along with the researchers, construct the meanings that become ‘data’ for later interpretation by the researcher” (Olesen, 1994, as cited in Denzin & Lincoln, 1994, p. 166).

Researchers and participants, as well as the collected data and its analysis, reciprocally inform each other through evolving creative iterative processes (Charmaz, 2011). These processes generate a vibrant dialogue about “multiple ways of seeing and hearing, multiple ways of making sense of the social world, and multiple standpoints on what is important and to be valued and cherished” (Greene, 2007, p. 20).
So, what does a composite and comprehensive portrait of a qualitative researcher look like? Who is this reflective storyteller, the inquirer into what is worth understanding and knowing, the scholar researching the most unpredictable of all subjects: humans?

This researcher thinks historically and interactionally, always mindful of the structural processes that make race, gender, and class potentially repressive presences in daily life. The material practices of qualitative inquiry turn the researcher into a methodological (and epistemological) *bricoleur*.... The interpretive *bricoleur* can interview; observe; study material culture; think within and beyond visual methods; write poetry, fiction, and autoethnography; construct narratives that tell explanatory stories; use qualitative software; do text-based inquires; construct testimonios using focus group interviews; and even engage in applied ethnography and policy formulation. (Denzin & Lincoln, 2011, pp. 681-682)

### 3.2. Hermeneutic Phenomenology

This thesis aims to tell the tale of student participants’ work of learning through describing the varied and complex life circumstances that shape students’ learning approaches and experiences. The thesis attempts to seize the essences of true, immediate, and unhindered *human experience* as it is lived and perceived, and then to articulate the *meanings of these experiences* and narrate them in an interpretive way. Van Manen’s framework of Hermeneutic Phenomenology was the research method used to achieve these main research goals.

#### 3.2.1. Van Manen’s Hermeneutic Phenomenology

Van Manen’s hermeneutic phenomenology is based on the philosophical traditions and ideas of *phenomenology* and *hermeneutics*. Van Manen defines a phenomenon as an object of human experience and phenomenology as the “science of phenomena” (van Manen, 1990, p. 183). Phenomenology is often termed a philosophical approach to the study of experience (Smith, Flowers, & Larkin, 2009). Phenomenology is “what is given to us in immediate experience without being obstructed by pre-conceptions and theoretical notions” (van Manen, 1990, p. 184). Van Manen (1990) writes that “phenomenological research aims at establishing a renewed contact with original experience” (p. 31). He defines hermeneutic phenomenology as a “method of abstemious reflection on the basic structures of the lived experience of human
existence” (van Manen, 2014, p. 26) and outlines the meaning of the terms *method*, *abstemious*, and *hermeneutic* as follows: “The term *method* refers to the way or attitude of approaching a phenomenon. Abstemious means that reflecting on experience aims to abstain from theoretical, polemical, suppositional, and emotional intoxications [emphasis in the original]” (van Manen, 2014, p. 26). “Hermeneutics is the theory and practice of interpretation” (van Manen, 1990, p. 179). Hermeneutics is typically applied to the interpretation of textual explications of lived experiences. “Lived experience means that phenomenology reflects on the prereflective or prepredicative life of human existence as living through it” (van Manen, 2014, p. 26).

Hermeneutic phenomenology as an interpretative phenomenology is further explained by van Manen in the following way:

Hermeneutic phenomenology tries to be attentive to both terms of its methodology: it is a *descriptive* (phenomenological) methodology because it wants to be attentive to how things appear, it wants to let things speak for themselves; it is an *interpretive* (hermeneutic) methodology because it claims that there are no such things as uninterpreted phenomena. The implied contradiction may be resolved if one acknowledges that the (phenomenological) "facts" of lived experience are always already meaningfully (hermeneutically) experienced. Moreover, even the "facts" of lived experience need to be captured in language (the human science text) and this is inevitably an interpretive process. (van Manen, 1990, pp. 180–181)

The concepts of “lifeworld,” or the world of lived experience, are important notions for understanding van Manen’s framework of hermeneutic phenomenology. Husserl (1970) described the lifeworld as the “world of immediate experience” and as the world of “original natural life” (1970, pp. 103–186, as cited in van Manen, 1990, p. 182). These immediate experiences are frequently taken for granted, argues van Manen, adding that the “everydayness of daily life” should not be ignored in phenomenological research (van Manen, 2014, p. 42). Van Manen (1990) writes, “the (phenomenological) ‘facts’ of lived experience are always meaningfully (hermeneutically) experienced” (pp. 180–181), and in observing and interpreting somebody else’s lived experience, we are only attempting to understand it and not to re-experience it (van Manen, 1990).

Lindseth and Norberg (2004) further explicate the “facts” of lived experience.

When the interviewees give expression to their lived experiences … the researcher does not want to seize on these experiences as something
‘factual’, as psychic, social or historical events that need explanation. As phenomenologists we want to focus on the understandable meaning of these experiences. (p. 146)

Van Manen lists the following six activities for the purpose of researching, interpreting, and understanding lived experiences:

1. Turning to a phenomenon which seriously interests us and commits us to the world (in this case, the approach of students towards their work as learners and the larger contexts in which they engage as students);

2. Investigating experience as it is lived rather than as we conceptualize it;

3. Reflecting on the essential themes which characterize the phenomenon;

4. Describing the phenomenon through the art of writing and rewriting;

5. Maintaining a strong and oriented pedagogical relation to the phenomenon;


Van Manen views hermeneutic phenomenology as a method that inspires wonder, stimulates reflection and thoughtfulness. “Phenomenology is about wonder, words, and world” suggests van Manen (2014, p. 13). Its main purpose is to question the meaning of life (van Manen 2014) and to “seize the meaning of the world” (van Manen, 1990, p. 183). He writes about the importance of lived meaning as “the way that a person experiences and understands his or her world as meaningful. Lived meanings describe those aspects of a situation as experienced by the person in it” (van Manen, 1990, p. 183).

The hermeneutic phenomenology framework stresses intentionality in researching intentional behaviours and actions. Van Manen (1990) states that “all human activity is always oriented activity” (p. 182). The students in this study understood and interpreted their approaches to university learning as being intentional and purposeful doings. I used hermeneutic phenomenology as the interpretative and introspective framework to help me evoke my reflective awareness about the students’ intentional learning that was being observed as well as my own research intentionality (van Manen, 2003).
Van Manen proposes that,

A phenomenologist does not present the reader with a conclusive argument or with a determinate set of ideas, essences, or insights. Instead, the he or she aims to be allusive by orienting the reader reflectively to that region of lived experience where the phenomenon dwells in recognizable form. More strongly put, the reader must become possessed by the allusive power of text-taken, touched, overcome by the epiphanic effect of its reflective engagement with lived experience. (van Manen, n.d.-b, para. 4)

3.3. Setting of the Study

The purpose of my research was to understand students’ perceptions of their own learning processes by exploring the stories I heard from a selected group of undergraduate students who were in their final academic term in the FHS at SFU. Since the focus of the research was on the undergraduate students’ experiences, only demographic profiles and other general characteristics of the undergraduate student population will be emphasized in describing the setting of the study.

3.3.1. SFU

SFU is a mid-sized university located in western Canada, offering undergraduate and graduate degrees in a variety of disciplines, from contemporary arts and social sciences to engineering and life and environmental sciences. In 2017, SFU had approximately 30,000 undergraduate and 5,000 graduate students, and 6,500 employees. The following demographic details and numbers are associated with surveys conducted between 2016 and 2018.

The average SFU undergraduate student is 22 years old and takes 3-4 courses per 4-month semester. Fifty-four percent of SFU students are female, and 60% speak at least one non-English language at home (SFU Institutional Research and Planning, 2017a, 2017b, 2018b). Sixty six percent of SFU students came directly from high school, and 22% of are first generation postsecondary students. Getting a good job, training for a specific career, and fulfilling a desire for knowledge are reported by SFU students to be the most important reasons for coming to university (SFU Institutional Research and Planning, 2017b).
The majority of SFU students are in good academic standing: only 4% of students with reported grades have a Cumulative Grade Point Average (CGPA) below 2.00, on the scale between 0 and 4.33. Thirty-four percent of SFU students have a CGPA of 3.00 or above, and 36% have a CGPA between 2.00 and 2.99 (SFU Institutional Research and Planning, 2017b). Fifty-five percent of SFU students are employed or self-employed while enrolled in courses at SFU, and 31% work outside the university for 20 or more hours per week (SFU Institutional Research and Planning, 2017b).

The NSSE survey conducted in 2017 reported that SFU students had “many demands on their time” and that they lived “full, busy lives” (NSSE, 2017, para. 3). The NSSE survey also indicated:

Compared to Canadian and other BC [British Columbia] research universities, they [the SFU students] report more time working for pay off-campus; more hours commuting; more time caring for dependents (children, parents, etc.); and more time engaged in community service and volunteering. In a typical 7-day week, the estimated number of working hours for first year respondents was 9 hours and close to 14 hours for seniors, which is higher than respondents in other Canadian institutions and much higher than those in other BC research universities (NSSE, 2017, para. 3).

SFU students report being generally satisfied with their learning experiences at university. They are satisfied with the overall quality of teaching and with the solid critical thinking and analytical skills they gain at SFU, in addition to acquiring discipline-specific knowledge (SFU Institutional Research and Planning, 2017a). Because of the students’ considerable work and volunteer commitments, as well as reported long commutes to SFU campuses, often through difficult traffic and poor public transit, they are less likely to participate in campus events. The NSSE survey suggests that SFU students, although academically engaged, feel that SFU does not provide them with enough opportunities for social involvement and further engagement with their institution (NSSE, 2017, para. 5). According to the 2016 SFU survey, just one third of students have participated in department, program, or faculty events, and only 9% of students have participated in any form of student government (SFU Institutional Research and Planning, 2017a).

On average, it takes 16.5 semesters, or approximately 5.5 years, for SFU students to complete their undergraduate degree. Although almost two thirds of SFU
students feel that it takes longer than expected to complete their degrees, 41% of students intentionally take a reduced course load because of their extracurricular commitments and a variety of other reasons, including co-operative (co-op) work placements arranged by SFU (SFU Institutional Research and Planning, 2017a, 2017b).

3.3.2. FHS

The first attempts to unite some already existing but dispersed health related programs offered at SFU were made in 1992 in order to identify existing unique and original fields of health research and teaching. Interests in starting a health research and education program at SFU became stronger in 1999 and were encouraged by some external factors: reorganization of federal funding for research in health sciences; increased priorities related to public and population health on both, federal and provincial government levels; and a global increase in awareness of health care and policy deficits. As a result, the Institute for Health Research and Education (IHRE) was established in 2000, with the goal to foster health-related research, particularly collaborations between the biomedical, clinical, and social science research areas, and to develop a graduate program in public health at SFU. The vision of the IHRE was approved by the SFU Senate, which started final preparations for development of the new faculty (Institute for Health Research and Education. Simon Fraser University, 2000).

The SFU Senate and Board of Governors approved the establishment of the new FHS at SFU effective September 1, 2004. The first complement of faculty and staff arrived in 2005, and the first cohort of Master of Public Health (MPH) students began their graduate studies in the FHS in Fall 2005. Undergraduate programs in the FHS were developed soon after: a Bachelor of Arts (BA) in Health Sciences was first offered in Fall 2006, and a Bachelor of Science (BSc) in Health Sciences started in Fall 2007. The Master of Science (MSc) program was introduced in 2009 and a Doctor of Philosophy (PhD) program in 2011 (Simon Fraser University. Faculty of Health Sciences, 2013).

In 2010, the FHS was accredited by the Council on Education for Public Health (CEPH). The FHS was the first Canadian English-speaking undergraduate and graduate university program in public health to receive this prestigious international accreditation (Simon Fraser University. Faculty of Health Sciences, 2013).
In partnership with local, national, and global communities and with a commitment to interdisciplinary research and knowledge, the FHS curriculum focuses on improving the health of individuals and populations and on reducing health inequities. The FHS’s BA and BSc degrees are intended to provide students with a comprehensive understanding of health care needs and a sense of the importance and relevance of population health in the new economy (FHS Accreditation Report, 2015).

The BA program focuses on the socioeconomic determinants of health, health policy, promotion, and communication and on disease prevention and control. The BSc program focuses on understanding biomedical factors of diseases as well as on epidemiological and quantitative approaches to public health (FHS Accreditation Report, 2015).

The FHS’s principal goals are to prepare students to become agents of positive social change, leaders of community engagement, and change makers in health promotion and innovation. The FHS’s mission and its core values are to provide students with an excellent education that will make a difference in their lives and help them apply their learning to make a difference in the world (FHS Accreditation Report, 2015).

The FHS has 1,413 undergraduate students, of which 60% are registered in the BSc program and 40% in the BA program. The average age of FHS undergraduate students is 22, and about 70% of them are female. Sixty-seven percent of FHS undergraduates are employed or self-employed, which is significantly higher than among SFU undergraduates generally (55%), and 50% of FHS students work up to 20 hours per week. Despite their high employment rates, FHS students take on average 4 courses per semester and they have higher GPAs in comparison to the general SFU student population. The average CGPA of an undergraduate FHS student is 2.93 for lower division courses, and 3.18 for upper division courses; comparable CGPA averages among SFU undergraduates generally are 2.72 and 3.05 respectively, on a 0 – 4.33 SFU grading scale (SFU Institutional Research and Planning, 2017a, 2017b, 2018a).

3.4. Participant Selection

My research used a purposeful sampling of participants because I wanted to select FHS students who would be able to “purposefully inform an understanding of the
In addition to the approval by SFU’s Office of Research Ethics, a permission to conduct this study was obtained from Dr. John O’Neil, the Dean of the FHS (Appendix A).

3.4.1. Recruitment of Participants

The study was designed to focus on participants who were senior FHS students, who were in their fourth undergraduate academic year at SFU and were enrolled in courses offered in the Spring 2014 semester. One of the main issues I faced in participant recruitment and also in the collection of data was that in my role as a staff administrator within the Faculty and as a person who has regular contact with many undergraduate students I might potentially influence the willingness of students to participate in the study or affect the results. In order to address selection bias in the recruitment of participating students, a trusted colleague, the Undergraduate Academic Advisor from the FHS Education Programs unit, was asked to assist me in the recruitment process. I decided to recruit participants from a list developed by my colleague that included potential study candidates who met a set of criteria that I provided.

3.4.1.1. Sampling Strategies

A purposeful stratified sampling was employed in order to ensure the appropriate selection of the sample and to adequately capture its heterogeneity. Since the research was designed as a phenomenological study, the main focus of the sample was not intended to be on representation, generalization, and distribution. Stratification was used to divide the population of FHS students into four subgroups before the final recruitment of participants would take place. The following criteria were applied to the selection of participants:

- Because the goal of the research was to understand the learning approaches and experiences of undergraduate students in their last academic year in the FHS, only Level 8 students were invited to participate. SFU’s Student Services recognize eight levels of students’ academic progression based on the
number of academic units that students have completed. A four-year bachelor's degree program at SFU consists of eight levels. Level 8 is the final level and includes students who have completed 105 or more academic units.

- The sample criteria also selected as potential participants Level 8 FHS students who had completed 105 or more academic units prior to the start of the Spring 2014 term and who were registered in at least one course at SFU (minimum of 3 credits) at the end of the third week of classes for the Spring 2014 term.

- Potential participants were to be FHS students who had an above average upper division GPA. According to the data I obtained from SFU’s Institutional Research and Planning (IRP), the average upper division GPA for FHS students in Spring 2014 was 3.05, so only students with an upper division GPA of 3.06 or higher were invited to participate in the study.

- Students’ gender and their program of study at FHS were used as stratification criteria. Since the FHS has two distinct undergraduate programs—a BA, focused on social sciences, and a BSc, focused on life sciences—the following four subgroups of FHS students were created for consideration as possible study participants:
  - female BA students;
  - male BA students;
  - female BSc students;
  - and male BSc students.

### 3.4.1.2. Participants’ Selection Procedure

To identify a pool of potential participants for the study, I employed the following procedures:

1. My colleague, the FHS Undergraduate Academic Advisor, was provided with the inclusion and stratification criteria for selection of potential study participants.

2. Based on the criteria, my colleague used SFU’s Student Information Management System (SIMS) to identify students who would meet the inclusion criteria.

3. A total of 123 FHS students met the above stated inclusion criteria with 60 in the FHS BSc program (49%) and 63 in the BA program (51% of the students). The students’ average upper division GPA was 3.48, and 93 (76%) of the students were female.

4. I gave my colleague the Invitation Letter (Appendix B) and the Consent Form (Appendix C) and asked her to email it to all the
students who were identified as meeting the study criteria, with a request that they reply to her directly.

The study was designed to proceed in the following way:

1. My colleague would provide me with the list of SFU student ID numbers for those students who agreed to participate. The list that I was given would not include student names, personal information, or academic records.

2. I would randomly select four students in each subgroup using a computer algorithm.

3. I would give the SFU ID numbers of the selected students to my colleague and she would provide me with the selected participants’ contact information: names, email addresses, and telephone numbers.

4. I would contact selected students to arrange details about the interviews, including the dates, times, and locations.

5. My colleague would contact the students who agreed to participate but were not selected and inform them that they might be contacted later.

6. If a selected student agreed and then withdrew from participation in the study, I would randomly select another student from the same specified gender/program subgroup who had agreed to participate.

The study actually proceeded in the following way:

1. My colleague provided me with the list of SFU student ID numbers for those who agreed to participate. The list that I was given did not include student names, personal information, or academic records.

2. Twenty-two students in total agreed to participate in the study.

3. I did not need to use a computer algorithm to randomly select students. I selected all of those who had agreed to participate.

4. I contacted the students to arrange details about the interviews, including possible interview dates, times, and locations.

5. None of the students withdrew from participation in the study.

3.5. Participants

Following are brief portrayals of the 22 participants in the study. All were studying in the FHS. The profiles listed here are based on the status of the participant at the time
of their interview for this research. The names are pseudonyms. I told the participants
that I would use pseudonyms when presenting my interviews and overall research
findings and I did not ask them to choose their own pseudonym.

_Yasmin_ was 22 years old and came to SFU from a British Columbia (BC) high
school. Although she was born in the United States, Yasmin was raised in the Lower
Mainland. Because of frequent family moves, she attended several elementary and high
schools. At the time of the interview, Yasmin was helping her parents in the family
business and occasionally waited tables in local restaurants. She also volunteered in a
hospice and a food bank while taking five FHS courses. Yasmin stated that she did not
like theorizing and never understood why all FHS courses were not designed to be
hands-on.

_Lorena_ was 25 and had immigrated to Canada with her family a year after she
completed high school. She was living with her parents and several siblings in a rented
townhouse, and she spoke only Spanish while at home. Lorena was the first member of
her family to attend university. At the time of the interview, she was working full time in a
Health Authority and was taking her final FHS courses. Lorena’s professional plans after
graduation were focused on staying and working in Canada, preferably in the field of
mental health and addictions.

_Erin_, age 23 years, was a successful martial arts competitor and an active music
band member while she was in a local high school. Erin described playing music on the
Great Wall of China with her high school band on a very snowy and windy day, when all
sounds of the music were simply flying off every stone of the Great Wall, as one of her
most memorable experiences. She was committed to becoming a family doctor, because
she had always wanted to improve the lives of families and help them make positive life
choices. At the time of the interview she was volunteering for two nonprofit
organizations.

_Jessica_ was 25 and had the highest upper division GPA of all the interviewed
students. She stated that she has always been an exceptional student. When she was
17, Jessica left a very small BC town and headed to a very large city in a different part of
the world on an International Bacchelaureate scholarship. Her decision to study in the
FHS was driven by a strong desire to become a physician. Because of her commitment
to anti-oppression and de-colonialization, Jessica was also minoring in First Nations studies. She enjoyed cooking with her roommates and was recently engaged to be married.

**Tamara**, age 24, was born in Ontario to immigrant parents, but completed her high school in BC. Dance was Tamara’s passion. From ballet to acrobatic dance and gymnastics, and from Zumba to tap dancing, Tamara danced them all. She even performed the Indian Bhangra dance in several Punjab cities during her international FHS practicum in India. Tamara’s other passion was learning about the impact of social inequities on population health. At the time of the interview, she was submitting her application to many different graduate programs.

**Robert**, age 21, was an international student from Africa who transferred to FHS from a BC college. Studying at university inspired Robert to discover the values and excitement associated with reflection, self-discovery, and building connections with peers and instructors. Robert was working with his FHS professors as a research assistant in several research projects. A few days before our interview, Robert was accepted to a Master of Public Health program at a university in central Canada. He brought the acceptance letter to the interview.

**Vandana**, age 25, was an international student, who came to Vancouver from an Asian island country when she was 20. Her wealthy and very conservative parents chose Canada for her postsecondary education. It took Vandana some time to overcome cultural differences and nostalgia, but she never regretted coming here. Vandana’s parents were paying her tuition, but she had to support herself otherwise. Vandana was working in a fast food outlet and in a research lab. She commented that the very distinct smell of the ocean had always energized her vitality and spirit.

**Hazel**, 22, was from Vancouver. Since her mother was Asian and her father was half French and half Spanish, Hazel learned to speak Cantonese and French in addition to English. She regretted that she never learned Spanish, although her favourite dishes were Spanish paella and gazpacho. Hazel worked part-time at a bakery on weekdays and at a seniors’ centre on weekends. She spent over three hours per day commuting to campus. Hazel’s cat and dog were her best friends—she considered them her siblings.
Terry, 21, had changed his home addresses many times as his father’s business had relocated across Canada. While visiting relatives in Asia, Terry had some unpleasant experiences with mosquito bites that left him forever afraid of insects. Terry’s goal was to become a pediatrician, and he was involved in a number of volunteer activities related to children’s health and well-being. Although a mediocre dancer himself, Terry had organized a charitable 24-hour Gala Dance Marathon at a local Children’s Hospital.

Katie, 22, transferred to SFU from a college in the BC Interior. Katie’s high school life was all about competitive sports, particularly hockey and soccer. Being used to living in considerably less populated areas, she often escaped the big city crowds by hiking local trails and forests. The silence of trees and nature gave her the serenity and peace that she had always felt in her tiny home town. Katie was passionate about movies, but not all movies: her favourite films were stories about love and the power of family togetherness.

Anika, 23, was born and raised in Vancouver. Her Japanese parents were somewhat disappointed that Anika didn’t declare her major after completing the first year at SFU because they expected that their four children would choose their careers and fields of study well before they started their university education. Being pressured by her parents to study science, Anika chose FHS because it offered a scientific discipline that was closest to her interests. She started working part-time when she was in high school and had always kept at least two jobs.

Karlie, 23, already had three work placements: in a Government Agency, a Health Authority, and most recently in a big hospital. Our interview was held in her spacious hospital office. Karlie was remarkably well organized and very ambitious. That helped her to balance full-time work with taking FHS courses. The hospital had offered Karlie a full-time job after her graduation and she was particularly honoured by the hospital’s decision to change the position’s job description in order to match it with her education and experience.

Sophia, 23, appeared to be extremely proficient in the use of computers and contemporary technology. During our interview she shared numerous applications built for smart phones, tablets, and laptops that she was using for studying. When explaining
to me the benefits of applying various digital apps to learning and organizing knowledge
she was very excited and engaged. Sophia’s goal was to succeed in the field of nuclear
medicine. She was volunteering at the FHS Student Union and was rather successful as
a fashion model.

Lisa, 27, had secured a government job right after graduating high school. Lisa
realized that university education could benefit her career progression, so she chose to
study in the FHS. Ten years ago, she started practicing yoga to learn more about
herself. After completing yoga teacher training in India, she began teaching yoga
classes. Lisa was working on several projects, from writing about burlesque and musical
shows in BC to leading many fundraising projects. She noted that her husband-to-be
enjoyed her mastery of delicious breakfast cooking.

Camila, 22, was born in South America. When she was 11, Camila moved with
her mother to Canada. After her first year at SFU, Camila spent eight months working for
nonprofit agriculture programs in rural Quebec and West Africa. Camila chose to do the
FHS practicum in her home country, where she worked with the local government on
improving the healthcare system. Growing up in a society that was very unequal and
discriminatory had convinced Camila of the profound and lasting significance of social
justice, equity, and equality.

Brittany, 21, came to SFU to study dance. Although she had danced since she
was five and had once practiced and performed six or even seven days a week, it was
with regret that Brittany realized that the dance program at SFU was not personally
fulfilling. She transferred to the FHS with a minor in kinesiology, but after completing her
extended FHS practicum at a Health Authority, she was sure that public health would not
be her final vocation. Brittany had two part-time jobs and enjoyed fishing and hunting
with her boyfriend. She told me that she would not dance again.

Marcus, 26, had worked as a construction worker after high school and then
embarked on a year-long trip around the world. He had enough money to board planes,
trains, and ships, but he also biked and hitchhiked. Marcus traveled through the United
States, Australia, and Central America. Seeing his family roots in various parts of Europe
and meeting relatives that he had never met before were his most memorable moments.
from that trip. While studying in the FHS, Marcus was also working as a server and volunteering as a soccer coach.

Lawrence, 22, never had any doubts that he would become a physician. He was raised in the Asian-Canadian family of a physician and a healthcare worker. His younger brother was also studying in the FHS. Lawrence was four years old when he started preschool, and he has been a student ever since. Lawrence viewed study as a way of life, his main responsibility, and his only hobby. He felt that sacrifice and effort were the keys to success. Lawrence acknowledged the influence of his parents on his choice of medicine as his career but did not feel pressured by them to make that choice.

Emma, 42, was married and had two children. Her parents expected her to become a writer, so she started studying English literature. After a couple of semesters, she quit college, worked in forestry for ten years, and then went back to school to study herbal medicine in England for four years. Upon graduation, Emma opened her own herbal medicine clinic and ran it for five years. Since she became passionate about standard medical care, Emma closed her herbal clinic and went back to school again—this time to study in the FHS.

Madison, 22, lived in Ontario and Manitoba before coming to SFU. Madison loved food but hated cooking. She published a vegan cookbook on the Internet, so that her boyfriend could use her own recipes when he was cooking for her. For the last three years, Madison has been a member of a professional cheerleading team. The team’s appearances at community events and charities in local hospitals convinced Madison to switch to the FHS from kinesiology. In addition to cheerleading, Madison worked at a yoga studio and for a promotions company.

Susan, 47, was a divorced mother of two grown daughters; she had one grandson and a granddaughter on the way. Both Susan’s daughters were also studying at SFU. She was even a classmate of one her daughters, who was also majoring in FHS. Susan’s entire career was focused on health: she was a health reporter and then she worked for the Ministry of Health. Because she wanted to join her fiancée in his naturopathic clinic, Susan felt that she needed a health-related degree in addition to her diploma in journalism. That was why she had chosen to study in the FHS.
Mia, 23, claimed that she felt much older than her actual age and noted that she lived an exponential life that was insensitive to restrictions and boundaries. She claimed to always have been greatly involved in the community, from participating in rainy day programs while in fourth grade to being a high-school library monitor, competitive athlete, and theatre performer, although she had never been a good singer. Mia was also a university peer educator and a food bank volunteer. Single-handedly, she had developed a highly recognized program for kids with mental and physical disabilities.

3.6. Interviews

Data collection in this study involved conducting one-on-one, in-depth, semi-structured interviews using open-ended questions reflective of the research questions described in Chapter 1. Each interview lasted approximately one hour. Most interviews were arranged at the FHS classrooms and offices at SFU campuses in Burnaby, Surrey, and Vancouver. Two interviews were conducted in the Royal Columbian Hospital and in the Fraser Health Authority offices, where interviewed students were employed full time through the FHS Co-Operative Education program (co-op). Every participant had an option to select the interview site, and site arrangements were made one week before the actual interview. The chosen interview sites were reasonably quiet, free from distractions, and familiar to the participating students.

The interviews were conducted during the Spring 2014 term and before the start of the exam period. As the Principal Investigator, I personally conducted the interviews. My primary objective was to achieve a two-way communication with students that would enable them to sensibly and richly portray their individual lived experiences and insights about the complex work of university learning. Participating students were asked to bring samples of textbooks, lecture notes, and other artifacts that they considered to be useful to their learning. Participants were also free to decide not to bring selected textbooks and lecture notes to the interview. The interviews were audio recorded and field notes were taken during interviews. The participants were freely able to specify whether they consented to audio recording of their interview session. The Consent Form (Appendix C) clearly indicated the digital audio recording method to be used during interviews and provided participants with an option to decline recording.
3.6.1. Monetary Compensation

Although monetary compensation was not intended to be a motivation for participating in the study, a $20 coffee card was given to the participating students as a token of appreciation for the time, effort, and thought they had put into the study.

3.6.2. Interview Topics and Questions

The interview topics and questions were designed with the goal of addressing the two main research questions.

• What experiences and perceptions are reported by a group of fourth-year students in the FHS with regard to their learning processes and tactics?

• How do students describe the ways they adjust their approaches to learning in response to a variety of different task requirements and learning environments?

The open-ended interview questions were formulated to address topics that were intended to be central to this phenomenological inquiry.

• General Approaches to Learning

• Particular Learning Strategies

• Personal Learning Preferences and Experiences

• Approaches to Understandings and Assessments of Learning

• Reflections on Selves as Learners

The first topic, General Approaches to Learning, was discussed using the following interview questions:

1. Can you tell me some details about yourself that would help me paint a portrait of you: details about your everyday life, anything you find interesting, funny, or unique about you outside of FHS and SFU?

2. What are your hobbies, your jobs and volunteering? What is your favorite food? What are your memorable trips and preferred moments of leisure? Can you guide me through your day off from any tasks or jobs?

3. Why did you choose to study health sciences? Did anyone influence your decision?
4. Why do you learn? What is your motivation to learn? How do you see the difference between learning (self-initiated activities you do to learn) and completing homework or assigned tasks? Can you share with me some learning activities that you engage in because of your pure interest, and not because of a course or curriculum requirement?

5. In a nutshell, what is easy about learning for you? And, also, in a nutshell, what is hard about learning for you?

6. What criteria do you use for describing the level of difficulty of a course? What attributes would you use to describe “hard” or difficult courses versus those that are “easy”? Could you give me an example of a “hard” course and an example of an “easy” course? Which type do you prefer in terms of what you get out of the experience or learn from it?

The second topic, Particular Learning Strategies, was intended to discover students’ approaches to studying and their particular study tactics. It was discussed using the following interview questions:

1. Do you have particular preferred strategies for studying that you always use? Why do you believe that those preferences are the most useful or appropriate for you?

2. How do you adjust and change your study tactics in direct response to different course topics? For example, what do you do differently when you study for the Applied Health Ethics course versus studying for Introduction to Statistics?

3. How did you develop your learning strategies? Did anyone teach you how to learn?

4. How different are the learning strategies that you use now, from the strategies you used when you were in high school?

5. What do you do to complete learning tasks and other responsibilities in a timely manner? How do you decide how much time to spend on different activities?

6. How important is it for you to attend lectures and to actively participate in your classes?

7. Do you read from your textbooks before class even if there were no assigned readings?

8. What strategies do you use to organize, combine, and summarize information and to reduce forgetting?
9. Do you take lecture notes, and if so what media do you use: handwriting, computer, audio recording, cell phone cameras, or any other?

10. In what way does your note-taking change depending on the lecture content? In what way does your note-taking depend on the course instructor?

11. How do you format and organize the content of your lecture notes? Do you try to write down everything you hear, or just the main points? How do you decide on the main points?

12. How do you connect your lecture notes with the textbook? What would you do if you have difficulties connecting lecture notes with the textbook?

13. How frequently do you review your lecture notes and when do you do it: immediately after the class, once a week, or just before the exam?

14. If you have brought some samples of your personal notes for various courses, can we discuss these samples?

15. How do you use textbooks? Can you tell me about a textbook that you have used in any of your courses that you found to be very useful, or about a textbook you found not to be useful, or both? What was it that made these textbooks useful or not useful?

16. Why and how do you use the Internet and WWW for your learning? What other digital resources do you use for your learning? How do you discover new applications, new software, and how do you learn to use them?

The third topic, Personal Learning Preferences and Experiences, was discussed using the interview questions listed below:

1. What is your preferred learning environment? Do you have a designated study area? When is the best time of the day for you to study?

2. What are the most common distractions you face when you study? What do you do to overcome these distractions?

3. Do you prefer to study alone or to study in pairs and teams? How would you describe your learning experience in team-based or group assignments and projects? How does the group size affect the learning effectiveness of the group?

4. What has been the best, most powerful, and most memorable learning experience you have had in an FHS course or in any course?
In that experience, what was it that made learning especially effective or good?

5. How important are instructors’ teaching styles or attitudes for your learning experience in a course? What makes a good instructor for you?

6. How has your co-op experience impacted your learning? How important has co-op been for decisions you have made about your studies and your career planning?

The fourth topic, Approaches to Understandings and Assessments of Learning, was intended to explore students’ perceptions of their own knowledge and understandings, as well as of the instructors’ assessments of their learning. It was discussed using these interview questions:

1. How do you decide when you really understand a concept or topic, not just that you have it memorized but really have “got it”? What do you usually do if you do not understand what you read or heard in the lectures?

2. How would you best communicate what you learned? Would it be through a written test, a term paper, a presentation, an oral examination, or some other form of assessment? Why do you think that is?

3. Are grades important to you and why?

4. What do you think of the assessment practices in the FHS?

5. How much influence does the grading system have on your approach to studying?

6. How do you study for exams with multiple-choice questions, and how do you study for exams with essay questions? How do you prepare for “open book exams”?

7. What does your typical day before an exam look like? What do you usually do one hour before an exam?

8. What was the most common type of feedback you received about your work and how useful was it?

9. What is your preferred form of feedback about your work?

10. What do you do when an exam paper is returned to you? Do you use returned exams for your learning? Do you go over them trying to
understand why you made mistakes? Or, do you try to memorize the questions and the correct answers provided in case you take a similar exam again?

The fifth topic, Reflections on Selves as Learners, was envisioned to be a summary of the students’ self-reflections. It was discussed using the following interview questions:

1. What do you feel you learned about yourself as a learner from the FHS program? Who are you as a learner?

2. How long do you think your current knowledge will be professionally relevant, particularly in the workplace?

3. What plans have you made to keep up with changes in the field of health science?

4. What is your personal learning plan after graduation?

5. Is there anything else that we have not discussed, but you feel is important to mention in order to better understand you as a “worker of learning”?

It is important to recognize that not all interview topics and questions were covered in each interview with the 22 FHS students because the interviews were designed and conducted using a qualitative, semi-structured approach. Also, after completing and analyzing all 22 interviews, a few new themes emerged.

• Students understand and articulate their own learning mainly through their personal circumstances and their particular life situations.

• The concept of “studenting” could be used to unite various perceived roles of students as being learners and also job seekers, sons and daughters, as well as parents, employees, and volunteers.

• The students’ shifting understanding of the purpose of learning and knowing.

All of these are discussed in Chapters 4 and 5 of this thesis.

3.7. Analysis of the Interview Data

My approaches to analyzing the interview data were based on understanding that research design, data collection, and analysis are simultaneous and continuous processes (Bryman & Burgess, 1994). I was mindful of Hycner’s caution that the term analysis might be unsuitable for phenomenological inquiry because analysis “usually
means a ‘breaking into parts’ and therefore often means a loss of the whole phenomenon” (Hycner, 1999, as cited in Groenewald, 2004, p. 49). Instead, Hycner suggests using the term *explicitation*, which he explains is an “investigation of the constituents of a phenomenon while always keeping the context of the whole” (Hycner, 1999, as cited in Groenewald, 2004, p. 49). Coffey and Atkinson (1996) describe phenomenological analysis as the “systematic procedures to identify essential features and relationships” (p. 9) as cited in Groenewald, (2004). For Groenewald (2004), phenomenological analysis is “a way of transforming the data through interpretation” (p. 49). Finally, I kept in mind van Manen’s (n.d.-a) warnings that phenomenological inquiry-writing is based on the idea that no text is ever perfect, no interpretation is ever complete, no explication of meaning is ever final, no insight is beyond challenge. It behooves us to remain as attentive as possible to the ways that all of us experience the world and to the infinite variety of possible human experiences and possible explications of those experiences (para. 5).

In analyzing the interview data, I chose to use a synthesis of the frameworks developed by Creswell (2007), Groenewald (2004), and Hycner (1999). These frameworks emphasize gradual, evocative, and reflective step-by-step approaches to a series of procedures in phenomenological data analysis and interpretation and identify the following procedures:

- transcription of the interviews;
- bracketing and phenomenological reduction;
- determining themes from clustering units of meaning;
- identifying general and unique themes and contextualizing them;
- and textual and structural summarizing (Creswell, 2007; Groenewald, 2004; Hycner, 1999).

### 3.7.1. Interview Transcriptions

All interviews were audio recorded using a digital recording device, and field notes were taken during each interview. Audio recorded interviews were transcribed by a professional transcriber who was neutral to the research, the participants, and me. I did not have any influence on the transcriber during the transcription process.
Once transcriptions were completed, I meticulously checked the transcripts’ correctness against the audio recordings and my field notes. I tried to pay particular attention to nonverbal and paralingual communications that were not audio recorded but were logged in my field notes. The process of checking was achieved by numerous rereading of the transcripts and relistening to the audio recordings of the interviews. In several cases, I had to contact participants for further clarification of my understandings and adjust the transcripts based on these clarifications.

3.7.2. Phenomenological Bracketing and Reduction

Bracketing refers to setting aside researchers’ preconceptions and “learned feelings about the phenomenon” in order to enable researchers to “experience the phenomenon ‘as it is’ … to experience its essence” (Johnson & Christensen, 2008, p. 395). With bracketing, researchers suspend their own “judgements about the factual, about what is the case, in order to become open to our own experience and to the understandable meanings implicit in this experience” (Lindseth & Norberg, 2004, p. 148).

Phenomenological reduction could also be seen as the bracketing of our common natural attitudes (Groenewald, 2004; Hycner, 1985, 1999; van Manen, 2014). It is a suspension of the researcher’s presuppositions and biases with the goal “to be as true to the phenomenon as possible, without any premature imposition of theoretical constraints” (Hycner, 1985, p. 300). According to Hycner (1985), phenomenological reduction also means

suspending (bracketing) as much as possible the researcher’s meanings and interpretations and entering into the world of the unique individual who was interviewed. It means using the matrices of that person's world-view in order to understand the meaning of what that person is saying, rather than what the researcher expects that person to say. (p. 281)

As an FHS administrator who is in many ways involved in shaping students’ learning experiences, I was cognizant of the importance of bracketing my own theoretical and practical preconceptions and biases related to students’ behaviours associated with university learning at FHS and SFU. In order to initiate bracketing, I tried to explicitly articulate my assumptions about students’ learning before I created the interview questions and set the criteria for participant inclusion. My intention was to avoid raising directed and leading questions that might in any way influence participants’
interpretations of their experiences. I also tried to stay “as true to the interviewee’s meaning as much as possible” (Hycner, 1985, p. 281) by excluding my suppositions while taking and reviewing my field notes or observing the students’ created materials they brought to the interviews. It was my goal to “suspend presuppositions in order to enter the lifeworld” (Ashworth, 1999, p. 708) of the students’ perceived experience of their work of learning. The ultimate goal was to achieve an unprejudiced openness to the details of experience (Ercikan & Roth, 2009), at the same time as being fully aware that the process of bracketing is never final and that the possibility of truly objective research and reflection is never completely realized (Moustakas, 1994).

### 3.7.3. Clustering Units of Meaning to Form Themes

Process of clustering was a relevant first step in revealing the essence of the meanings of participants’ experiences. I started with identifying significant statements and phrases from interview transcriptions and field notes. Significant statements were considered to be those directly related to the student’s perceived and narrated experiences as workers of learning.

As a next step, I created units of meaning by grouping identified significant statements and phrases (Creswell, 2007, p. 270). In order to formulate the units of meaning, I frequently revisited the interview transcriptions. This revisiting provided me with “a sense of the whole as well as providing the context for the emergence of the themes” (Hycner, 1985, p. 291).

Finally, I clustered articulated units of meaning into themes, or categories, which were developed to form some major ideas related to the description of the phenomenon (Creswell, 2008, p. 252). In that way, the theme becomes the essence of the clustered units of meaning (Hycner, 1985, p. 290).

### 3.7.4. Identifying General and Unique Themes and Contextualizing Them

This process enabled me to formulate themes that are common to all participants’ transcripts (Colaizzi, 1978, as cited in Creswell, 2007, p. 270). Hycner (1985) states that the process “requires the phenomenological viewpoint of eliciting essences as well as the acknowledgment of existential individual differences” (p. 292).
Identifying general and unique themes also involves a careful identification and delicate exclusion of overlaps and redundancies in themes across the interviews. These probable overlaps are expected, given the common nature of the researched phenomena (Groenewald, 2004, p. 50).

It is important to contextualize the general and unique themes derived from the research, and “to place these themes back within the overall contexts or horizons from which these themes emerged” (Hycner, 1985, p. 293). I identified four general and unique themes, prior to the themes’ contextualization:

- Students’ Personal Context
- Learning Related Context
- Learning Tools and Tactics
- Self as a Learner

In contextualizing the above themes, I was driven by the notion that the meaning of a phenomenon is largely determined by its role within the context (Hycner, 1985, p. 293). Students’ experiences as workers of learning are determined by the particular institutional and cultural properties of the school settings. Also, our understandings of how students learn, whether in formal or informal settings, needs to be driven by an understanding of their general life situations (Andres, 2004), and how they conceptualize and interpret those situations.

The following themes emerged from my deeper understanding of students’ learning in the context of FHS and SFU settings and students’ particular life circumstances:

- Living
- Learning
- Studying
- Teaching
- Reflecting

Chapters 4 and 5 will further discuss these themes.
3.7.5. Composite Summary: Textual and Structural Summarizing

In textual and structural summarizing, I was trying to step back from a detailed analysis or explication, to form a “larger meaning about the phenomenon based on personal views, comparisons with past studies, or both” (Creswell, 2008, pp. 264–265).

In the textual description I wrote about what was experienced, and in the structural description I wrote about how the phenomenon was experienced (Moustakas, 1994, as cited in Creswell, 2007, pp. 236–237). Both descriptions formulate a final composite summary, which according to Hycner (1985) “would accurately capture the essence of the phenomenon being investigated” (p. 294), that is students’ perceptions of their learning approaches, contexts, and experiences.

3.8. Truthfulness

The validity of a phenomenological study has to be sought in the appraisal of the originality of insights and the soundness of interpretative processes demonstrated in the study (van Manen, 2014, p. 348).

The goal of my phenomenological study was to understand and interpret students’ perceived experiences of their work of learning as they lived through them. “For research purposes lived experience has to be fixed in texts, which then always needs interpretation” (Lindseth & Norberg, 2004, p. 147). Interpretation typically involves shared backgrounds—social, cultural, and historical—as well as shared understandings and conceptions, and it engages both the interpreter and the interpreted in a dialogical relationship (Giorgi, 1994; van Manen, 1990).

I was fully aware that, “in the telling, both the teller and the listener take part in the narrated meaning” (Lindseth & Norberg, 2004, p. 147). As Hycner (1985) points out, given the approach of phenomenological research, there is no way to eliminate the "subjectivity" of research. In fact, the phenomenologist believes that it is the very nature of such "subjectivity" which allows for greater "objectivity," that is, an approach that is most comprehensive and faithful to the phenomenon. (p. 297)
Because of the previously described specific nature of hermeneutic phenomenology, my focus during data explication was not on rather formal mechanisms of data validation. Instead, my focus was on revealing the “essential meaning,” which “leads us to the truth, to lived truth as opposed to correctness” (Lindseth & Norberg, 2004, p. 148). As a result, the truthfulness of a phenomenological study remains dependent upon the degree to which the analytical process of following a set of reductions remains true-to-life and not just faithful to what is said about an aspect of life by participants in a particular study.

This study aimed to achieve its truthfulness, believability, and integrity by applying phenomenological reflection and analysis through the series of bracketing and phenomenological reductions.

My starting point was the life of students’ lived experiences.

The first reduction involved transforming live interview conversations with participants into audio recorded forms.

A subsequent reduction was transforming the audio recordings into written text forms, in this case interview transcriptions.

The next reduction organized the transcriptions into units of meaning and then further into general and unique themes.

Both general and unique themes were addressed in the thesis by creating narrated meaning through a continuous process of writing and rewriting.

The final reduction associated the narrated meaning with the life and essence of the researched phenomenon.

This series of phenomenological reductions completed a full circle in this thesis: from the life of students’ experiences as workers of learning to the life of interpreted meaning of that experience.

My phenomenological reductions were selective, synthesizing, and interpretive in nature. They were selective in deciding on interview topics and questions; in defining criteria for participant selection; in choosing the ways of transcribing audio recordings,
etc. They were synthesizing and interpreting in building a deeper, reflective understanding and creating true-to-life meaning of the students’ reported experiences.

This all provided me with confidence that my reported findings could be considered believable, reliable, and truthful.
Chapter 4.

Findings

Learning is a purposeful human activity and is best understood by understanding how learners perceive their personal circumstances and how they make connections between their particular contexts and their learning. How and why people learn, whether in formal or informal settings, is often driven by their general life situations and how they conceptualize and interpret their lives.

It was from this interpretive frame that I began this study of the work of learning by first drawing a broad situational picture of the learners in this study, the 22 Faculty of Health Sciences (FHS) students who were enrolled in their final academic term at Simon Fraser University (SFU). Their profiles are provided in detail in Chapter 3. Although they were all above average students, they were profoundly different in a variety of ways. The life stories I heard from these students offered a meaningful foundation for contextualizing this study of the work of learning and for understanding its human dimensions.

In the following sections I report on the results of my conversations with the students. The sections are framed by the interview questions and topics that were listed in Chapter 3.

4.1. Students’ Personal Contexts

At the beginning of each interview, I asked the student to share with me some details about themselves. I asked them about current circumstances that define or constrain their everyday lives, their goals, anything they found interesting, funny, or unique about themselves outside of the classroom. I wanted to know something about their hobbies and their jobs, favorite foods and restaurants, about memorable trips and how they spend their leisure time. My intent was to appreciate them as having lives outside their work as university students enrolled in programs of study in the FHS.

Here are the interview questions that focused on students’ personal contexts and that each interview opened with:
• Can you tell me some details about yourself that would help me paint a portrait of you: details about your everyday life, anything you find interesting, funny, or unique about yourself outside of FHS and SFU?

• What are your hobbies, your jobs and volunteering? What is your favorite food? What are your memorable trips and preferred moments of leisure? Can you guide me through your day off from any tasks or jobs?

• Why did you choose to study health sciences? Did anyone influence your decision?

• What do you do to complete learning tasks and other responsibilities in a timely manner? How do you decide how much time to spend on different activities?

The following is a summary of students’ responses to these questions and any extended conversations.

4.1.1. They Were not the Same Age

All 22 interviewed students belonged to the SFU’s Level 8 academic group, meaning that they all had completed 105 or more academic units. However, their ages ranged from 21 to 47. A majority of the students, 12, were 22–24 years old. Five students were 25–30 years old, three were 21, and two students were older than 40.

4.1.2. Their Living Environments and Family Circumstances Were Very Different

Thirteen of the 22 students lived at home with their parents, five lived with partners, three with roommates, and an international student was living in a homestay. Two students were married and had children, two were engaged, and one was a grandmother of one and was expecting a second grandchild at the time of interviews.

The following are some examples of how students described conditions and distractions associated with their diverse living environments.

The reality of my life is that I get up at 6:00 and make everybody breakfast and get them ready for school, and it’s crazy and a rush and this, and that and the other, and check on this and then the babysitter cancels and there’s like 500 other things that happen before I go to school at 8:00 in the morning. (Emma)
My partner, who I live with... he doesn’t go to school and hasn’t gone to school ever since high school, so he is really supportive but sometimes doesn’t understand how much effort it takes to focus on things, and he always wants to do something fun, which I want to do, and probably just wanting, just normal things like wanting to watch TV instead or something else he’d rather do. And, my cat actually is a huge distraction. She jumps on my homework constantly. (Lisa)

My daughter is expecting and this is not typical of a university student, but she is expecting a baby. I’m going into the delivery room with her and it’s in the middle of my finals, well, kind of in the middle of my finals, just before finals, it’s not good timing. She was supposed to be due later, but then her due date has changed, whatever. (Susan)

I live with my family, my parents and my siblings... Right now, I’m the only one going to university. My brother is a musician and my younger sister, she’s a hair stylist. And my youngest sister, she’s in high school, so she’s still trying to figure it out. My siblings and noise in my household are my biggest distractions. I try to study whenever they’re not home [laughs]. But if they are, I just like ask them like, “Hey, I have to study, please go away!” [laughs] (Lorena)

It was interesting to hear Susan’s story. Susan studies at SFU together with her two daughters.

I remember last semester I went down to the dining hall which I had never been to. My daughters convinced me to go, and I spent the day studying there with them, and that was really cool... although they’re not allowed to call me mum, yeah. I’m incognito! [laughs]

And this is how Susan described what she learned from her daughters about good studying skills.

Well, both of them are really meticulous in terms of the way they keep notes and stuff. But I guess when I look specifically at Chemistry, I’m a like, “Okay, I need to learn everything,” and in Chemistry that’s impossible. And, my daughter was, “Mom, you can’t do that, you can’t read every word and learn everything.” Because I can remember we’re sitting in class and I talk about litmus paper, and I’m like, “Oh yeah, it’s made from blah, blah, blah,” and she’s like, ”How do you know that, and why do you know that!” [laughs] "You don’t need to know that!” [laughs]

A number of the students who were living at home mainly communicated with their parents and siblings in languages other than English, for example, in Cantonese, Spanish, Polish, Japanese, and Slovakian.

Hazel’s remarks nicely illustrate these linguistic and cultural diversities.
So, I’m actually half Chinese, my mum is from Hong Kong, and I’m quarter Spanish and a quarter French... I speak Cantonese and English, that’s it. And I wish I spoke more, because that would be amazing, having four languages.

The student participants were spending anywhere between one and two-and-a-half hours commuting to SFU, driving or taking public transit. Those who were bussing did not complain about the length of their commutes, instead they utilized that extended travel time to review their lecture notes, listen to recordings of lectures, or just cram before the exams.

4.1.3. They Did Not Come to University the Same Way or for the Same Reasons

The interviewed students came to SFU from British Columbia (BC) high schools or as transfer students from other Canadian or international colleges and universities. Some took a year or two to travel, work, or volunteer, to wait for immigration papers to arrive, to figure out something important to them, or just to do nothing before they felt that it was the right time to embark on a university program. A few made the decision to attend university after several years of self-employed work or work in various private and public-sector organizations. Many felt that a university degree could be a solid entry ticket for different, more educated, and better paid walks of life.

I didn’t go straight into university, I took a year off to work on construction and travel around the world... Poland, Scotland, France, Germany, and basically all Western Europe and Central America and Australia, that’s where I went. I was able to stay at different people’s houses from around the world and get to know their cultures, and when I came back after travelling, my parents didn’t, I don’t think they wanted me to do construction but they did want me to go to some postsecondary school, and I did too. (Marcus)

I first worked in forestry for 8 years and then I went back to school in my mid-20s and studied herbal medicine in England for four years, came back, had a clinic, started my own business and I realized in my early 30s that I really liked science, and I’m good at it, so I decided to return to university with two young children and really study science so that I could have a real understanding of it. And so, I did, and I have one course left to graduate! (Emma)

There was a rich diversity of reasons why the interviewed students chose to study in the FHS. Students’ motivations ranged from their focused interests in public and population health—particularly in studying the social determinants of health together with
health policies, health communication, and promotion—to an authentic enthusiasm about the eclectic and interdisciplinary nature of the FHS programs that connect cells to societies and transcend the boundaries of general experimental sciences. Katie explained her views on the FHS’s approaches to human health.

It wasn’t just focused on one thing. It looked at health care from every single perspective, and how your environment and society really determine your health, so that’s what I loved about it.

For the students who had plans to continue their education in medical and nursing programs, studying at the FHS was a sensible choice. This is because the FHS curriculum would complement the admission prerequisites of such programs.

It was interesting because it [the faculty] was very innovative and because the way they had designed it I could integrate the prerequisites from medical school into the degree, and then I thought, well okay, if I don’t end up going to medical school for whatever reason I’ll graduate with this great degree and I can do lots of other things with it and that’s what happened. (Lawrence)

Job prospects and career options were initially not important reasons for the students to commit to the FHS. Instead, their commitments to the FHS were motivated by a genuine desire to help people in making positive life choices; they perceived that their studies would provide opportunities to work with diverse populations in improving their health and the overall quality of their lives. Helping people achieve better health outcomes is a major stated outcome of the FHS. The students appeared to see that program goal as a good match with their personal interests and values.

I think health is such an important facet and I really like working with people, and I was like, well if you’re working with people in the health field, that’s not necessarily being a doctor or a nurse, because the health field isn’t just those two jobs. You can do a lot more, you get to see how health is impacted within the community and how you can make intervention programs and how health is so important on a level that’s not just biological, and not just through hospital environment. (Mia)

4.1.4. All Participants Described Different Influences on Their Lives

The students identified immediate family members, including parents and siblings, as well as high-school counsellors, peers, and their family doctors as leading influences in their lives. Their influence ranged from support, offering advice and recommendations, to eventual pressure and included encouragement to attend
university, suggestions for particular programs of study and prospective careers, or just general support.

Personally, I just don’t like school. The only reason I came to university is because my parents made me, and I ended up liking health science, but at the beginning I hated it. I hated university, and high school, I hated it. (Yasmin)

I looked at my family doctor and see her career, and she has an awesome life. I’ve always talked to some doctors about how difficult it can be to raise a family while going to medical school or while being a physician, so I think it’s just something I have to play by ear and see how it goes. I spoke to basically every doctor I could and asked them, “What do you think, should I do this?” (Erin)

My parents pressured me to choose something, you know, because they come from a Japanese background where before you hit university you choose your career, you choose your school, you choose what you want to do for your career, for your life. (Anika)

4.1.5. They Had Different Interests and Passions and Very Unique Fears

The students in this study group came to the FHS from various parts of the BC Lower Mainland, but also from the BC Interior, Ontario, Manitoba, California, Mexico, Bolivia, Sri Lanka, and Zambia. They brought with them different traditions, habits, interests, and passions. Some students loved to dance, from ballet to tap and Zumba, some enjoyed sports and the outdoors; others searched for balance through yoga, going so far as to train in India to be yoga teachers. Others enjoyed cooking and baking; one was an expert in making eggs benedict and another in making big pots of curry or chili. There were students who adored musical theatre and symphony and wrote reviews about theatre and orchestra performances in local newspapers. Some students were fond of movies and burlesque shows, and others were very interested in fishing and hunting with their dads. One student was writing a vegan cook book for the Internet.

Some students were passionate about working on social media and other public campaigns to raise awareness about poverty reduction; some had travelled to remote areas of Africa and South America to participate in agricultural projects and social justice initiatives. Others were employed by major regional hospitals and health authorities. They were deciding on their volunteer commitments based on the values that defined their personal integrity. Jessica, for instance, noted, “my strong commitment to anti-
oppression work and decolonization.” In spite of all these sophisticated and mature undertakings, some students shared unexpected and childlike fears with me. A taekwondo champion and black belt holder was very afraid of snakes although she had never encountered any. A future medical school student was afraid of bananas. One student had a human hair phobia, and another was disgusted by asparagus.

4.1.6. They Had Very Busy Lives Outside of School

All of the 22 students interviewed had at least one part-time job or an on-going volunteer commitment while at the same time taking university classes. A majority had multiple jobs and volunteer positions, and four were working full time at their Co-Operative Education (co-op) placements and also attending classes. One co-op placement was in a hospital and three were in two different BC Health Authorities. As a group, although they worked very hard, they all had managed to maintain above-average academic standings.

I work, volunteer and I’m taking five classes... So, at the moment my mom is in Iraq, so I’m working almost full time at her daycare, and then volunteering with the Health Science Student Union, and before that I used to waitress and work and volunteer at a palliative care centre... and I’m taking five classes. (Yasmin)

Right now, I have two jobs; well I have my fulltime co-op job with a Health Authority, I also work as a server at the Keg, and I am taking two classes. (Brittany)

I work part-time at a bakery as well as I work with seniors on the weekend too. I help them around the house in a senior residence. (Hazel)

The students worked as baristas, fundraisers, cheerleaders, data analysts, pita bread sellers, laboratory research assistants, yoga studio cleaners. They also volunteered as peer health educators, AIDS Walk coordinators, program developers for survival sex workers, library assistants, indoor soccer coordinators, poverty reduction and social justice promoters, or summer camps organizers. Their volunteer work spanned three continents.

Following are some of the reasons that the students offered as prompting them to volunteer.
It’s really, like, grounding yourself in knowing the people who are at the bottom... it’s why you’re learning all of this stuff, right? (Sophia)

I started volunteering with kids quite a bit recently, and was just another volunteering thing I do. And, I find kids just so vulnerable in a sense that they’re so young, and I just see them as really needing, you know, extra attention and help, and that’s why I do it. (Terry)

Just to learn more about life. (Karlie)

I think that seniors don’t have that many people who are around them. I mean, if I don’t help them, who else will it do it for them? (Hazel)

4.1.7. They Organized and Managed Their Time Rather Successfully, Although They Did This in Many Different Ways

All the interviewed students reiterated the importance of being strategic and skilled in setting priorities. They described their days as being completely filled with a variety of activities related to school, jobs, family, and volunteering.

My day off? It never happens! [laughs] I can’t remember when I had a day when no one bugged me... It is, it’s exhausting! Sometimes, I’m so tired. (Emma)

Many students echoed Emma’s statement.

Students prioritized their tasks based on their individual beliefs and sense of urgency. They claimed that no one taught or advised them how to prioritize. More mature students, who had families and children, positioned their families as their first priority. For others, who lived with their parents or roommates, school had the highest priority, even over their social lives. They pointed out that hectic lives were a very common issue across their generation.

Well, I don’t necessarily go out too often with friends... I guess because they’re all the same type of people like me, but they’re always so busy that they don’t have time to get together all the time. (Anika)

The students realized that they did not have infinite time available to complete their obligations, and because of that they had to be very efficient and tactical. For them, prioritizing was not the only attribute of effective time management: they described classifying and scheduling activities as equally important, as well as the proper allocation of resources, particularly their time and energy, in order to complete tasks and get through their days.
I have a list for the week and I have everything jotted down that I have to do that day. And, then I'll cross it off when it’s done, and I try and allocate. I’ll say, maybe study this class for an hour and then go to volunteering, and then come home, and like maybe even meet up with a friend for half an hour. (Mia)

Finally, students indicated that an ability to adjust and reschedule activities on the spur of the moment was critical for their successful time management.

Being “organized” was seen to be the key word when students’ tried to explain their capacity to balance their complex and frequently conflicting priorities and deadlines. The large majority of students identified calendars as the most appropriate tools for helping them be organized. Some students referred to calendars as the printed table like structures showing months, weeks, days, and even hours of a particular year. Others referred to calendars as “agendas,” or “planners,” or just simply “schedulers.”

Here are some reasons why students chose to use calendars.

So, at the beginning of the semester, like first couple of weeks in, I make that calendar, and I can visually see how many days I have until the exam. I like to, I like to [have] a benchmark. (Katie)

Well, I need to write everything down, I just like to schedule it and then, depending on the priority, when it’s due and how much it’s worth, then I tackle that first. (Lisa)

Students’ described physical calendars that were bigger or smaller in size, that would capture a whole year, or a semester of four months, or just a single week. Several students were also using notepads for daily to-do lists.

The monthly one gives me like a visual of when things are due and when I’m busy and when I have days off. It gives me just kind of a basic view of what my month’s going to look like. The daily planner gives me short-term goals for the day in order to reach the bigger monthly goals. So, today I need to call for transfers for grad school, and tomorrow I work, and it just helps me organize day to day, so I don’t get swamped one day. (Madison)

As a rule, the calendars were positioned in different, but always very prominent, places in their homes, ranging from bedroom walls to kitchen walls and fridges, or attached to their work desks. Students checked their calendars frequently, most checked them every day. As Katie noted, “whenever I sit down—it’s there to remind me, to pressure me.”
The students purchased calendars from bookstores and supermarkets, or they handcrafted them.

I don’t buy nice calendars and notebooks because I feel it’s a waste of paper and thinking about the environment. I don’t need a fancy leather-bound stuff when it’s just going to end up in the garbage... So, what I end up doing actually is writing little notes about things that I need to do, using a blank piece of paper. Before I go to bed, I have a notepad beside me, and I write. And I’ll wake up in the morning and say, “Okay, what’s my day? What are my goals that I need to accomplish and get done?” and then I just kind of compartmentalize these notes... (Mia)

Some students created calendar events only for school activities, exam schedules, and homework deadlines, while others included their entire life responsibilities and schedules in their calendars.

I started using my calendar like an actual planner. So, everything that is purple are my new shifts at the Keg. Everything that is pink are my shifts with the Health Authority, and then things that aren’t highlighted is like stuff for school. (Brittany)

The above example also shows that some students used colour-coding to classify their activities. For some, different colours had different distinct meanings. For others, different colours were used just to visually separate seemingly unrelated tasks and events. A number of students also used colour-coding to set different priorities or to set alerts for due dates and exams. They found colour-coding to be an invaluable visual tool. As Yasmin mentioned, “I need to have colours, if I didn’t have this I would go crazy.”

A few students used software calendar applications on their laptops and cell phones. Students using electronic calendars decided to do so because they liked the simplicity of synchronizing their calendars across different devices, (e.g., cell phones, iPads, and laptops). They also liked a variety of electronic alert options, and they used software to avoid or minimize procrastination. Practicability and environmental awareness were also motivations for abandoning hard copies.

I’m constantly moving around and my schedule changes so often that my hard copy things were just getting lost, or I wasn’t bringing them with me, or I didn’t have space in my purse because that day I had to go somewhere else, or I forgot to put it in my backpack. And, I also got really interested in trying to be more green, so I’ve tried to go electronic or paperless. (Lisa)
Most of the students, however, preferred hard copies of the calendars so that they could edit them by hand. They could not articulate the explicit reasons for their preferences to handwrite the notes on their wall calendars or in the daily planners kept in their purses, other than to say, “I like to interact with pen and paper.”

A couple of students never found a reason to use any calendars or any sort of planners. Vandana even gave up on planning, entirely.

But what frustrates me about wanting to be perfect and not being able to be perfect is because life never goes in order... My due dates got changed, everything got shifted around, and that's why I don't like having [calendar]. Some people have perfect little notebooks or agendas, but it never stays that way... As I said, I constantly had to revise things because life isn't stagnant and it never goes as planned.

4.2. The Students and their Experiences as Learners

All the participants in this study had very unique personal circumstances and diverse motivations, skills, attitudes, and determinations. They were all “veteran” university students: among them they represented over a hundred years of accumulated university level studies. Being in their final academic years of study, they certainly might be expected to have learned what is at stake and how to play the “university game.” The following sections present the students’ various interpretations of the ways they approach and understand their learning situations. The students’ motivations are discussed first, followed by what they found to be easy and hard about learning. The conversations also considered students approaches to the work of learning, how they study, how they prepare for assignments and examinations, the particular tactics they have chosen, and the resources that they have found to be of most use. The conversations that are reported here should be seen in the context of the personal life contexts that were described in the section 4.1, Students’ Personal Contexts. That connection will form part of the discussion in Chapter 5.

The following are the questions and topics that structured my conversations with the students while discussing the motivation and contexts of their learning.
4.2.1. Motivation to Learn

This topic was addressed in conversations with students that were framed by the following questions: Why do you learn? What is your motivation to learn? The students offered distinctive and very personal reasons, inspirations, and drives for undertaking learning in the context of their university programs. They all valued their university learning experiences, and they all agreed that learning does not happen only in classrooms. The students appreciated and articulated their motivations to learn as being affected by fairly diverse social, academic, and intellectual elements in the learning environment.

**Curiosity that defies ignorance** was frequently mentioned as a motivation for learning.

My motivation is not to be ignorant I guess, because if you don’t know anything, if you’re not learning new things, you’re not actually living life to its fullest. (Yasmin)

I’m always curious about things, and I want to know how things work and how I could apply this. Knowledge is endless, and the only way you could gain it is by learning. (Karlie)

The desire to keep up with an ever-changing world was an important motivation for learning for several of the interviewed students. Many expressed views about the limitless and everlasting nature of knowledge.

I think if you don’t learn you’re just staying the same, and the world is changing so much. You know, the world is so dynamic and there’s so much new discoveries and information that’s been researched about all the time. And in a world, that’s growing this fast, it’s impossible to not learn if you want to succeed, or be able to just have conversations with people, and to do it well. So, I guess my motivation is just to keep up with everything that is happening... I don’t want to be static in a world that’s very dynamic. (Terry)

There’s no ending to anything, there’s always going to be new things, new changes, and you can learn something from everyone, every single person you meet. So, I think I take it beyond just learning from a book. I like to learn from other people. (Anika)

**Excitement about developing new knowledge** was also identified as an important motivation for learning. The interviewed students highlighted the significance of their
emotional and cognitive investments in learning as having illuminating and transformative effects.

What I find pleasurable is when I am excited to learn something new. That’s what makes learning pleasurable. (Tamara)

I think yeah, one of the biggest things about learning is that it transforms you in a way... I mean, it changes me, and continues to change me. It’s something that it’s not so much about the outcome, but the process, it’s just engaging in that... (Robert)

I feel like when I learn something new, it’s more of I feel a greater sense of accomplishment and a greater sense of acquisition of knowledge about life in general... Like, they broaden my horizons. (Sophia)

The students also connected learning to societal expectations, and to their personal enrichment and empowerment.

I think, deep down inside, you want to be an educated-minded person, that’s what society expects you to be, that’s one. But another one is also, you know, just to kind of enrich your mind. (Anika)

I like learning. Learning new things makes me a more responsible and powerful person to make decisions and do things. (Camila)

When I was younger I just wanted to know everything, but then now I think the more I learn the more I realize how much there is that I don’t know and how much there is left to learn. I just want to be able to make informed decisions regarding a lot of the things I do. (Erin)

What I like about learning is I feel it makes me a better person... It teaches me to put myself in other people’s shoes, it teaches me how to react in certain situations and be able to just be more knowledgeable. (Marcus)

Careers and future prosperity were repeatedly associated with learning and knowing.

The students described achieving degrees as important outcomes of their university education.

I would need a degree to do anything. A degree is kind of the bare minimum now, in order to get a career going. (Karlie)

Some students were very explicit in relating learning to their future career and life objectives.
Money! [laughs] Career! And I know, sometimes, I guess it’s not the best thing to say, but yeah, it’s a stepping stone, that’s why I’m learning. (Brittany)

Others were somewhat more reflective:

For me it’s very much career-related... Studies show that people with higher education tend to do better off in life. And I’m not saying that I’m going to do it all, but at least it increases my chances of being able to have a good career, have a good quality of life, being able to raise a family because of that, so that was another important thing to me that I am working and investing and learning right now, because I want to have a better future, so to speak. (Lawrence)

4.2.2. Learning... Hard or Easy?

In the student interviews, I Invited students to discuss their perceptions of the “hard” and “easy” aspects of learning. I asked students the following questions: In a nutshell, what is easy about learning for you? And, also, in a nutshell, what is hard about learning for you? These questions allowed me to open broader conversations about their general approaches to learning and themselves as learners. They also helped me to gather their perspectives on the ways particular course content and assessment requirements affected their perceptions and preferences in course selections. The students’ responses addressed the effect of their prior knowledge on acquiring new learning and the role that instructors played in shaping their learning experiences.

For some students in this study group learning was essentially a tough task. As Tamara said, “I don’t think learning is easy. I think it’s always a challenge.”

Katie’s opinion, expressed below, was shared by many others.

What is easy about learning is that it’s a natural thing, everyone’s always learning, whether they know it or not. What’s hard about it is sometimes when your ego gets involved and you are so hard on yourself on getting a certain grade, I think.

Learning was generally described as being easy when it was perceived to be applicable, relevant, and interesting. Personal interest in the subject matter and its applicability to real-life situations were particularly emphasized as contributing to ease in learning.
What’s easy about learning? I think just that I am generally interested in the things that I’m studying... studying something that interests me so I can relate it to things that happen in my life, or have happened to people around me, or that happen every day. That really helps me, it motivates me to study and to learn. (Erin)

I find that if I’m genuinely interested in a course, like if I’m actually passionate about material and if I care about it, even if the subject itself could be considered difficult, I tend to find it easier than a course that I’m not that interested in. (Terry)

It’s easy when you can actually go and apply it, what you’re learning... That’s how I learn the best. (Hazel)

When it’s a content that is so relevant to the world and it’s very interesting, I think it’s easier for me to acquire that knowledge and apply it. (Erin)

The students told me that it was easy to learn when the content or topics being learned were interrelated and associated with big, general ideas, and when concepts were connected to their previous knowledge.

It’s a lot easier to learn things when they’re relatable to each other, so I can compare and contrast things as opposed to memorize a hard fact... I relate it either with my experiences or with other things I learned in other classes, and that helps me remember. (Camila)

Easy is when I don’t have to spend as much time learning because there’s some things I already know. So, criteria for that would have been yeah, it was just stuff that was already familiar to me. (Vandana)

What’s easy learning for me is bringing together big ideas, integrating big ideas, pulling out what’s important or something like that. I can pretty easily kind of pull out the main ideas and that sort of... big picture thinking. (Emma)

Some considered memorizing and rote learning to be easy, although for others, these attributes or requirements of a learning experience made it hard and undesirable.

I find it very easy to memorize things, memorize content. That’s never been difficult. An easy course is where you can just like stay up the night before the exam and study, and just memorize and go and do well in the exam. (Vandana)

Easy? Memorizing, memorizing is the key word, because it goes in one ear, stays in for a bit, and then goes out the other [laughs]. I remember for BIO 101, me and my friend studied so hard, one of the hardest courses I’ve ever taken at SFU and we were just like “Okay, let’s keep all that information in our brain,” and then once the final was over, like
oh my gosh, you can feel that information is just leaking out of our brain, it’s just coming out [laughs] and it’s okay! (Brittany)

I think what’s hard for me to learn are things where we have to memorize the details, especially in science courses: we had to learn very detailed stuff, and it is just memorization because this is the way it is, and that’s it. (Camila)

Hard courses would be courses that test only on your memory, your remembering skills. They require a lot of reading and a lot of remembering exactly what that reading was about, and I guess that would be it for the hard ones. (Yasmin)

Students identified developing self-directed and independent learning as well as time management skills as being hard.

Sometimes I don’t even know what I don’t know, so I don’t know how to find out what I don’t know. I wish I had better skills for learning how to learn without an instructor or without a mentor. I’m very dependent on having an instructor to give me guidance that says: this is what you need to know. If I don’t have that guidance, I sort of go off target, and then there’s a way too much information to synthesize... I have a challenge in synthesizing information. (Tamara)

I found the lectures easier than the labs, because in the lab you had to think on your own, where in the lecture they kind of just told you, and that’s more my style: I can just memorize it, where in a lab I had to think on my own, and that’s more difficult. (Brittany)

It’s not that it’s hard to study, it’s hard to take the time and concentrate...Hard would be my procrastination, it’s horrible. It’s actually gone beyond the part where I get to be under pressure now. It’s constantly pushing those lines around time management and getting the motivation to start things early. (Lorena)

Investing extensive amounts of effort, and particularly time, to studying was also seen as a hard part of learning.

Hard is when I have to put a lot more time and effort into that class to learn things... A difficult course is one that has a really heavy workload, that requires you to stay on top of it, day after day after day after day, and if you miss a day or two you feel like you’re playing catch-up. (Susan)

A hard course would require like a lot of time, like a time-consuming course that kind of makes you need to learn beyond the textbook, so not just the textbook, not just the readings, but also you have to apply yourself a lot more. (Anika)

I think I’ll look at how much time I spend studying for it, and I’ll also look at the marks I’m receiving. Because if I compare those to say I’m
studying a lot and say I get a low mark, then I’ll say “Oh, that was hard.” (Erin)

What’s hard about learning is it takes time out of my life where I could be doing something else. For example, if I need to study for a certain matter, that means I perhaps can’t spend time with my girlfriend, spend time with my family, spend time with my friends, because I have to prioritize. (Marcus)

The students also told me that learning without creativity makes learning hard.

Something that is hard in learning is if it’s a very restricted course limited on creativity... Creativity, that’s my engine I think, I need to be creative in my thinking. (Anika)

For many students, what was seen as hard about learning was the fact that their learning would be examined and graded.

Actually, if university was just coming to school and not being examined, just for the sake of learning, I would enjoy university so much, right, no exams! Just coming to school, being in lecture and learning new content, I would love it. (Sophia)

Some students preferred easy courses because they saw them as being “less stressful” and “less demanding” in terms of time and effort and because they were more likely to result in higher grades: “the easy ones matter on the transcript.”

Others found that hard courses were more meaningful and effective for their learning. A sense of achievement and accomplishment was also frequently mentioned.

If I can master something that is challenging, it’s so much more rewarding than succeeding at something that I find very easy... I would say the process of learning a difficult thing may not be as enjoyable, but it’s, the sense of accomplishment after I’ve learned it that’s more enjoyable. (Terry)

4.2.3. Preferred Learning Environments and Experiences

Discussions about preferred learning environments mainly focused on students’ decisions and reasons to attend and participate in lectures and tutorials; on their preferred study places and times for studying; on the most common distractions they faced while studying and what they did to overcome these distractions; on their experiences and preferences related to group projects and collaborative group learning; and on their most memorable learning experiences.
4.2.3.1. Attendance and Participation

This topic was activated through asking the following question: How important is it for you to attend the lectures and to actively participate in your classes? Most of the interviewed students chose to attend lectures and tutorials. Instructors were also described as important factors in their decisions to attend classes.

It depends a lot on the professors, and if the professors are interesting. They make a class learn, and that’s why you really want to go to class. (Sophia)

Class attendance was connected to better learning and understanding. As Camila stated, “You hear other perspectives or someone can clarify something for you that you didn’t understand.” Many students identified attendance as very important for engaging with the course material.

[Professors] often explain things in a way you can’t get out of the reading, and you have the opportunity to ask questions, and it’s just lots of different ways to engage with the material. You can listen to it and then you can watch the prof, and then you can ask questions. So, the more ways you have to engage with the material, the easier it is to learn, or the more likely you are to learn it. (Vandana)

Class attendance was also seen as a meaningful way to connect with instructors and to understand their expectations. Attendance was also associated with academic success and achieving good grades. Still, the students were selective in deciding which classes they would attend. Some would never attend the first lecture, because, as Sophia noted, the instructors used the first class to “discuss the course outlines and not to teach.” Others reported skipping tutorials because they found them not to be useful. Almost all the interviewed students had developed their own criteria regarding the usefulness of classes and helpfulness of instructors’ teaching styles and used these standards for making their decisions. They shared their opinions with their peers and were willing to listen to other students’ perceptions and experiences.

Paying tuition fees also stimulated the students’ decisions to show up for classes, labs, and tutorials.

You pay a lot of money for it. I think you should go. And I have to travel really far. Even for a one-hour class I’ll usually come, even though it takes me three hours in total. It takes me an hour and a half to come from home and an hour and a half to go back. It’s worth it, you’re paying
for it, even if you might not learn directly from the teacher, you still learn off of your classmates. (Hazel)

If I don’t go to class, it’s a waste of my money. (Lawrence)

For a number of students in this study, attendance was closely related to in-class participation. The students indicated that their in-class participation changed over time. They described their participation as being more frequent and meaningful in their senior years at university.

I guess in the first year and even in the second year, because the classes were so big, I didn’t always feel very comfortable participating. But, in my seminar courses now I do participate very actively in all of them and I think it’s important, because I feel that you can’t fully grasp the material unless you engage with it and participate, and I think it’s the best way to really show your understanding of the material and learn from other people, and get feedback on it. (Camila)

The students acknowledged general learning benefits of in-class participations, but they also felt that they needed to be interested in the course content, to be “intrigued by it.” The students found it to be easier to actively participate in smaller classes. Their sense of confidence was also identified as an important factor for their in-class participation.

Sometimes I’m confident, but I do get scared and embarrassed to ask questions in other courses that I am not as comfortable. (Mia)

To get that participation mark is a starting point, but you get so much more out of it, because it becomes a conversation rather than just this awkward question in class, so participation I think is really important, and I really enjoy it, and I do it. (Madison)

In-class participation helped some students felt that they were not “alone in the learning process.” They sensed that participation was a way of sharing and contributing.

And I also think that it helps when I ask a question or when I’m sharing something, because it contributes to the other people’s knowledge, since they might be wondering the same thing. (Camila)

The students found participation to be important for their social bonding: for developing friendships with their peers and for building valuable relationships with instructors.

When you create social bonds, that helps with learning as well, because you have someone to study with or to bounce ideas off of. (Lisa)
I have been able to make relationships with the professors more easily by talking in class, which has made it easier to go up to them to ask them further questions, to get help on assignments, because just reading in a textbook is not going to always help me. (Lorena)

Although there were the students in this study group who participated only because it was a required and graded course component, others expressed different views regarding the benefits of participation other than as a required factor in assessment.

I think it influences [professors’] opinion about you, and therefore your grade, so you should participate. Usually, professors like people who participate, just because it facilitates discussion and yeah, I mean that’s part of their job right, so it kind of benefits them as well. Even if it’s not part of your grade, it’s good to participate just because it kind of sets their opinion about you. (Anika)

4.2.3.2. **Preferred Times and Places for Studying**

Student comments in this area were generally stimulated when I asked the following questions: What is your preferred learning environment? Do you have a designated study area? When is the best time of the day for you to study?

There was no consensus among the interviewed students about the best, most productive times and places for studying. Some students described themselves as being rather flexible, but a majority of them had very specific understandings of their capacities to learn in relation to the time and place. They were able to identify and articulate very particular points in time and settings that would help them learn the most. For a few of the students, early mornings before classes were seen as the time when they felt most energized, attentive, and determined to study. For others, evenings and late nights were preferred study times because of their work and volunteer commitments or just because their “kids would go to bed at that time.” A student’s age had an impact on preferred study times.

When I was younger it was the evening, but now I find it’s the morning. The earlier I wake up and as soon as I sit down, that’s when I’m the most productive. (Susan)

As I got older, I could not study at night anymore, so I had to start early in the morning and then until the afternoon I would study. (Karlie)

Many students reserved early mornings for *active learning*, which they described as memorizing and complex conceptualizing, and evenings for *passive learning*, which
some of them explained as “just readings.” Evenings and late nights were also considered by many to be the preferred times for the reflection and creativity associated with essay writing.

Papers and stuff, I’ve written all, the majority of them at night, I think just throughout my whole university periods. It’s the time when I and my mind are most alive. (Madison)

I tend to write essays really late at night, for some reason... That’s when I get most of my essay writing down is after 8:00 pm but studying I tend to do between 2:00 and 5:00 pm. (Lisa)

Several students affirmed the following statement:

At the beginning of the semester, I usually study in the morning, it’s really good. But, then after a while, once the semester starts running you down, I cannot wake up as early, so night-time becomes the chosen time. (Brittany)

There were the students who claimed that they studied “whenever they found the time,” while others indicated that they “just studied all day for two days before the exams, only.” Procrastination and common disruptions were also described as having impacts on study times.

I’m a procrastinator. So, even if I decide to start studying at 8:00 am, I actually won’t start studying until it gets dark, because when it gets dark you’re like “Oh no, it’s night-time, limited hours.” I need the pressure and the stress of having a time limit on it. (Yasmin)

In the middle of the day life is running around and you get really distracted, it’s very easy to get distracted. Early morning, and late night is when no one is on Facebook, no one is around to bug you. (Hazel)

Some students preferred to study in their homes, although others mostly studied in university libraries and some in different public places. Lisa and many other students insisted that the quietness and comfort of their own homes also ensured “not being distracted by people watching me, and me watching other people.” Kitchens and dining rooms were frequently identified as the best “home spots” for studying because they provided the ample space and bright light that were seen to be important for effective studying.

It was really bright and there was a big kitchen table. I could kind of just put my notes anywhere. I have my laptop and my textbook and my notebooks and then also the sun kind of made me feel more motivated than—my basement is a bit darker. (Erin)
I study at the dining room table, because I have more room to spread out all my stuff, all my books and everything were there... And I’d sit there and memorize, and would talk out loud to my dog. (Brittany)

However, there were quite a few students who indicated that they could not study at home.

I cannot study at home because there is a lot of distractions at home. I get way too comfortable at home, I take a lot of breaks at home, there’s always somebody bugging me and wanting me to do things for them, they don’t seem to see that I’m in the middle of something. (Karlie)

Those students felt that they lost focus when attempting to study at their homes; they also felt being isolated if studying on their own.

When I see other people studying, it would just help me study too and focus more, as opposed to studying at home. (Lawrence)

The university library was a common choice for students who preferred quiet learning environments. On the other hand, coffee shops were popular choices for students who thought that it was “good to have some background noise” while studying. Finally, the students had differing perceptions and experiences of studying while commuting by bus or SkyTrain. Although many of the students actually did study while commuting to campus, there were some who found that to be quite a challenging task. As Hazel noted, “I can’t study on the bus because of motion sickness, I get sick.”

4.2.3.3. Common Learning Distractions

The conversations with students about distractions were activated by asking the following questions: What are the most common distractions you face when you study? What do you do to overcome these distractions? During our interviews, many students expressed agreement with Yasmin, who told me, “To be honest, I get distracted very, very easily.”

Internet and online communications channels, family and social life, and noise in general were identified as the most common distractions the students faced while they were studying. The students described various methods that they used to overcome these distractions, although many admitted that they were “not good in limiting distractions.” In almost all conversations with the students in this study, YouTube, Facebook, Instagram, Snapchat, and other social media were mentioned as major
distractions. In order to avoid being distracted, some students designated study times without Internet, mixed with short breaks when they allowed themselves to go online. As Marcus noted,

So, when I reach my goal, like the page limit that I set, then I have a break, so I kind of reward myself with breaks.

Other, possibly less disciplined, students used online “procrastination blockers” and other computer applications to block those websites that they identified as “distracting.” When the online “blockers” were perceived not to be effective, some students took more radical steps: they turned off and hid their cell phones and even deactivated their online accounts. Jessica remarked,

There was even one semester when I had my friend go in and change my password on my Facebook, so I just couldn’t log in. If you have to get things done, I think you need to do extremes sometimes. It's worth it.

Family members like partners, children, and siblings were all seen as study distractions, as well as the students’ roommates and friends when socializing and even when studying.

Another distraction would be if I’m studying with friends. We tend to socialize, so we have to say “Okay, you know what, we’re taking a break for 15 minutes, that’s when we’re going to socialize. As soon as our 15 minutes are up, back to studying.” So, just kind of disciplining ourselves. (Karlie)

The students found all sorts of household noise to be a distraction when studying. Several students used earplugs to disconnect themselves from the noise, and some students bought headphones for their partners and roommates. Although the students coped with distractions in many distinct ways, they were all aware of the negative effects distractions had on their studying, except one student who described utilizing distraction as a beneficial tool for learning.

I try and use distractions to my advantage. So, what I mean by that is, if I study for 20 minutes, I'll distract myself for five minutes and then I'll come back to my notes and see if I still remember it. If I don't remember, then it means I need to review it again. I kind of try and use distractions to my advantage. (Marcus)
4.2.3.4. Group Projects and Collaborative Learning

During the interviews I asked the students whether they preferred studying alone or in groups. The students generally experienced group learning in two different ways: it was either their chosen study approach or they were assigned to group projects by their instructors. When group learning was the students’ choice, they mostly chose to study in pairs or very small groups, preparing for tests and exams with colleagues they knew personally. In many cases, their selected study-mates were not majoring in their field of study and mutual trust, common learning habits, and shared expectations and commitments were described to be more important than the subject and content of learning. There were, however, students who chose to prepare for exams only with their classmates.

The students offered various reasons for their choices of study-mates when studying for exams.

My best friend, she’s in Communications, I’m Health Science. We never have the same thing to study for, but having somebody else there who is studying will motivate me, because if I’m by myself, I’ll watch TV, fall asleep or do something unrelated to school, even if it’s due. (Yasmin)

If I study alone, I get distracted, I need someone else suffering with me... It’s two people that I study with, and I study with them really well, because they have the same tolerance as me. Like, they get distracted around the same time, but they get focused again, and we’re getting our stuff done. (Hazel)

The students in this study had different interpretations of their expectations and experiences about studying in groups that their instructors put together to work on team projects and presentations. The following themes emerged as important in affecting the students’ learning experiences in such group assignments: work ethic and fairness related to workload and individual contribution; openness and respect for distinctive personalities, opinions, and values in mutual communication and interactions; and flexibility and readiness to resolve disagreements and conflicts. A number of students agreed that studying in groups was beneficial for their learning only if every group member came to the group with particular content knowledge and understanding.

I would prefer to first study alone, but once I know what I’m talking about then it’s okay, I feel that it’s fine to share ideas... And, it’s actually really helpful, because if there’s something I quite didn’t understand or I forgot, then others can help out. But, to be in that stage, I feel that
everyone needs to know stuff before getting together, because otherwise it’s not very helpful. (Jessica)

I need time initially to sit down, learn the topic and the content myself, and then go inside of a group setting and then apply it with them. So, the application part I would prefer to do with a group, but I’d prefer to sit down and learn it first without any distractions. Only after [that], I can go in a setting where there is open communication, open thoughts going around, brainstorming, and stuff like that. (Sophia)

The students preferred smaller study groups—groups not exceeding five members. They found smaller groups to be more manageable, easier to meet with and coordinate activities. For many of the students, group learning helped them “cement their knowledge.” It also helped them to affirm their own understandings and to contribute to creating knowledge of their own or of the whole group.

I first try to understand the information on my own. Then, I’ll meet up with friends and we will discuss the information together. If there was something that I didn’t pick up, then I would get them to explain it to me, and vice versa—I would kind of teach them. So, if you can teach the material to somebody then it means that you know it yourself really well... And that again would help me remember things even better. (Karlie)

What’s most difficult for learning is synthesizing information, and what helps me synthesize information is talking to people about what we’re learning. So, if we’re talking about a new concept, and we’re learning it together, and we’re understanding how it fits into a larger framework together, that’s what helps me the most. (Tamara)

Later I will comment on how students described their abilities to express concepts or principles in their own words or to create their own examples and metaphors as being one of the key indicators of their understanding.

The sense of greater common purpose and increased responsibility was also associated with group studying and learning.

If I’m in a group I feel the pressure, because I don’t want to fail other people. (Hazel)

A female student mentioned the importance of having a “gender mix” in mind when assigning groups projects.

I think that in group projects it helps to have a mix of genders. Having at least one guy in the group, it really helps. Because if it’s all girls, there’s sometimes a power imbalance... And yeah, girls can get a little
bit catty, sometimes, like too concerned about who has more power, or whatever. Guys are more objective. They’re more like, okay, let’s just get this done. So, it helps to have at least one guy. (Anika)

The notion of sociocultural diversity was also brought up in our conversations about study groups and collaborative learning.

You have people that have very different lives and they live differently, culturally, everything, right... And, they contribute in a way that you haven’t ever thought of before. We usually think in a restricted and self-centered way, only. And then you get the thoughts and these opinions that are very different from the way you thought. (Sophia)

4.2.3.5. Memorable Learning Experiences

Discussions about the students’ best, most powerful, and most memorable learning experiences opened several interesting topics. I asked students to identify the best learning experience they had had in an FHS course? In any course? Some students described these experiences as beginnings of real and profound personal changes.

There was a time when I started actually thinking about things like structures and discourse, and it really brought everything together that seemed more scattered around in different courses. The approach to that topic that was much... that really touched me. That was the beginning of the change in me. (Robert)

I remember leaving those classes and sort of describing the feeling as if I had fireworks going on in my head. I’d never thought of health in the way that was being taught in that class. So, that class was excellent in terms of introducing new, more critical ways of thinking. (Tamara)

The courses that inspired students’ learning through exchanging ideas with other people and that challenged them to actively debate, to question, and reflect on ideas were also identified as being memorable learning experiences.

In the Semester in Dialog¹ we always had leaders from the community to come into our classroom, and then we’d talk with them. They’d talk about their experience and expertise, and then we’d ask some questions about it, but also about their life and how they’ve experienced whatever they do, and then we reflect on how we’ve experienced whatever we do.

¹ SFU Semester in Dialog is a special, alternative format SFU program that provides students with distinct interdisciplinary experience that bridges the classroom with the community and creates space for students to reflect on what they are doing and why it matters.
A lot of reflection came out of that, and I think that was really powerful. (Camila)

Further, being encouraged to think through the process of learning and to become critical while evaluating information were equally mentioned as remarkable learning memories.

It was about logic and reason, and how to always, always, be critical of what you read... To always be skeptical, not cynical but skeptical and to make sure not to believe everything you read but to do further research and always be not afraid to say that you don’t know something, and you’re willing to learn more about something. (Marcus)

Many of the students agreed that instructors had extraordinary influences on their learning experiences. These students felt that the profound changes in their learning were instigated by the instructors’ positive and caring attitudes, friendliness, and sense of humor, as well as the instructors’ ability to make students feel comfortable and confident in their learning. As one student mentioned:

Well, I think she empowered the students a lot, and she trusted us students a lot. I guess, once you empower and trust the students, you give them hope as well. You, kind of instill a hope, you inspire them. (Anika)

The students also indicated that applicability and relevance of the course content was very important for their learning experiences. They found that closeness to reality had an exceptional effect on their learning.

We went to a supervised injection facility downtown. They give clean needles to people who inject drugs. It’s on Hastings, and we learn about it like in all our classes, because this is a really big health science topic, and the prof had it arranged that we got to visit it, and that was amazing. You learn about all this stuff by actually getting to see it and meet the people. It makes it so real. I think that’s one of the biggest things, when they can make it real for you, like a professor can make what you’re learning applicable, and you can actually see it, the process. (Hazel)

4.2.3.6. **Perceptions of Instructors**

Conversations around this topic were initiated by the following two questions: How important are instructors’ teaching styles or attitudes for your learning experience in a course? and What makes a good instructor for you? The students acknowledged the important role instructors play in their learning. The instructors’ pedagogical approaches,
their organization of lectures, and their ability to clearly communicate their expectations were described as having significant effects on students' learning experiences and decisions about course selection. The students regarded creative, passionate, and resourceful instructors highly. The instructor's openness and fairness as well as the enthusiasm about the content they teach were also described as distinguishing characteristics of good instructors.

A good professor is somebody who is able to inspire the students and is able to influence them in the way that they want to actually make some kind of change, or they want to go and take something outside of the course. And, to make them want to demonstrate the potential of that content to the real world. (Anika)

How the professor teaches makes the class easy or difficult... A good course is a course where a professor lays out a set of guidelines, the professor creates a clear outline of what each lecture will teach and provides a clear outline of what the learning outcomes are for each lecture. If a course is organized and laid out clearly and the expectations are laid out clearly, that’s what makes a course good. (Madison)

The importance of instructor's organization was mentioned in almost every conversation with students in this study group.

It depends a lot on how organized the instructor is actually. When I took it, our prof was very disorganized and the lectures were all over the place and I had a lot of trouble following it. It took me double the amount of time to study because there was no clear outline of what was covered in each lecture, so I had to go through each lecture separately and make my own sort of table of contents and that was kind of hard, and it made learning much harder. (Jessica)

What make a course challenging is when the material presented appears disorganized, which means that the professor hasn’t clearly explained how this new information fits into a larger framework of knowledge, or why this information is important. (Tamara)

What’s challenging is when a teacher does not clearly explain what the expectations are or what the learning outcomes are. (Lorena)

Some students favoured instructors who would continually provide ready-made solutions, and step-by-step guidance.

The lecture slides were exactly what was on the midterm... So, that’s what made it really easy, almost like spoon-feeding I would say [laughs]. (Yasmin)
He made it really easy for us. He always had point form lists, so what are seven things of this, what are five reasons for that... I’m used to just being told what’s right and what’s wrong. (Brittany)

Others preferred different teaching approaches.

What I loved was the teacher again, who was very excited and engaged and was challenging me in good ways. (Lisa)

He’s a really creative lecturer. It’s insane. I think having to apply what you learn in class in the creative way... it’s so different. I think that’s probably one of the best things. (Hazel)

The students also commented on instructors’ approachability and passion for teaching.

I think it really comes down to the instructor’s personality... If the instructor takes a genuine interest in getting to know their students and they seem approachable, I’m much more likely to get to know that instructor versus someone who seems they’re just doing it for the money or something like that. (Terry)

If it’s a hard course and the professor has a passion about whatever he’s teaching and presents the material in a really relatable manner, and gives you appropriate resources to rely back on when he can’t help us, it will make even a harder course really easy and good. (Karlie)

Finally, it seemed that the students were likely to replicate their instructor’s enthusiasm in a way that could increase their interest and capacity to learn.

If a teacher is engaged in the information, even if it's a subject I’m not so interested in, that makes it easier for me to learn. Whereas if a class is dry, or if I feel like the teacher has not, does not seem to be interested in it, that makes it really hard for me. (Lorena)

4.3. Strategies and Tactics for Learning

All of the students who participated in this study were very good at combining strategic and tactical thinking in their approach to learning. They excelled in strategic thinking and were able to achieve desired academic results by taking stock of the learning situations they were facing. They attentively analyzed and understood what was ahead of them, and they also performed a “big picture” analysis of their prior learning experiences. These analyses were then combined with a tactical and logistical overview of the steps they needed to take in order to effectively and efficiently locate, allocate, and manage their own personal resources, including time, effort, and perseverance.
My conversations with students regarding their learning strategies focused on their perceptions of their general learning strategies as well as particular learning tactics that they described using for learning at SFU. The questions that reflected this focus are listed in Chapter 3 and are included with the discussion of the themes that emerged from the conversations that followed below.

The following themes emerged from the conversations relating to *Tools and Tactics for Learning*. The themes are divided into two broad categories.

Themes related to the students’ *general learning strategies*:

- Students’ learning strategies were mostly self-developed, and they were seen as different from the strategies they used in high school.

- Students reported adjusting and changing their study tactics in direct response to different instructors’ expectations and the specific characteristics of courses.

- Students were able to distinguish between learning for grades only and learning with understanding. Learning with understanding was described as the ability to explain abstract ideas; to summarize and simplify complex concepts; to apply these concepts to real-world experiences; and to reflect and participate in peer learning.

Themes related to the students’ *particular study tactics*:

- Note-taking was a commonly used strategy and was related to writing by hand and digitally both in-class notes as well as study notes. Note-taking also referred to rewriting notes and sharing and reading these notes aloud.

- Creating and answering practice questions was a frequently used study strategy.

- Students described analogies, mnemonics, associations, acronyms, keywords, and flash cards as their chosen cognitive tools for improving memory.

- Visual learning and visual thinking were identified as important ways of organizing learning environments.
4.3.1. General Learning Strategies

4.3.1.1. How did They Learn How to Learn?

The conversations below were framed by the following questions: How did you develop your learning strategies? and Did anyone teach you how to learn?

Nearly all of the students participating in this study reported that no one had explicitly taught them how to learn: how to approach learning tasks, how to develop the very personal processes and particular activities that would support their attention, memorization, comprehension, and reflection. For many of the students, learning how to learn was an ongoing process of trial and error. It was a contemplative and self-learning process that happened concurrently with the subject and content specific learning. Terry said, “I guess over the years I’ve just kept trying different things and learning what works for me, but it was all self-taught. I never had someone to tell me, oh this is what you should be doing.” Lisa noted, “I Googled it, I tried out new things. A lot of it’s been like, guess and tell. I would try something and it would work, or I’d try something and it wouldn’t work at all.” Brittany learned how to learn by herself, during her first year at university. She compared her study strategies with those of her peers. Erin agreed. “My friends taught me.” Sophia believed that instructors did not teach students how to learn because “they expected you to know it.” However, she wished that they were teaching students these skills. “It would help, yes, of course, it would help if the professor was like, ‘these are some strategies for you to learn.’”

Some students talked about advice they received from their parents and elementary or high-school teachers on how to learn.

I remember just something that I took from my high-school biology teacher who said, “Seventy five percent of stuff we’ll teach you but the rest you just have to find it on your own,” and that sort of struck me. A lot more of that I found it on my own during university studies. (Robert)

A couple of the students remembered that their university instructors suggested to them how to improve their note-taking, but that was pretty much it. Since developing study skills was not part of any FHS curricula or instructors’ lesson plans, the vast majority of the students felt the same way as Susan. “I think I’ve learned through experience, but I have looked at colleagues and resources on how to study.” Tamara nicely summarized many student views on this topic.
I am certain, that it’s trial and error, unfortunately. When you’re in the trial and error stage, it is really stressful if you didn’t approach a course with the most optimal strategy. At the end of a course, I always feel like I have good ideas of how I would re-learn it, if I would do it a second time.

4.3.1.2. Did They Study Differently in High School?

The following question was used to explore the probable changes in students’ general approaches to learning: How different are the learning strategies that you use now, from the strategies you used when you were in high school? It was interesting that quite a few of the students reported that they “really did not study in high school,” or that they were “just coasting.”

I never studied in high school. My family always laughed because I’d get a textbook, put it under my bed, and take it out and give at the end of the year. And, I remember this one time studying like for five minutes for my French class, and my whole family thought it was funny… They all started applauding me and saying, “She actually goes to school!” and just making a joke out of it because I never studied in high school. (Yasmin)

I didn’t do anything in high school! [laughing] I think literally, I studied for provincial exams in Grade 12, and that was it, but I didn’t learn how to learn, which was a big problem… I had never learned how to study because I didn’t have to in high school. (Emma)

However, some students, indicated that their high-school learning strategies were similar to the strategies they used for studying at university, but they believed that, as university students, they were better organized and more willing to try different approaches to learning. They also felt that they had to be more prepared and aware at university, as Lawrence put it,

I find learning now is more self-directed and self-motivated compared to [learning] in high school... I’m not happy to admit, but I find there [in high school] were times I could put in not as much effort but still do really well, just by virtue of high school. And, sometimes they inflate grades, so I sometimes took advantage of that.

A majority of the students agreed that they were spending considerably more time studying and preparing for exams at university than they did in high school. They recognized that high-school classrooms and university lecture theatres were very distinct and diverse learning environments, with different course requirements, pedagogies, teaching styles, and expectations. As Mia noted, "In high school, everything was just
kind of fed to you.” For Lawrence, in high schools, “everything was very much delivered to us in morsels, so that it didn’t require as much time and effort in putting to understanding material, because everything is bite size and it’s easier to digest and take in.” Karlie remembered that as a high school student she “never really understood or saw what’s important.”

The students thought that the complexity of the university courses and the volume of the subjects’ contents was much higher compared to their high-school classes. Terry said, “High school? They didn’t really have anything big.” The students also noted that the course-specific worksheets and custom course packages created for them by high-school teachers did not exist at university. Instead of using teacher-edited and rather condensed materials as primary study resources, the university courses required FHS students to study from textbooks. Studying from textbooks, even approaching reading them in a purposeful, effective, and learning focused way, was a challenging learning curve for many of the interviewed students. Camila mentioned, “When I was in high school, we didn’t really have any readings, but if we did, I didn’t have to do them.” Marcus admitted, “I found that high school almost ruined my studying techniques because everyone in high school studies the same way.”

The students also stated that high school had more frequent quizzes, tests, and exams compared to university courses. This had an impact on their learning experiences.

You have twelve tests [in high school], in comparison to SFU [where] you have two tests. Everything you do [in high school] is not as important because you can rebound from one test. I did not have this much pressure to do well, so I did not study as hard. (Hazel)

In-class participation and discussion, as well as group studying and team projects, were not seen by the students as important for their high-school leaning. Some of the students noted that collaborative learning was not required and even not explicitly promoted in high schools. Lisa said that she was very shy as a high-school student, being afraid of talking with other people and in front of them. When she completed a few university courses, she felt inspired to “get out of my shell, and to… just start living life to the fullest. Important part of that was stepping out of my shy space.” Like many other students in this study, Lisa was able to realize the benefits of interpersonal
communication for her learning processes: “So, probably the biggest has been allowing
other people into my study space and recognizing that actually it really helps.”

Other students were also quite introspective when reflecting on their high-school
learning experiences and their transition to university learning. Karlie recalled some of
the core values and attitudes she and her classmates shared as high-school students.

In high school, your thinking is completely different. You’re focusing not
on your studies, but more so that whether I can fit into the crowd or
not, and whether I can follow a new trend or not, or whether I can
socialize with this person. So, that’s sort of what’s going in your head
as opposed to, hmm, I wonder what I’m going to get on that exam, or
how can I make this learning approach better? Those things are never
crossing your mind in high school, because you’re not within that
environment.

Many of the students echoed Katie’s impression, “When I went to university the
first time, it was really challenging for me, because it was the first time I was ever
challenged.” Others noted that their university learning was more “self-motivating”
compared to high-school learning, and that university learning was often related to
interpreting and integrating facts and ideas. Anika noted, “How I learn now is different
just because I have a little bit more freedom, a little bit more creativity, I’m a little bit
more sure of myself, too.”

For Robert, university learning was about finding out “what I can do by myself.”
He emphasized the importance of reflection, which he thought was central to his
university experience.

And a lot of reflection, that has been the most key thing about university
when I came in. It was all about what is reflection, and just learning
about that itself, that was a big thing. Just learning how to reflect, and
not only just writing down what happened, but actually looking at what
happened by taking mostly assumptions that we made about why you
did something.

4.3.1.3. Instructor’s Expectations

Almost all the students indicated that an instructor’s expectations greatly
influenced their approaches to learning and choice of learning strategies. The following
question sparked these conversations: How do you adjust and change your study tactics
in direct response to different course topics? For example, what do you do differently
when you study for the Applied Health Ethics course versus studying for Introduction to Statistics?

Marcus noted that he always started by analyzing the course syllabus in order to learn the instructor’s expectations and preferences. That way he claimed to be able to find out how much work he would need to put into a course. He characterized his initial approach to studying as “feeling out the process."

I’ll study hard for a certain test or I’ll try really hard in essay, but I use that first midterm or first paper to see how or what the professor expects out of me. So, how they mark my test or how they mark my written paper shows what kind of style perhaps they like or what they’re looking out of a student in a certain class.

Before deciding on her study tactics, Sophia revealed that she wanted to make sure that “I understand what’s required of me first, what I’m supposed to do.” Anika and Mia also tried to understand the instructors’ expectations and grading logic.

Each professor is different, each professor has their own bias, their own opinion, and that’s what the mark is based on. They even are biased towards your personality or who you are as well. So, you try to be on their good side, you try to figure out what their logic is, logic meaning what they would consider to be a good answer or how they want you to answer. (Anika)

It all depends on how the professor decides to teach it and how they want to mark it. (Mia)

Lorena, Karlie, and Brittany made similar statements. They all agreed that being flexible in choosing study tactics and matching them with very specific instructor expectations were irreplaceable prerequisites for effective learning that would ultimately result in getting good marks.

4.3.1.4. Course Characteristics

In addition to instructors’ expectations, the students also affirmed that a course’s distinctive features played an important role in choosing their study tactics.

I think, for me it really depends on the course, like how the course is structured, how the prof teaches the material and what type of course is it. (Lawrence)

It all depends on the course and the content. I have different strategies for different types of learning tasks. (Emma)
The students distinguished between “facts-focused” courses, such as math, chemistry, or statistics, and “concepts-based” courses and topics related to health ethics, health care systems, or social determinants of health. Lower division courses, taken in the first and second year at university, were generally considered by the students to be mostly facts focused, while upper division courses taken in the third and fourth year at university were commonly identified as concept-based courses. The students described facts-focused courses as courses that emphasized specific details that required a lot of memorizing. Concept-based courses were described as more theoretical, requiring students to be able to synthesize and combine information. Anika described these courses as requiring her “to more articulate why and how I draw the connections.” The students saw understanding concepts and an ability to explain complex ideas to themselves as well as to the others as being essential for learning in concept-based courses.

4.3.1.5. Learning for Grades Was Not Seen as “Real Learning”

This theme emerged as an aspect of discussions about course characteristics. Grading and assessment is discussed later in this section. Many students indicated that they made a distinction between real learning and just getting a desired grade. Real learning was associated with intentional, focused, and meaningful learning. As a learner, Anika was going beyond the course syllabus in search of meaning and applicability of learning concepts. She felt that the imperative to get a good grade was constraining her actual learning and restricting her study strategies. Vandana explained real learning as a learning process that challenges her. For Robert, writing quizzes and tests was simply a matter of reproducing facts with the only purpose of achieving higher marks. He became “very engaged in real learning” when he was required to do some research, to investigate and to be actively involved in discoveries and relations and not just memorizing facts. Robert described real learning as a very reflective process that prompting him to “take that step back and say, why I did something, what could I have done better, why was this, why did I approach something the way I did?”

4.3.1.6. Learning with and for Understanding

The students identified several study strategies they used when they were required to learn broader principles that involved a deeper understanding and not just rote memorization. The topic of tactics that can assist in memorization and recall also
emerged during these conversations. Strategies mentioned include explaining a concept to themselves as well as to somebody else using their own words; summarizing and simplifying; finding ways to apply abstract concepts to real-world experiences; and participating in peer learning.

Most of the students stated that using their own words to interpret ideas and to explain theories and principles was very helpful to their understanding of new concepts. The students described their ability to express concepts or principles in their own words, or to create their own examples and metaphors, to be one of the key indicators of actual understanding, evidence that they really have “got it.” Here, students were responding to the following questions: How do you decide when you really understand a concept or topic, not just that you have it memorized but that you really have “got it”?

One of my things is to be able to talk about it in a different perspective and see how much I understand it in my own words. That’s very important, not just speaking the way the professor speaks but in my own words, and be able to explain it to myself. (Marcus)

If I can’t write and explain in my own words then I will approach the professor or take the extra necessary steps. (Katie)

Students associated explaining with explanation both to themselves as well as to somebody else. Yasmin connected explaining with teaching.

The best way for me to learn anything is to explain it to somebody else. If I teach somebody else, even the minimal things I know, I’ll learn it better... So, I think that’s why I got such good marks, because by explaining it somebody else I would actually know it better and more in-depth.

Erin and Terry also made statements that were very similar to Yasmin’s. When thinking of explaining, Jessica had her mother in mind, and she noted that being able to explain concepts to her mother over dinner gave her confidence that she has actually “got it.”

So, whenever I’m taking my notes or learning a new concept, I’m always thinking how would I explain this to my mum, how would I explain this to my friend who’s in the class, how would I explain this to somebody else? I think it helps my understanding and it also later, when I go back to the content after not having looked at it for three months or something, it really helps because I have explained it to myself in a way that I can understand. (Jessica)
Madison felt confident about her understanding if she was able to explain a complex immunologic function to her boyfriend, who was a cook. Lisa, sometimes, tried to explain the controversies related to the regulation of health programs and services to her cat. Camila also associated understanding with her ability to spontaneously and willingly discuss challenging learning topics, particularly outside of classrooms. She said, “If I can verbalize it, it will make me think about it more simply because I’m saying it and it makes more sense to me.”

Summarizing and simplifying were also described by the students as their chosen strategies to make meaning of complicated concepts. When summarizing, Robert described constructing his own “points of understanding” and then linking them into a structure that would seem sensible. Summarizing helped him to reach an “understanding of what’s going on first of all.” Katie related summarizing to connecting themes and ideas. She was trying to look at the big picture first. She said: “It gives me a good starting point to understand the whole thing and then I focus on the details after that.” Simplifying was important for Terry and for Emma, who described simplifying as breaking down large, complex concepts into more specific learning objectives. For Hazel, simplifying was a way to go through considerable amounts of information.

When you open up a PDF of a posted lecture, and it’s like sixty slides, before I even start it, I’m already defeated. How can I get through sixty slides? It’s just so much easier if I simplify it... I would just try to get the main idea from each one. I just want to make it as simple as possible.

At times being able to apply abstract concepts learned in classes to the real world was described as an important condition for achieving effective learning with understanding. Some students felt that presenting the applicability of lecture content was the instructors’ responsibility, though others thought that it was the learners’ job to connect new information to the realities of the world in which they live. Numerous students agreed, however, that the applicability of knowledge transcends lesson plans, lectures, and required readings.

The students described peer learning as a very valuable strategy, which they frequently utilized in their attempts to achieve understanding. It was equally important to students to learn with each other, as it was to learn from each other. However, a few claimed that it took a while for them to realize the social as well as cognitive benefits of
learning with and from their peers. As Lisa mentioned, “Now I get together with friends more, which I never did before. I used to be a very independent student, and now I like talking with friends about topics.” Although a few students reported to have “designated” study partners that they had never changed, many others relied on their classmates in courses that they were currently taking. That way it was much easier for them to organize their collaborative study sessions and to synchronize course-specific schedules and deadlines.

The majority of the students in this study felt that an understanding of the concepts was the most valuable learning outcome. Furthermore, they believed that understanding was much easier to accomplish if it was a purposeful and shared effort. In addition, the students realized that helping others to understand did contribute to their own understanding as well. Erin said, “I find it helps me a lot when I have a friend who asks me a lot of questions to explain the material, and if I can explain it in my own words to her that helps me a lot to understand.” Mia added,

But in terms of processing things and understanding it, I really, really enjoy discussions. You know, the saying goes: if you can teach someone something then you really know it, and I think through that experience you get to really challenge yourself, and also learn different things about everything.

When they did not understand what they read in the textbooks or heard in the lectures, a majority of the students indicated that they would “do a lot of Googling” first and then talk with their peers. Many students echoed the following comment made by Madison: “I ask friends a lot, because all my friends have such different backgrounds that it’s always possible that they’ll understand something I completely don’t understand.” Interestingly enough, contacting instructors for clarification was the last and the least frequently used option for most of the students, despite their reported regular class attendance and participation.

4.3.2. Particular Study Tactics: Lecture Notes and Beyond

4.3.2.1. Note-Taking

Note-taking was identified by nearly all students as their preferred study tactic for documenting and internalizing information. Although some students acknowledged the importance of integrating their prior knowledge with effective note-taking, others believed
that the main purpose of note-taking was to support the acquisition and retention of entirely new knowledge. As Jessica mentioned, “Taking notes is the way I memorize things. I have to write things out to process them.” Many students generally agreed that having the proper “lecture listening skills” was important for their effective in-class note-taking. As Lawrence put it, “to take good notes, I really try to listen very intently.”

I asked several interview questions that were broadly relevant to note-taking.

• Do you take lecture notes regularly and how do you do that?
  
  ○ In what way does your note-taking change depending on the course instructor or lecture content?

• Do you try to write down everything you hear, or just the main points?
  
  ○ How do you decide on the main points?

• How do you format and organize the content of your lecture notes?

A number of specific themes pertinent to students’ note-taking emerged from these interview questions. They are discussed in more detail below.

4.3.2.1.a. How Much Information Should be Recorded in the Notes?

Some students reported recording all they could gather during lectures because their main intention was to stick to the instructors’ exact expressions and explanations. Terry decided to capture almost everything he heard during lectures.

I write down everything that the professor says and then later on when I’m studying and going through it, that’s when I try to get the main point out. I just don’t want to miss anything when I’m taking notes, so it’s important for me to write down as much as I can.

In order to avoid missing something, Tamara also tried to write down as much as possible.

Sometimes I find my hands just passively write what the professor is saying, and I’m listening. And when I go back to read my notes that I’ve typed, I’m like: What? I wrote that? I don’t remember writing that! So, I think sometimes my hands are on autopilot while I listen.

The speed of the instructors’ speech was described by some students to be related to the quantity of notes taken during classes. Erin mentioned, “If the professor is talking really fast then I’ll probably just try and scribble down as much as I hear and
figure the main points out later.” Several other students also agreed that an instructor’s fast pace in lecturing and the large amounts of presented information would likely disengage them from the lecture content. As a result, they would stop thinking about the concepts that were taught and will just tend to record as much detail as possible.

A number of students believed that verbatim recording would help them in memorizing instructors’ explanations, so that they could properly replicate these when writing tests and exams. There were students who decided to go a step further to ensure the high fidelity of notes taken in-class, as they resorted to audio recording lectures.

I’ll choose to record their lectures on my iPhone. I’ll record them because I just know that there’s things in there that I’m going to miss by not being able to write them all down, so I’ll record [lectures] and later go through them again. (Susan)

Some students said that they asked instructors for permission to audio record the lectures, but many admitted that they did not.

4.3.2.1.b. Identifying Relevance and Importance

Students indicated that in-class note-taking frequently required them to be rather selective in determining what information was important enough to include in their notes. Jessica claimed, “If I wrote down everything I heard, I would have tendonitis. But I tend to write down things that I want to think about later, or things, particular dates, or important details that I think I’ll forget.”

Students often remarked that searching for the meaning and significance of the lecture’s content was a quite challenging task when trying to accomplish good note-taking. Deciding on what information to include in the notes was described by the students as difficult, particularly because such decisions had to be made quickly. There were students who tried to rely on their own assumptions or perceptions of importance and relevance. Yasmin said, “If I think it’s interesting, I’ll write it down.” Brittany described the lectures’ “main keywords” as her “clues for importance.”

Lorena felt that novel terminologies she heard in class were important, making note of “words that I haven’t heard before I guess, and that would help me get a better understanding.”
For some students, predicting potential exam questions was central to their decision making about what should be included in the notes. Anika noted, “I’ll jot down the stuff I think it would be on an exam.”

Students suggested that it was especially hard to match the ideas they sensed to be important with the ideas the instructors might believe to be important and relevant. Some of the students referred to this process of *matching* as being more than just the act of speculating and supposing. They reported that previous knowledge and their higher level of interest about the subject matter did improve the possibilities of synchronizing their notions of importance with the ones that instructors held. Yet, a large majority of the students agreed that the way they anticipated the instructors’ perceptions of importance was important for deciding on lecture content that needed to be recorded.

Karlie and several other students counted on instructors’ explicit clues.

Sometimes [instructor] will tell you that this is important and is going to be on the exam, and that actually helps quite a bit. I would then just circle that as this is going to be on the exam. So, that’s sort of how I decide that this is the important stuff.

Several students stated that they recorded everything instructors wrote on the boards because they thought that it was an actual sign of importance. Terry mentioned that “Because they [the instructors] put an effort to writing things down, so I’d do.” Others relied on lecture slides, which were posted online by instructors before the lectures, to decide on importance of the presented topics. Katie noted that “if [text] on the slides is underlined, I’ll write that down.” Mia had a different view, stating that “only if it’s not on the slide, and I think it’s important, I will write it down.”

Some clues from instructors were seen by the students as being rather elusive. Sophia believed that important lecture content was usually “formulated in a metaphor.” Lisa noted, “I know that if a teacher says things more than once, that’s something that’s really important to listen for.” Emma described her ways of trying to interpret instructors’ implicit hints about what should be considered important in the following way:

If they pause and then start something else, it’s probably something important... If they ask the class a question, it’s probably really important. If they go over it in the tutorials, it’s probably really important. Just little cues like that.
There were students who reported watching for instructors’ nonverbal communication signals, like their facial expressions and gestures, in the search of discovering instructors’ perceptions of importance.

4.3.2.1.c. In-Class vs Study Notes

In-class notes were described by the students as the notes they took during lectures, tutorials, and labs when they were recording the course subjects presented to them by instructors and teaching assistants. Only a couple of students mentioned glancing over their in-class notes the same day they were taken, and they mostly did that on the bus while commuting from campus back home. They did not consider that glancing to be an indication of any deeper exploring or analyzing of the in-class notes.

However, all interviewed students stated that they were engaged in a really systematic and meaningful review of the notes taken in class at some point after the class. For some students, it could be a week after, and for others, even a few months later. Students associated this thorough reviewing of in-class notes with creating their own study notes. When creating study notes, students reported first starting with revising and reorganizing their in-class notes. Their next step was reported to be combining the in-class notes with their own personal observations and interpretations. That would also include adding notes they were taking while reading textbooks or supplementary course materials and various online sources. The majority of the students described their study notes as their primary resource for studying and preparing for tests and exams. As Lisa mentioned, “I basically just take all my reading notes and all my lecture notes and I combine those into my exam materials.”

Tamara referred to study notes as “study sheets.” She reported creating study sheets by blending them with the lecture slides and other materials that were provided by instructors ahead or after lectures.

I find that I need to write out my study sheets and organize them in subheadings or in different colours. It allows me to synthesize the slides and professor’s notes with the notes that I added while the professor was talking.

While showing me some of her study notes that she brought to the interview, Katie explained that she also started with the printouts of lecture slides.
Yeah, these are the slides that they [instructors] give to me. And then I go through them after class and rewrite things that were important, just along the outside, or I underline. And then I make my kinds of study notes when I’m going to study.

Many students also mentioned that rewriting in-class notes was the method they regularly used for creating study notes. They said that while rewriting their in-class notes, they were selectively eliminating material they thought was not important for their learning, so that their study notes could contain what they believed to be the most essential and relevant information. The process of creating study notes was described by the students as the beginning of their real studying. Erin said,

So, that’s when it gets hard, and when I really become serious about learning. When I read through all my lecture notes and try to summarize it or reword it to make sure that I understand it. And then ideally, I’ll start weeding some of the things out.

Study notes often included highlighted or underlined words, together with scribblings and sometime colourful drawings made by the students. Emma described her way of creating study notes. “I would do more sort of circles and underlines and stars and things like that around important points.” Katie explained why she also draw stars in study notes: “If we have to know these things I put stars beside them.”

Study notes were described by the students as a way of personalizing learning as well as taking ownership of knowledge. The main concept that emerged here was the students’ desire to decode and interpret new facts in their own way because that would help them to remember and internalize the new information.

I think it’s just being able to put something in my own words and having that process of writing it out helps me a lot. (Madison)

You want to put into your own words, be able to understand in your way because everyone has a different style, [different] sort of teaching or learning... I write my notes out on a piece of paper in a way I would understand. So, make another person’s words or concepts your own. This makes knowledge your own. (Marcus)

As Mia noted, writing her study notes was all about creating a personally meaningful structure that would force her to follow it as a learner. Several students echoed Terry’s determination to always try to write the study notes very neatly. “That really helps me to just be very organized and be very focused.”
Most of the students created their study notes by themselves. Some, however, described creating them in collaboration with their peers, usually while exchanging notes taken in-class. Many students also reported that comparing and sharing their study notes with their classmates when they were studying together was beneficial for their learning. For the majority, the study notes were seen as indispensable resources for preparing for tests and exams. Although none of the interviewed students reported creating study notes immediately after lectures, they all agreed that their study notes would be much more beneficial if they were made shortly after the lectures.

4.3.2.1.d. Diversity in Students’ Notes

I asked the students to bring some examples of notes or other self-developed study materials to the interviews.

The students’ notes varied greatly in appearance. Some notes were written on loose pieces of paper, or in small notepads. The others were recorded on bigger sheets, collated in ring binders. Several students indicated that they wrote notes on the printed handouts or lecture slides provided to them by the instructors. There were a few students who described writing notes on the textbooks or lab manuals.

Some students reported taking notes in a way that is generally characterized in literature as text-based or linear note-taking (Boch & Piolat, 2005; Makany, Kemp, & Dror, 2009). These predominantly text notes consisted of information recorded in sentence like arrangements. Some sentences in these notes appeared to be complete, but many were very condensed, so that they looked more like a series of vaguely related keywords and abbreviations. Each new topic was usually written on a separate line and was differentiated from previous topics by either indented and nested paragraphs, or by using bulleted or numbered lists. As Mia mentioned, using lists enabled her to hierarchically represent a “flow of different levels of details,” so that she would be able to “break things apart and to break them down.” Most students described using the text-based format for taking in-class notes because they found this format to be appropriate for a sequential and relatively fast recording of the lecture content presented by instructors.

Nonlinear approaches that employ various graphic representations (Boch & Piolat, 2005; Makany et al., 2009) were, however, asserted by most of the students to be
their preferred styles for creating study notes. These nonlinear study notes were often colourful, with plenty of lines, arrows, shapes, and sketches, and also included tables, diagrams, timelines, flowcharts, maps, and any other forms of illustration. Students indicated that these more visual approaches to creating notes helped them to capture structures and relationships among lecture topics, in addition to the main points and ideas.

Although Karlie did not consider herself to be artistic, she admitted drawing illustrations everywhere in her notes. She needed to see images in order to “absorb” information: “I want to have a picture of it in my mind.” Madison added, “I like to physically see things laid out in pictures, diagrams, circles,” and Camila noted, “I do charts and diagrams when I can compare or contrast whatever I learned.” Lisa talked about composing timelines in her notes, “for something that’s systemic and it’s connected across time.”

Several students mentioned drawing flowcharts in their notes in order to achieve an orderly organization and classification of new information. Erin and Jessica commented that they were creating flowcharts when they were trying to memorize and grasp complex processes. Karlie described using flowcharts to “delineate excess information,” while Tamara needed flowcharts to “better understand how different frameworks come together.” She even drew flowcharts on the mirror in her room, explaining, “I have a really big mirror and I have dry erase markers and I just do it until I know it.” The students were seeing flow charts as helpful tools for building, understanding, and remembering the structure of the course materials.

A number of students reported using mind maps to create a map-like arrangement of their notes in order to visually record the relations between newly acquired facts and concepts.

West et al., (1991) refer to these diagrams that visually "map" information under the general heading of “concept” maps, so the method of mind mapping could also be seen as a type of concept mapping.

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2 British psychology author and educator Tony Buzan claimed to be the originator of the term "mind map" in 1970s. There have been a number of arguments about the use of the term and over Buzan's claim to be its originator.
Lorena and many others related mind maps to memorizing: “I think I have a very graphical memory, so regardless if I paid attention in class or not, if I do these maps I would remember.” When asked to distinguish between mind maps and flowcharts, students who preferred using mind maps indicated that they found mind maps to be similar to flow charts, but less formal and more flexible. In comparing mind maps to flow charts, Emma described mind maps as being much more “multi-directional” structures. Therefore, the students believed that mind maps allowed them to feel and be more unconstrained and creative while, as Terry mentioned, “doing that final bit of studying for the exam, when I start pulling everything together.” Anika brought a sample of a mind map she created that had quite a lot of arrows and lines pointing in so many different directions. These lines were combined with numerous circles and rectangles and dozens of words that ranged from full sentences to very short abbreviations. Anika’s mind map looked like a very tangled spider web, or a very complicated maze. She described it as her preferred way “to glue together and connect different topics, meanings, ideas.” Emma explained her way of using mind maps in the following way: “I start with the central theme and then I mind map out different directions.” Lorena found it very useful to memorize the image of a mind map, because in “remembering the image I kind of remember the concept itself.” Camila stated that mind maps were very useful for writing papers. “They help me notice,” she said, “the concepts that have the most things in common and then select which ones I want to address in my paper.”

Examples of students’ notes that they brought to the interviews were a combination of various approaches to note-taking. Mia, Terry, Jessica, and Emma used to combine large portions of text with charts and mind maps. Lisa’s notes included mind maps and timelines in addition to words. Tamara’s and Karlie’s notes were particularly creative. Karlie even drew a very vivid diagram of human heart that imaginatively blended various note-taking styles.

Many students stated that they often underlined their notes, and used different markers and coloured pens to highlight them. As Hazel mentioned, “you’re not going to remember all that, but if it’s colourful and they’re just key things, it might pop up in your brain better.” Yasmin explained her approach to highlighting notes:

I’ll highlight the concepts that I don’t already know and I need to review... And, if a professor goes over what’s in the exam, I will highlight
those titles, too. So, when I come back to study, I will only review the things that are highlighted.

Some students reported associating certain colours with specific meanings in their notes. For example, red, purple, or orange were sometimes used to highlight key lecture terms and formulas or topics identified to be examinable. Yellow or green were occasionally mentioned as being used to highlight explanations and clarifications. And blue or gray colours were mentioned as colours used to emphasize secondary or supporting information. Others, however, reported using colouring for arranging and categorizing information without any particular distinction between different colours.

4.3.2.1.e. Notes: Handwritten or Typed?

Most of the interviewed students stated that their notes were handwritten, both in-class and for study. Some did not have explanations about why they chose to do their note writing by hand. Others, however, echoed Lisa’s comment.

It’s easier to memorize if you have that tangible sense of writing things down. There’s some sort of a mind-body connection between writing things down and memorization, and that’s just like been I guess hammered into me.

In addition to handwriting, Jessica used a laptop computer to write her notes.

Courses where I have to memorize content, I have to do it by hand. Courses where it’s more general overview or like where I’ll eventually be writing a paper, I do it on the computer, partly because I can write faster that way, and partly because it’s easier to write a term paper if you’ve already worked out a big chunk of something. You can copy or paste it, or rework it easily.

Hazel and Tamara reported using tablet computers for taking in-class notes because they benefitted from a number of particular applications specially designed for tablets. These software applications enabled them to record lecture notes fairly quickly and accurately. However, both Hazel and Tamara were switching from digital recording to handwritten notes when they wanted to compose their study notes. Tamara would read in-class notes from her tablet screen but would always rewrite them on a piece of paper. Lorena decided to print out the lecture notes and required readings that were posted online by instructors. She relied on these printouts to create her study notes.
It’s a good memory tool to have a hard copy as something in your hand, so you can mark it up. So, I’ll mark-up different readings, and then when I get closer to an exam I’ll connect everything into different themes.

4.3.2.1.f. Recitation of Notes

Most of the students in this study identified frequent rewriting of notes as being important for their successful memorizing and learning processes. Erin indicated that rewriting notes helped her in “making sure I know the details.” Rewriting was the preferred study strategy for Tamara, one that she claimed she always used and that it had never failed her. “Writing things out again, works hundred percent,” she said. Camila started rewriting in-class notes in high school and never stopped doing that when she went to university. Susan’s decision to keep rewriting notes was motivated by her stance that “repetition is the mother of all skill.” Sophia was rewriting her notes because with each rewrite she was able to “additionally link ideas to my personal life, so I can memorize them afterwards.” Lawrence agreed, stating that “memorizing is all about repetition.”

While Erin rewrote all her notes into one designated notebook, Lisa had different binders, one for each course. Madison used scrap pieces of paper for rewriting notes. “I just write all over them to memorize,” she told me, “but I don’t have to worry about how pretty they are or the colour, whatever, just to write it over and over and over again.”

Several students indicated that reading their notes aloud was an important strategy that helped them to remember new facts. As Yasmin stated, “I have to write them and say them out loud. If I talk it, I will usually remember it.” Karlie said, “I need to see things, but I also need to hear things to be able to better understand what the method is and what the process is.” Camila read aloud definitions and explanations of new terminology, stating that “hearing it reinforces my understanding.”

Sophia started reading her notes aloud on recommendations from several of her classmates.

When you say it out loud you can hear it, and it kind of marinates in your head. So, what happens is that I read it, and then some of the points that are important I’ll say it out loud... It helps, yeah, it definitely does help.

Lorena added,
I try to say it out loud in my own words, so that way I remember, because I understand it in my own way. And saying it out loud, I guess I hear myself and kind of like makes me remember.

Brittany coined the interesting expression “writing out loud” her study notes: “I always read aloud my study notes. It always worked, that’s because I read it out loud, and write it out loud [emphasis added].” Some students reported reading aloud while reading their notes, and others did not. As Vandana mentioned, “Usually I just whisper under my breath for the most part, but I guess I talk in my head a lot, that’s for sure.” Karlie reported summarizing the study notes in her own words and then she went a step further when reading her notes aloud. “I started recording myself on my phone and sort of saying a lecture as if I am the professor and I’m giving the lecture.” While driving to school, she would listen to these recordings, “and that helped me a lot, like again sticking to the information and understanding it.”

4.3.2.2. Creating and Answering Practice Questions

The importance of self-testing to effective learning has generally been described in the literature as test-enhanced learning and repeated retrieval (Brame & Biel, 2015; Roediger & Butler, 2011; Thompson, Wenger, & Bartling, 1978; Wheeler, Ewers, & Buonanno, 2003). This process was acknowledged by many of the interviewed students as part of their study routines. They found that creating and answering their own practice questions was very beneficial for both memorizing and understanding new content. The students indicated that their self-testing was helpful regardless of the fact that it did not involve any instructor feedback.

Marcus described regularly working on practice questions, sometimes even for nine hours continuously, because he strongly believed that “all you need to do is to practice, practice, practice.” His favourite textbooks were those with lots of practice questions that were usually found at the end of each chapter. Erin agreed, “study questions have always been a preference of mine.” If she could not find study questions in a textbook, she would create her own questions. Creating practice questions was a preferred learning strategy for Madison, even if the practice questions were provided; she mentioned, “I like making practice problems, these ones that I’m making from my notes.” Susan called practice questions “practice problems,” because they were “more complex, sort of more challenging questions.” She described exchanging her practice
problems with classmates while they studied together. In addition to general practice questions, Sophia created her own exam questions in order to better prepare for exams.

What I do is, I summarize with potential exam questions that I formulate myself. It’s just thinking ahead... So, you want to have an idea of what the questions would look like. It’s just for me, because I have a fear of writing exams, so I like to be more prepared for it.

Some students used Brittany’s method of creating and using practice questions.

I make myself study questions from the lecture notes, and then I write them out ahead of time, and then usually about one or two days before exam, depending on how much material it is, I cram it all in and just memorize it.

Most of the students stated that they did not have time to create and answer practice questions immediately after lectures. They believed that self-testing was associated with more organized and focused learning activities that happened closer to the important course deadlines, tests, and exams. Sometimes students’ self-testing routines also included reading their practice questions and answers aloud. Brittany read her study questions and answers aloud because she thought that the combination of writing, reading aloud, and hearing her voice was the main reason why she managed to become an efficient and effective learner. A majority of the students agreed with Robert that “silence is never helpful for practicing and learning.”

4.3.2.3. **Analogies, Acronyms, Keywords and Flash Cards**

Students reported using the following cognitive tools to reduce forgetting and to keep topics presented in-class in their long-term memories:

- Analogies
- Mnemonics and acronyms
- Keywords and flash cards

**Analogies.** Students described analogies as tools they used to formulate similarities between newly presented concepts and interpretations they had already known. This process of connecting new with existing knowledge involved articulating unique and occasionally uncommon associations. The following is a sample analogy offered by Karlie.
I think we were learning about repolarization and depolarization of brain cells. It was a lot of sequence, a lot of steps, so it’s really easy to lose track of information. Step one had said that when potassium enters the inside of a membrane is negative and when sodium enters its positive. So, I said: okay, well sodium, salt, salt is in food, food is good and it goes in our stomach and it’s positive, you know, yummy! Whereas in potassium waste, you know, it’s getting out of our body... so it’s negative! So, that’s how I always made analogies like that, and it has helped me quite a bit.

Camila and a few other students mentioned that “especially when I’m studying with friends, we make and share analogies.” A majority of the students, however, decided to keep the analogies they created for themselves only.

*Mnemonics and acronyms.* The students acknowledged the importance of memorizing for their learning and understanding. Yasmin and many other students commented that memorizing facts and ideas was the first and necessary condition for understanding them. Mnemonics and acronyms were identified by the students to be tools used frequently for memorizing lecture materials. They described developing mnemonics and acronyms as a very creative and rather entertaining process of creating a new word or a phrase, by combining the first or other relevant letters of a subject that had to be remembered. During the interviews, however, quite a few students had difficulties recalling specific examples of mnemonics and acronyms they created. Katie gave a possible explanation for this: “I use them for the tests only, I guess maybe not for long term.” Some students were also somewhat reluctant to share their examples because they found them to be very personal and, as Madison indicated, “I find weird things in my head that help me memorize, these are just my very own.”

Here is Susan’s interpretation of the way she arranged remembering the “\[M=\frac{dRT}{P}\]” formula for finding molecular mass of gas in her chemistry class.

I’ll always remember: Mass equals \(dRT\) over Pressure. So, I remember *dirt over pay* [emphasis added]. Yeah, I’ll use things like that if I need to. So, I will do things like that.

She added that associating a graphic image of dirt with her chemistry mnemonic helped her to better memorize the formula for calculating the molecular mass of gas.

For Terry, mnemonics and acronyms had to be unique and funny in order to be effective as knowledge retention tools.
I like acronyms a lot, I like mnemonics. I found those really helpful. Especially since I have a kind of weird sense of humor, so if I can make something like really stick out, I find that really helps me memorize it.

Terry’s way of remembering enzymes and glycolysis associated with metabolism was to connect highly scientific terminology with Harry Potter.

Yeah, it was something related to Harry Potter and like poop and just like a lot of really bad words in it [laughs]. Oh, it was so good.

Lorena asserted that she was often building acronyms and mnemonics in a way that she could chant them. “Sometimes,” she told me, “even singing, or saying it in rhyme helps [laughs].” Several students also mentioned that combining rhymes and rhythmic patterns with acronyms and mnemonics was an effective tool for supporting memorization.

Keywords. Almost every student mentioned that keywords played an important role for their leaning. Some of the students reported trying to identify main keywords during lectures while taking in-class notes. The others described identifying keywords after class, when they were creating study notes. There were also students who indicated that they defined keywords and used them when they were crafting flowcharts and mind maps.

Students often associated keywords with self-testing and generating practice questions: a keyword was described as an important component of a practice question or as a required or expected part of the answer to the practice question. The students identified the following reasons they found keywords to be very useful for studying.

• Keywords were seen as a tool for summarizing information. As Karlie said, she used keywords to “filter out all the excess words.”

• Keywords were used to identify the most important facts and define very complex concepts and processes. Hazel stated that “keywords are always the major things. I told you how I like to rewrite the same thing over, and it’s all the keywords I’m rewriting over and over again.”

• Keywords helped students to understand the main points of the structures and connections between concepts to be learned. Tamara said, “I use keywords and I try to understand how things are related. I need to build relationships between different concepts, how things link.”
A number of students echoed Vandana’s statement that keywords are the “real secret of memorizing.” She added, “I think keywords is the biggest thing. And, reading it right before the exam, like on the SkyTrain. For some reason, they tend to stick out more than anything else.”

**Flash cards.** The students frequently discussed keywords in the context of flash cards. Numerous students considered keywords to be very similar to flash cards, categorizing both as learning aids related to summarizing and memorizing large amounts of information. Terry used flash cards to create “quick facts I need to memorize.” Mia used them to “condense material” in order to “get the key points.” Brittany and Sophia also created flash cards for filtering out irrelevant details. Madison described using flash cards to “organize keywords.”

In addition to summarizing study materials, the students used flash cards to synthesize information as well: to co-relate different concepts and ideas by combining and grouping the identified key points and keywords.

Susan said that she frequently reviewed her flash cards, “literally, as I’m getting ready in the morning I’m going through my flash cards, so I try and go through them every day.” Many other students, however, indicated using flash cards for cramming only before the exams. Marcus commented that he sometimes moved around the flash cards he had made, “like playing a board game,” and that this helped him make sense of the complex subjects he was trying to understand.

Some students referred to flash cards as “cue cards,” or as “cheat sheets.” Although there were students who reported buying standard index cards from stationary stores to create their flash cards, a majority of the students designed their flash cards on pieces of paper or cardboard. Many students brought samples of their flash cards to the interviews. Their flash cards were handwritten, mostly on white or light backgrounds. The students used differently coloured pens or markers and fairly large fonts to write content on the flash cards. While the majority of the flash cards contained just one or two keywords, there were flash cards containing numbered or bulleted lists, even chemistry formulas.

All the interviewed students stated they used only flash cards that they had created, even when they were participating in collaborative learning activities. The
students indicated that, although they did exchange lecture and study notes and practice questions, they almost never exchanged flash cards.

4.3.2.4. **Visual Aids to Learning**

Many students identified themselves as *visual learners* and *visual thinkers*. The students’ appreciation for pictures, diagrams, colours, flowcharts, mind maps, and many other forms of illustration was previously described in discussing their approaches to note-taking, self-testing, and designing study notes and flash cards. Most of the students reported that information presented visually was easier to memorize and recall. They preferred teaching styles and course materials that were rich in visual content.

Examples of students’ notes showed a combination of various approaches to note-taking. Mia, Terry, and Emma combined large portions of text with charts and mind maps. Lisa’s notes included mind maps and timelines in addition to words. Additionally, the students thought that watching animations and movies related to study topics had a very positive impact on their learning and understanding. They talked about movies that instructors posted online before lectures, or movies they downloaded from the Internet. Mia stated that for her, watching movies was a “visually simulated learning experience.”

It was the integration of different media, including sound, animation, and video recordings of people in action that gave Mia an impression that she was getting closer to “being able to do things hands on,” instead of just reading or listening to instructors’ lectures. Jessica mentioned that videos provided her with “irreplaceable visual representations.” She shared how a YouTube movie helped her learn about the complex topic of gamete creation,

> YouTube or biochemistry sites often have these really cool 3D graphic animations of these processes and so that’s very helpful. When I was learning meiosis there’s a cartoon called the Meiosis Square Dance [laughs] that was funny and extremely useful at the same time.

The students also noted that being visual thinkers helped them to become more organized and focused. They related their visual learning strategies to achieving more meaningful and better structured understandings of learning concepts. Some of the students related visual thinking not only to visually presented information but also to making their personal study areas more visually appealing, which they reported to be very stimulating and helpful for their productive learning. Yasmin noted, “I make sure everything is nice and clean before I study, so I could really enjoy it.”
4.3.2.5. Using Textbooks

During the interviews, students were asked to describe how they used textbooks for their learning and to discuss the textbooks they found to be very useful, or the textbooks they found not to be useful. Students reported that useful textbooks had the following characteristics:

• they were written as stories, using simple words which were easy to understand;

• they clearly analyzed complex problems and provided reasonable examples and case studies that were related to the real world;

• they were relevant, and they had plenty of practice problems and solutions, as well as exercises and step-by-step guides;

• they were effective in summarizing the content, which was described by the students as an important and much-appreciated time-saving characteristic.

This is how Sophia described useful textbooks:

I was discussing this with my friend and I’ve noticed that textbooks that write or just present the information in a way that’s conversational, it’s easier to understand. So, I don’t know if you’ve seen it or not, but there are some textbooks that speak to you.

Of useful textbooks, Brittany said that “they are not actually textbooks, they are actually study guides.” Susan noted that useful textbooks are “not necessarily textbooks, they’re just different perspectives on things.” For Karlie, with useful textbooks, “it doesn’t even seem like you’re reading a textbook, it just seems like you’re just hearing another person’s point of view or discussion.” For Yasmin, good textbooks “don’t try to be smart.” Madison described useful textbooks as “hands-on and easy to read even with very confusing concepts.” And Hazel gave the following description of useful textbooks:

They start off every chapter with a little blurb, like a story, “Bill got sick and he had to go to the hospital,” whatever it gets you interested in the chapter and the chapter ideas. And after every page, after every paragraph, they simplify it for you, just kind of what I like doing, but they did it for me. So, you don’t have to be in Health Sciences to understand these concepts.

Textbooks perceived to be useless were said to be unrelated to lectures and instructors’ handouts. Tamara recalled “a textbook that the professor never referenced, so all the content was in their slides and we didn’t need to go to the textbook for more
detail, that’s what made a textbook useless.” Terry commented on a book he brought to the interview.

I found it useless because it was listed on the syllabus as a required book, but the instructor never even referred to it even once, she didn’t assign reading from it and there was never any homework from the textbook. I just felt like, well then why did I spend $200 on this book?

Some students mentioned that there were instructors who even discouraged them from using the textbooks. Marcus noted that “lecture notes were usually enough. I find that many professors say, ‘You don’t need to read the textbook because it is too detailed.’” Some students also felt that useless textbooks expected them to have substantial previous knowledge about the subject matter, and that was not how they perceived the purpose of a good textbook. Anika brought a textbook to the interview and asked, “Why is this book expecting you to know things prior to reading it?”

Many students indicated that the way a textbook is designed and printed, including the font type and colour, even the book size, was also important to their perception of it as useful or not. Emma and a few other students liked textbooks that had plenty of “free, empty space,” so that she could “read the chapter and then I’ll often put those little sticky notes, like the little flags on pages where I don’t quite understand it or something I think which is really important.” Hazel described good textbooks as being “aesthetically pleasing,” and added, “when you get a book and it’s just cover to cover words, nonstop, no pictures, no diagrams, no anything, you don’t want to read it.” A number of students reaffirmed their profound appreciation for textbooks with plenty of images, graphs, colours, and visually arranged headings and subheadings. For Terry, colours and pictures were important for memorization. “I’m kind of a visual learner,” he told me, “and if something looks eye catching and is more like visually memorable, I’m more likely to remember it.” Lisa connected textbooks’ illustrations to her understanding of the concepts: “I need to have colourful pictures explaining how to do things or else I just don’t understand it.” Emma talked about her perception of a well-designed textbook in the following way:

The reason that one was really useful is because it had a lot of diagrams and it also had connection to a website that had animations, moving diagrams. It was really helpful in terms of processes and pathways and seeing how they actually work, instead of trying to conceptualize these in your head.
Anika pointed to a poorly designed textbook that she brought to the interview and said, “This one is really bad because the colour of the textbook itself, the pale white and blue, it makes it hard for you to just stay focused and read, and you know, it’s hard to just stay interested.”

There were students who reported writing notes or highlighting in textbooks. Madison said,

When I read a textbook I still like to write things down because that’s just how my memory works. I definitely highlight. I am not someone who’s good at reading without highlighting. I highlight, I sticky tab like crazy, post-it notes on something I don’t understand. Again, like I’m very hands on with my textbooks.

Others, however, shared Mia’s aversion to writing in a book: “It’s a sacred object! [laughs]. I was instructed by a librarian in elementary school to never, never write in the book! I remember that being drilled into our heads, do not ever write in a book!” Being able to resell a textbook was also a factor in deciding whether to write on it or not. Sophia noted, “I usually don’t write on them because I have to sell them [laughs]. But if I find a class particularly difficult, I’ll just bite the bullet and write in it and then I’ll sell it for less of a price.”

The students had different approaches to using textbooks for their learning. Some, like Jessica, reported, “I don’t usually use the textbook at all because with the Internet it’s just so much faster.” Brittany stated, “I don’t use textbooks often for classes, to be honest, unless there is a concept I think I need further elaboration on to understand.” Marcus added, “I’ll use textbooks to kind of correct my thinking.” A few students typically relied on their instructors’ lecture slides or posted lecture notes, but there were others who echoed Lawrence’s statement, “I don’t fully rely on what the teacher says. I will first reference the textbook, and that’s usually how I go about studying.” Finally, many students acknowledged the importance of having the hardcopies of the textbooks. As Robert stated, “I have to have it in my hand and looking at it and be able to flip the pages.”

Vandana approached textbook readings as if they were a well-organized work, by determining the amount of effort she would put into it, “I like to see how many pages are there that I divide it up, how many pages per hour. When I reach that page limit, then I have a break. So, I kind of reward myself with breaks.” Katie’s tactic was to “read them
like a regular book, like a novel I guess. Slow, I read the textbooks very slowly, just to let everything sink in.”

Tamara had a completely different approach to textbook readings.

When I started university, I wanted to read everything, but now at this point I would flip through the headings and figure out what I don’t know and read those sections. I still feel like I read those sections in full detail, but I wouldn’t read everything in the chapter necessary.

Susan’s explanation of how she reads a textbook was very detailed.

I’ll start by reading the conclusion of the chapter and then I’ll read the intro of the chapter and then I’ll go through and I’ll look at the headings and then I’ll go through and I’ll look at the subheadings and so then I sort of have like a tree I guess to hang my knowledge on, if you want to put it that way before I actually go through and actually read it, or I’ll read the questions too sometimes before I actually read the chapter.

Katie mentioned that she had a hard time figuring out what she should read. “It was hard to know if you should be reading something or not,” she said, “because in the interest of time you won’t read way too much. You didn’t really want to read more than what was on the test.”

The students were also asked if they were reading the notes and comments that other people had written on the pages of used texts. Vandana stated that she didn’t pay attention to these comments, “I don’t want to read over it, because for one thing you don’t know if it’s true what they’ve written.” A majority of the students, however, reported reading what others wrote in textbooks. Anika said, “It’s nice to see what other people have highlighted, because I know that I don’t get everything, I’m not going to pick it all up. But, having other people fill in the blanks is great.” Reading others’ comments was described by Lisa as a sort of collaborative learning.

It was sort of interesting to see what someone else thought would be interesting or was a key to the learning process. So, I actually liked that, because I look at it and think, oh, I wouldn’t have thought that was pertinent, but maybe it is. So, I’d actually read it more in depth, I liked it. It’s kind of a collaboration, it’s kind of getting together with a group of friends and talking through things.

Camila mentioned that she liked reading these notes; she looked at it as being involved in a dialogue with other readers.
If I disagree, if I see something that’s wrong, like they wrote ‘this is the answer to this equation,’ I will add and I will say ‘this is wrong.’ I won’t delete it, I would just add ‘this is wrong’ for whoever’s next reading it.

Almost all interviewed students admitted that they did not read chapters before classes, citing a lack of time as the major reason for that. Finally, in cases where they had difficulties connecting instructors’ handouts and their lecture notes with the textbook information, some students indicated that they asked the course instructor for help and clarification. The reason why they chose to contact instructors instead of their classmates was effectively summarized by Lisa.

That’s really frustrating when that happens, yes. Usually that means that the textbook information is not going to be on the exam, if it has absolutely nothing to do with the lecture, but it depends. So, I’ll usually ask the teacher that question. I’ll say there’s something in the textbook that you didn’t cover at all in lecture, is it still examinable? And sometimes they’ll say and sometimes they’ll say no. So, if it’s yes, I would just also make notes on that as a completely separate, an addition to the lecture.

### 4.3.2.6. Using Technology and Digital Resources

All the students interviewed for this study stated that technology had become an integral part of their learning at SFU. They reported using mostly laptop computers, tablets, and smart phones for studying during and after lectures. None of the students owned a desktop computer at the time of the interviews, although they were comfortable using desktop computers in the SFU library and in university computer labs. The students who did not bring their laptops and tablets to lectures did not feel distracted by the others who used their laptops and other devices during class.

The following software platforms were identified by the students as the most frequently used for learning.

Canvas is an online learning management system (LMS) that is widely utilized by at SFU. The students used Canvas as the main course portal for accessing relevant course materials and announcements posted by instructors; for submitting their assignments and quizzes and receiving instructors’ feedback; for viewing grades and the overall course standings; and for communicating with instructors, teaching assistants, and their peers. As Vandana mentioned, “Canvas is where everything is.”
Google and Wikipedia were described as indispensable learning resources. They were mainly used as quite comprehensive dictionaries and the first reference point for getting a general background information and clarification of new concepts. For Lorena, “Google is the first place you go, and I use it a lot.” Google and Wikipedia were seen by the students as the “most accessible and easiest to understand encyclopedia,” as Sophia noted. The students also mentioned using Google Scholar for reading online academic papers and journals and creating Google Docs to “connect with my group or other people in the class,” as Yasmin stated. Although all interviewed students reported relying heavily on Wikipedia’s online articles while studying, they all mentioned not using it as a source for quoting and citing. Tamara said, “Wikipedia gives you a quick snapshot or definition of a new concept, new term. But, it’s not credible at all, because anybody can write on Wikipedia.” And, Camila added: “I was told in university you cannot use Wikipedia as a source and I never did again.”

YouTube, Ted Talks, and the Khan Academy were mentioned as websites that students regarded highly due to the sites’ effective and well-crafted video content and online lessons. Students found these to be very informative as well as interactive. YouTube’s interactive videos were seen by the students as how-to tutorials and very useful step-by-step guides through complex and puzzling processes and ideas. Lisa explained, “I use YouTube a lot to understand how something was happening, because when the profs were just explaining it in words, it just was so hard to visualize with something so complex as human body.” Erin commented, “I find YouTube helpful if I’m trying to learn functions of something, learn a new program, learn a new process, and they walk you step-by-step how to use a new tool.” When facing “confusing concepts,” Hazel would search for YouTube videos where she was able to find an answer that “simplifies it or says it in a different way… So, if I go on the Internet, I’ll get a different perspective, I’m trying to learn from other people.” The students also commented that these educational online videos helped them connect the real world with course topics and give them a sense of “learning by doing,” as Karlie said. In addition to online video lessons, the students liked the variety of practice tests and the ability to create a personalized online environment offered by the Khan Academy website.

All the interviewed students highly regarded SFU’s online library, and many of them preferred using the online library instead of visiting it in person. As Lisa mentioned, “I’ve gone to an actual library once, in my entire time [laughs]. Yeah! So, the [SFU]
online library I use constantly. I use electronic journals, I use everything on there, quite a lot." The students liked quality and variety of the library collection, particularly the ability to access full-text searches of various relevant digital libraries, like JSTOR and many others. The students also described the SFU library’s website navigation as easy and very intuitive and the library’s website search facility as strong and fast.

Although the students used technology and digital resources very effectively for studying during and after class, they also suggested that the Internet, as previously mentioned, was one of their main distractions, However, the students reported being fairly successful in locating and applying various online applications to effectively aid their time management, to prevent procrastination, and to stay focused and avoid tempting Internet distractions.

For many students, educational software applications were “critical sources of learning.” The students described using the Internet, particularly Google and social media platforms, such as Facebook and Twitter, to find out about new software applications and to learn how to use them. They also trusted their peers’ advice on which applications to try. The students, usually, did not read the software manuals or online help sections—they instead used a “trial and error” approach. As Terry stated, “I only like to try it for myself, and I feel that’s the best way for me to get acquainted with something.” Some of the students also echoed Erin’s comment, “I’ll always get a friend to explain it to me.”

4.3.2.7. Exams: Before and After, Feedback, and Grading

In general, exams were described as having a very important role in students’ learning and overall experience at SFU. The students noted that the frequency of exams, an exam’s weight toward the final course grade, and the type of exam questions were significant factors that affected their study strategies and even their course selections.

In the interviews, the following questions were used to initiate discussions about the students’ views and experiences of exams and assessment practices at SFU.

• How do you prepare for exams? What does your typical day before an exam look like? What do you usually do one hour before an exam?
• What do you do when an exam paper is returned to you? Do you use returned exams for your learning?

• What was the most common type of feedback that you received about your work and how useful was it? What is your preferred form of feedback about your work? How would you best communicate what you learned?

• Are grades important to you and why? What do you think of the assessment practices in the FHS?

Many students described feeling stressed about exams. Hazel’s comment nicely summarizes students’ common fears about exams: “Failure. Yeah, I think failure is what I’m afraid of.” Susan remarked, “the stress of seeing a question and not knowing how to answer it drives me crazy.” The students’ career and further education goals made them feel pressured to be successful on exams, but as Emma noted there were also some other pressures.

I have exam terror! I hate exams, because I don’t feel I can ever be prepared for them. I think it’s also because there’s so much pressure on me, like I have one shot at this exam and I have to get it right. And there’s, you know, my whole family is involved and there’s a lot of money on the line and there’s a lot of stress around that. Financial stress, time stress and I cannot make mistakes, so it’s a lot of pressure.

Brittany decided to use medications to reduce her exam anxiety.

I usually have to take like Advil Night-time or like a Gravol or something, because all that’s going through my head are things I’ve memorized all day. And I can’t sleep, I’m tossing and turning just because all those things are going through my head, so I have to take some sort of sleep aid to help me sleep that night [before exam].

Many students who did not like writing tests and exams agreed with Robert’s observations.

I find that exams don’t make me learn any more. They are a lot of work, and it usually ends up to be kind of a rush to memorize everything rather than focusing on a certain project or a research, where you can look more in depth into something, and be more likely to learn it in the long term.

*Before exams.* Almost all the students echoed Tamara’s comment that “in high school, it was sufficient to study the night before the exam.” There were students who reported that they did not change their high-school, one-day exam preparation practices
once they came to university. Many other students, however, stated that their thorough and “serious studying” for exams usually started a week before the exam.

The day prior to an exam, and even an hour before, was described to be full of cramming. A number of students described cramming strategies as repeatedly rewriting study notes. Camila mentioned, “I go over my notes and I rewrite the things I was uncertain about before. That’s it.” Instead of rewriting study notes, Brittany had a different strategy, “Yeah, I’m a crammer. And, I talk to myself all day! I read my notes out loud to myself all day.” For Yasmin, cramming strategies were slightly different.

I’m cramming, I have a stack of paper, and it will be all my study notes, and by the end I’ll tear away pages I already know. I usually have one page left of the things that I for some reason can’t remember, and I’ll look at it right before I go into an exam, so I make sure I covered all my bases.

The students’ self-created and handwritten notes were consistently identified as the main learning resources when they were studying for exams. It was interesting that none of the students mentioned using the assigned textbooks during their final preparations for exams.

Some students liked talking with classmates in the last moments before exams to, as Marcus said, “bounce some ideas off.” Others, like Hazel, preferred solitude.

I like being alone. I just try to stay away from exam room, so I don’t have people hassling me, and I keep my phone away. I just, in my own little world, try to remember everything I can. And, I like repeating the same thing, writing the same thing over and over, that sticks in my brain.

A few students, like Emma, who were married, were particularly busy the day before an exam.

Well, until 8:00 I have to get the kids to school and then I have from 8:00 until 3:00, so I have seven hours. Usually what I’ll do is I’ll go for a run as soon as I put them on the school bus, at least a half hour run, come back and then study all day. As soon as the kids come home, I have to spend time with them until dinnertime. If I’m feeling stressed out about the exam I’ll say to my husband, “okay, everyone has had dinner, I’m gone,” and at 6:00 I’ll lock myself in another room until 9:30. I study, but I don’t stay up late studying because I think it’s counterproductive. So, I always try to get to bed by 10:00.
During exams. The students had distinct approaches to writing exams. These approaches were described as self-developed and they depended on the specific course requirements and, especially, on their perceptions of the instructor's expectations. Several students indicated that they did not answer exam questions in any particular order. They said that they usually started with the first exam question and then moved on to the next one. Tamara noted, “When I’m writing on the exam, I’m just going to write as much as I know, as much as I can.” Mia, Katie, Vandana, Lorena, and Yasmin always tried to answer multiple-choice questions first, then short-answer questions, and left long, essay questions for the end. For Lawrence, as for many other students, time was an important factor. “I skim through the entire exam,” he said, “just to see how much content there is, and try to mentally map out how much time I should be spending on each section.”

Regardless of differences in test-taking strategies, students generally tried to ensure that they answered as many questions correctly as early as possible, in order to avoid being short of time. Many of the students carefully analyzed the marks assigned to each question while writing exams. Terry commented:

I start calculating on the exam as I’m writing it, like: you can only get these many questions wrong, and that really tends to stress me out a lot. I’ll go through the exam and look at the point value of each question, and start doing like, okay: I think I got this one right, so that’s four points. I don’t think I got this one right, that’s minus two, and I start adding up the numbers in my head.

After exams. The students were very mindful of returned exams. They confirmed keeping exam papers and stated that they prudently reviewed the instructor’s comments as well as the marks they received. Validating the correctness of the assigned exam marks was the first thing Vandana mentioned that she did. Karlie added, “I look through it, count all the marks, because sometimes they have made errors.” Some students addressed their inquiries and concerns about assigned marks with course instructors and teaching assistants during class time, and others preferred to have one-on-one conversations during instructors’ and teaching assistants’ office hours.

When going through returned exams, the students paid close attention to instructors’ comments written on exam sheets. The instructors’ comments reportedly helped the students to learn from their mistakes and to more effectively prepare for future exam writing. As Marcus pointed out, “the first thing I do is I look at my mark and I
look exclusively at what I did wrong and what the right answer was, what I should have done and learned from those mistakes."

Jessica’s approach illustrated the ways students connected writing and reviewing exams.

When I’m writing a test, I circle the questions that I’m not sure about. Like, I’m not sure if I have answered correctly, or if I’m not sure if I’ve elaborated enough on them. And then, I go back through the exam and I check to see whether they were questions I thought I would get wrong or not. For example, this last midterm, a lot of the questions that I circled and I thought I got wrong were questions I got right, and then I made silly mistakes that I could have easily rectified by going back through my exam and double-checking my answers. So, that informs me for the next exam that that’s what I need to do.

Feedback: received and preferred. The students reported that exam grades were the most common, and in many instances the only, feedback that they received from instructors about their work. The students also stated that grades, as numbers and percentage representations, were adequate forms of feedback for “content-based courses” in which demonstrating memorization of the content-specific details was seen by the students to be the most common exam objective. Returned exams showing only recorded marks for correct answers were perceived by the students as no more than summarized reports of how correct their answers were.

The students preferred more comprehensive and personalized instructors’ comments as a feedback for courses that were interpreted as “concept based,” that is courses that required a profound understanding, reflection, and application of knowledge. The students described essay questions, term papers, and oral presentations as the most common assessment strategies used by their instructors in concept-based courses. Instructors’ written and verbal comments and recommendations that related to the structure, style, and clarity of writings or presentations were perceived by the students as very important; students desired feedback on how much they knew about a courses’ concepts.

Almost all the interviewed students liked receiving any type of instructors’ feedback on their work. When discussing feedback, Marcus stated, “Give me criticism. Any constructive criticism that I deserve. I’ll take it, I’ll look for that.” Jessica added, “I do
like being challenged, and I do like it when people tell me where my deficits or my learning gaps are.”

Some students appreciated verbal feedback received from instructors. A majority, however, preferred instructors’ written comments on exam papers.

The students identified the following characteristics of useful and motivating feedback and assessment:

- It encourages and promotes students’ understanding and not just mere memorization.
- It is creative in combining multiple assessment methods.
- It provides diverse and preferably personalized suggestions for overall improvements of studying and learning.

When discussing how they could best communicate what they learned, the students had different opinions. For some students, a written exam was the most appropriate way to demonstrate their learning. Lorena said, “I like exams because you sit down for three hours and write down everything you know, and then that’s done.” Vandana’s echoed Lorena when she claimed that although she disliked writing exams, she found exams to be an “easier and simpler way to explain” what she learned in a course.

For several students, writing term papers was a preferred method for demonstrating their knowledge. Lisa chose writing papers over exams because “sometimes you don’t test well, on a day you could be tired, you could have like five tests on the same day.” Katie mentioned that, “if I write a paper on something, I know about that thing, for a long time to come.” Terry also commented on writing papers.

I have the time to learn, to think about the material and process it, and to explain it in my own words. Versus a test, where I feel pressure for time and I am like freaking about the marks, and things like that. So, wherever possible I would prefer to write a paper and show how I understand the material.

Quite a few of the students described verbal communication as their preference for expressing what and how much they learned and understood. The students identified in-class presentations as the most common pedagogical practice used at FHS to assess their learning through verbal communication. Although none of the interviewed students
had ever had an oral exam in FHS, several students stated that they would love to have one. Emma explained why,

Because it’s interactive and then if they don’t think you understand something, they can ask you more questions about that, and then they can really assess whether you understand it or not.

Tamara commented, “I think that my strength in my learning is through listening, and then my strength in expressing myself is through presenting or speaking.” Jessica favoured oral presentations for “content-based courses.” Karlie also found oral presentations and oral examinations to be effective ways of communicating knowledge and understanding.

Because that’s how it is in the real world. You’re not asked to prepare something, to write a paper about what you’ve learned, or write an exam about what we just talked about. In the real world, you’re more asked to get, like: can you present that knowledge in a presentation and can you orally or verbally speak to somebody about what you’ve learned.

About grades and grading. Grades appeared to be especially important for students. Madison almost exclaimed, “I think I’m addicted to grades now, four years in!” Many students echoed Lawrence’s comments about grades.

Grades have always been the thing that motivates me to keep going. Like, I really want that A plus and I am going to work as hard as I can to get that. It’s a little corrupting, because sometimes I find: am I really learning for the sake of learning, or am I just learning for the grade? Sometimes I really like to learn, but in so much as that results in a good grade, because this goes on my record and I take great pride in being able to have a strong academic record.

The students were asked to discuss the fairness and meaningfulness of the grading policies and practices in the FHS and at SFU. The ways the FHS grading systems influenced the students’ approaches to studying was also discussed.

Erin questioned the effectiveness of grades.

Unfortunately, grades are important because you need them to move forward to your career or further education. But, I don’t believe that grades accurately assess whether someone has learned the information or whether someone is a good learner.
Yasmin agreed that grades “actually don’t capture how much a person knows,” adding, “Professors don’t examine on everything. What if I’m better at the things he’s not examining on?”

Many students thought that FHS and SFU grading practices were mostly fair and equitable. However, Brittany felt that it was unfair not to distinguish between the students who did and who did not have jobs and volunteer commitments while studying. “Well, those with no jobs have more time than me,” she said, “and I think it’s unfair that I should be getting the same grades as them, if I don’t have enough time to study as they do.”

Instructors’ grading methods and grade distribution formulas were reported to have a large impact on students’ approaches to studying and preparing for exams. Mia noted, “It really matters, it will hugely influence how much time I spend studying for quizzes, assignments, papers, and so on.” Anika commented, “If I have a 30% midterm compared to a 15% midterm, I know that that 30% is heavier or more weighted, so I try to focus more on that.” Lisa added, “For me and for many other students it even impacts what courses we choose, because if we see that a final exam is worth 50%, I’m not likely to take that class unless I have to.”

4.4. Students’ Views of Knowledge and Learning

4.4.1. Relevance of Personal Knowledge for the Ever-Changing World

Three questions framed this part of the interviews.

• How long do you think your current knowledge will be professionally relevant, particularly in the workplace?

• What plans have you made to keep up with changes in the field of health science?

• What is your personal learning plan after graduation?

All interviewed students described the knowledge they gained in the FHS as generally wide-ranging, interdisciplinary, and relevant. Many stated that the knowledge they obtained in particular areas of study, such as the history and structure of Canadian healthcare, social and environmental determinants of health, or mental health and
addiction, would have a strong and lasting impact on their professional careers in public and population health.

Robert commented,

I think they’ll always be relevant, just because it’s not so much teaching about facts and figures which are always changing, but teaching about ways of thinking, which don’t often change too much. I think my knowledge will always be relevant.

Some students acknowledged the importance and relevance of first- and second-year courses. Tamara associated these courses with “fundamental knowledge.” She felt that “a lot of the science courses were fundamental knowledge. Everything from chemistry, organic chemistry, like all the basics of science were essential.” However, Yasmin disagreed. “Undergrad lower division is completely useless, I don’t think I’m going to use any of it.” She, and many others, expressed the view that courses focused on community engagement, service, and experiential learning would be more useful after graduation.

When discussing relevance of the knowledge gained in the FHS, Katie noted, “I’m not sure of a certain timeline, but I can imagine they would be relevant for a fairly long time.” Sophia added, “I am going to rely on the applied knowledge to be more relevant in my career.”

A number of student comments referred to the frequency and speed of changes related to the science as well as the practices and policies regarding human health.

Marcus mentioned,

Things move really fast in health, because health issues are constantly changing and there are constantly new updates on different topics and there’s so much research going on. Certain facts from the classes I’ve taken a couple of semesters ago may even be irrelevant today.

Continuing learning and carrying on with different education programs were described as key factors in keeping up with changes in the field of health sciences. The students often reiterated that it would be essential to “keep reading, stay engaged in information within the health sciences. Yeah, so more school” (Erin).
For Lisa and several other students, “it was important staying involved with organizations, like Vancouver Coastal Health.” Mia’s plans were similar to many other students’, who would continue to, “kind of grow that tree of knowledge and go out there and work constantly on learning and understanding how things happen, based on whatever situation of work that I’m in.”

When talking about their personal learning plans after graduation, Lorena, Karlie, Vandana, Brittany, Lisa, and Katie indicated that they would look for a job, trying to work first for a while and learn on the job. Yasmin and Sophia decided to go to the British Columbia Institute of Technology in order to gain applied and very practical knowledge that could eventually increase their employability. Applying to medical school was the definitive plan for Erin, Jessica, Terry, and Lawrence. Susan planned to attend a naturopathic medicine school and Hazel was preparing an application for the occupational therapy program at the University of British Columbia. Continuing education through various graduate programs was the plan for Tamara, Robert, Camila, Marcus, and Emma.

4.4.2. Self-Knowledge

The following questions concluded the interviews with the 22 FHS students:

- What do you feel you learned about yourself as a learner from the FHS programs?
- Who are you as a learner?
- What attributes would you use to describe yourself as a learner?

The students’ responses to these questions present a vibrant, diverse, and colourful collage. I will refrain from commenting here because the students’ original voices could easily be lost in my attempted translation. Also, the students’ responses were intentionally left unattributed in order to ensure that their self-reflections actually point to their self-learning and learning of self, and do not identify any particular person. The following are representative of what the students had to say.

4.4.2.1. I Learned

I learned how to study. And, I learned that I sometimes [I] do like to learn, because I hated it coming into SFU, I just hated school.
The first thing I learned is that I love, I love learning. I may not be as skilled at learning something like calculus, but I am always willing to learn, just because I feel there’s just so much I don’t know, and there’s so much more to learn.

I’ve really learned that I’m a group learner. I learn that I can work with other people, and that I don’t have to learn alone all the time.

I learned to use my resources to the extent. I’m not afraid to use anything and everything that will help me understand something. That’s how I would describe myself as a learner.

I discovered that I want to teach what I’ve learned. I learn so I can share the knowledge. I just realized that.

4.4.2.2. I Am

I am really motivated in things that I like and less motivated in things that I don’t like.

I am a procrastinator and that’s how I learn. I learn at the last minute, I need the pressure.

I am a visual and a talking learner, like an oral learner, I guess.

I’m an ongoing learner. I don’t think I’ve ever fully mastered something, I don’t think anyone can. I’m chaotically organized. It’s weird, I don’t have the time as much as I want to have. Sometimes I can be a frustrated learner as well, because there’s a lot of things that I want to control that I can’t. So, I’m an ongoing and frustrated learner, and chaotically organized.

I think I am very flexible, I mean a flexible student. But, I have to be, you know, I’m forced to be very flexible. This is how it works, particularly when you’re in school.

4.5. Reflections

In this chapter I have attempted to bring the voices of the students who were interviewed for this study on to the pages of this report. I have drawn very directly from the transcribed interviews, although, given the volume of content recorded and transcribed, some selection and editing has been done.

I hope that what emerges is a picture of a group of university students who have developed their capacities as learners in a challenging but rewarding context. In the process, they have also reflected on their particular abilities, preferences, strengths and accountabilities. In the background of their comments on their FHS experiences are their
personal life contexts outside of the university and away from the direct demands of the Faculty’s curriculum. The ability of these students to balance the sometimes (perhaps often) competing demands of their lives was impressive to me. In the following chapter I will discuss the personal meaning that I have taken from this research and also touch upon some of the implications of the study for modern universities.
Chapter 5.

Interpretation and Discussion

5.1. Work of Learning and Workers of Learning

The student has nearly disappeared from much of the policy and research discourse…

We are not so much interested in the student as an autonomy-seeking, capacity-building, identity-striving person as we are in readying that student for a world that adults believe will be there when the student inherits it.

(G. D. Fenstermacher, 2006, p. 111)

This phenomenological study was intended to discover what students make of their learning and their lives as learners. The study’s initial goal was to understand the students’ work of learning by making sense of their descriptions of particular learning processes, rituals, tactics, and tools as they were applied in their approaches to learning. Goldin (2010) reminds us that “students do the work of learning, but educational researchers have not paid much attention to that work” (p. 3).

The study evolved to be a phenomenological inquiry into the students’ experiences and perceptions as workers in learning. This evolution was initiated by my realization that students perceive and articulate their learning through the frames of their personal circumstances and life situations. I found that students’ experiences of the work of learning could not be separated from their personal life contexts and that their approaches to learning occur within and are profoundly shaped by those contexts.

The students in this study approached their university learning the same way they approached extracurricular work or any of the other life tasks to which they were committed. This study became a phenomenological inquiry through which I attempted to connect with the lives (van Manen, 1990, 2003, 2014) of the students within the academic environment of Simon Fraser University (SFU) and within their broader social and cultural settings. In discovering the various and diverse connections in the lives of the study participants, I attempted to appreciate and describe their personal engagements with learning in particular contexts rather than attempting to develop
definitive answers or make conclusions applicable generally to students or university programs. University learning is a purposeful human activity and is best understood by appreciating the ways in which students integrate their personal situations with their work in learning. How and why students learn, whether in formal or informal settings, is often driven by their general life situations (Andres, 2004), and how they conceptualize and interpret those situations.

This chapter discusses the study’s findings and considers its implications. It begins with the notion that the work of learning can be described by the concept of “studenting.”

5.2. Studenting

The term “studenting” was introduced by Fenstermacher in 1986 to refer to the various actions and tasks that students perform while completing the work of learning, including both academic and nonacademic aspects of that work (Fenstermacher, 1994, 1986, 2006). Studenting is related to learning achievements and is strongly associated with other rational and tactical student behaviours. While learning can be seen as an active and purposeful mental process occurring in or out of school settings, studenting is related to the social role of being a student in a school environment. Studenting includes learning behaviours in general and is not determined by the properties of a specific discipline or particular subject. Rather, studenting is shaped by the student’s perceptions of the institutional and cultural properties of the particular school setting.

If demonstrating knowledge and understanding could be seen as the main outcomes of the learning process, studenting focuses on giving the appearance of knowledge and understanding (Ericson & Ellett Jr., 2002; Fenstermacher, 1986, 2006; Wallace & Wildy, 2004). As participant Sophia said: “I find I am a chameleon, so a chameleon is someone who can change colors, depending on what their environment is. So, I feel I am very highly adaptable to certain situations, and I find that is an advantage for me.”

Fenstermacher (2006) argues further that students perceive schooling as a game. They believe that learning and following the rules of the “studenting game” is a necessary prerequisite for achieving success in that game. For students, learning the
rules of the schooling game is equally important as learning subject content (Fenstermacher, 2006). Instructors also perceive schooling as a game that is constituted by particular rules, although their views of the rules are often largely or entirely different from those of the students. The rules, as seen by instructors, may require focusing on the subject details, assessment practices, and overall institutional objectives. Fried (2005) argues, "The Game begins whenever we focus on getting through the school day rather than actually learning [emphasis in original]" (p. x), and continues, “The Game of School is so identified with the culture of our educational system as to seem both invisible and immutable” (p. xvii). According to Aaron (2011), “The game of school is the result of teachers and students focusing on the outcome of their school activities, like grades and performance evaluations, and ignoring the educational experience” (pp. 268-269).

Studenting could also be seen as students' intentional shifts from intellectual to more pragmatic approaches to learning (Willms, Friesen, & Milton, 2009). Students’ strategic approaches to learning (Bain, 2012; Marton et al., 1997) enable them to become successful players of the schooling game. Seen as “game playing” or “gaming the system,” the term studenting might be viewed in a negative or pejorative light. However, in the context of this study I propose to see it as the ways in which students learn to engage with learning environments and the cultures of formal educational institutions.

The students in my research had achieved academic success in their programs of study. They were committed to SFU and to their communities. They all were also doing a great job of studenting. They had managed to become very proficient in discovering:

• implicit hints on what instructors consider to be important;
• how to correctly predict exam questions;
• the most effective studying techniques and how to match them with various learning assignments;
• how to negotiate the best deals on assignments;
• how to get certain grades, or how to navigate imposed rules and regulations (Fenstermacher, 2006).
Attention even to subtle cues in the process of studenting can be seen in participant Vandana’s statement, “If the instructor spends a lot of time on a particular slide, then that means it’s important. If text on the slides is underlined, I’ll write that down.” Participant Emma even noted observing instructor’s movements in the lecture theaters. “When instructors walk away from their podiums, it means that stuff they’re talking about is not important, it means they’re taking a break from the tough stuff.”

Studenting can also be associated with tactical efficacy in learning. Participant Brittany noted, “I am an efficient learner. I study what I need to know and I’m not going to read a whole textbook. I never, I never in my whole time here at SFU done all the required readings… I don’t waste time, I study what I need to study.”

Students’ approaches to studenting are also affected by elements of their overall life situations. The students who had to support their children or who lived with partners while studying at SFU stated that continually shifting family and school priorities as well as coping with financial pressures had significant impacts on their learning experiences. Similarly, the students who lived with their parents but worked full time or had multiple part-time jobs and volunteer commitments described the process of budgeting their general “life resources” to be a demanding influence on their work of learning. The majority of the students identified time and effort as being the most critical resources in support of their learning process. They also stated that even their course selections were frequently determined by their estimations of the time and effort they would need to invest in a particular course with a particular instructor.

In summary, studenting can be defined as learning how to be a person who studies in school (Lampert, 2001). The concept of studenting could be seen as being organized by five distinct but interrelated narrative categories that emerged from the interviews with the participants in this research.

- **Living**: This study afforded a marvelous opportunity to learn about students’ diverse life contexts and, particularly, to discover the remarkable diversity and significance of those contexts for their learning.

- **Learning**: Many of the students reported that their goals, values, and expected outcomes were affected by their general life situations. In turn, these elements shaped their approaches to learning and motivation.

- **Studying**: The students’ descriptions of their approaches to studying included diverse patterns of work that were intended to achieve learning outcomes. The
student participants used different terminologies for describing their study tactics and the tools they used in the process.

• **Teaching**: The students described instructors as very important for their effective learning. They appreciated well organized, purposeful, and passionate teachers. They felt that instructors who were passionate, in turn, inspired their passions for learning and many of the students agreed that instructors’ enthusiasm, or lack thereof, affected their approaches to learning.

• **Reflecting**: Being in their final academic term at SFU, these “veteran students” were very experienced students and learners. They were able to recognize and articulate the relevance and durability of the knowledge they gained in the FHS and to reflect on themselves as workers in learning.

These components of studenting are described below in detail.

### 5.3. The Components of Studenting

#### 5.3.1. Living: The Diversity of Student Lives

My interviews with the 22 senior SFU students who were involved in this study unveiled life stories that had effects on their total academic experiences. The students reported having experienced some major personal events, celebrations, and crises that happened in the midst of the academic terms or just before important deadlines and exams. Each and every story, although deeply unique, demonstrated students’ strong efforts to understand and manage their competing priorities. The stories also demonstrated their commitments to aligning their complex “life spaces” with demanding and rigorous academic requirements.

At one time it might have been expected that a group of university students in their fifth year of study in an undergraduate program would be very similar in age, in their pre-university education and experiences, in their reasons and expectations for coming to university, and in their living situations and extra-curricular and social activities. In contrast to this expectation (or stereotype), the 22 students who participated in this study were very dissimilar and embodied fairly significant differences. The range and richness of the students’ diversity was described in detail in Chapters 3 and 4. That information invited a meditative questioning of our general understanding of the students with whom we work: that is, do we really know who our students are?
My research in this study prompts me to presuppose that the idea of an average student is an illusion. There was nothing average about the students in this study. Instead, each student was unique and differed from some of the general assumptions and expectations that often seem to frame policies around admission, attendance, grading, and requirements for financial support or student housing (Adamuti-Trache, 2004; Andres, 2004). According to Rose (2016), current educational policies and practices regularly ignore the complexity of individual students. Rose coined the term “averagarianism,” adding that “averagarianism reshaped the educational system and workplace … [by] altering the way people viewed themselves and one another, the way they determined their priorities, the way they defined the meaning of success” (Rose, 2016, p. 190).

We might ask whether or not universities take student diversity into account in developing their schedules, student services, and other operational details. Many universities and colleges have certainly paid attention to the needs of students with physical challenges and have worked to make campus buildings and classrooms more accessible to students who have diverse physical or medical needs. However, how and where classes are scheduled and the frequency of course offerings can have profound effects on students who do not have special physical needs but have diverse living situations. There were students in this study who were involved in parenting young children and needed to take children to daycare or schools and pick them up later in the same day. Some of the students commuted considerable distances to get to classes and their access to lectures, labs, or tutorials could be affected by transit schedules.

Many popular stories of university life seem to be based on both an ideal campus, in which students (and faculty) live in residence or close to campus, and on students who study full time, without significant outside commitments to family or jobs. The students who participated in my study certainly did not report experiencing the ideal university environment and organization. Course schedules, including the availability of evening and weekend classes or courses offered online, are factors that affect the ability of some students to access courses and programs and even to complete their degrees in a timely manner (Adamuti-Trache, 2004; Andres, 2004).

The results of my study closely align with Andres and Finlay's (2004) notions of students' heterogeneity.
Theoretical developments and empirical studies usually focus on four-year university students and assume full-time attendance. As such, they disregard the demographic heterogeneity of today’s student population. To extend our understandings of access to post-secondary education and participation and retention once in the system, other individual, institutional, and extra-institutional dimensions are needed. These dimensions include family, society, preparation, situation, institution/program, psychosocial/emotional and socioeconomic considerations, and outside community support. (pp. 2-3)

5.3.2. Learning

A main focus of the research for this study was on developing an understanding of the work of learning in the context of learners’ lived experiences rather than on describing learning as a technical process. Students offered quite different descriptions of their motivations and expectations of learning. As I argued in Chapter 2, learning is a complex process and is as much social and cultural as it is individual (Committee, O. A. F. S. F., 1999; Fry et al., 2009; National Academies of Sciences, Engineering, and Medicine, 2018). By accepting that learning is a meaning driven, identity forming, and socially situated activity (Brown & Duguid, 2002), which involves intertwined acts of social, academic, and intellectual engagement (Cardwell, 2011; Willms et al., 2009), we could be able to understand students’ interpretations of their dissimilar academic, personal, vocational, and social reasons for learning in a variety of settings (Andres, 2004).

Most of the interviewed students stated that getting a relevant job or being ready for further education after graduation were important reasons for learning. However, the students clearly indicated that future employability was not their main or only motivation for learning. Some of the students’ offered other personal reasons for learning, which could be seen as comprising their intellectual engagement, including:

- curiosity that defies ignorance;
- excitement about developing new knowledge;
- keeping up with the ever-changing world.

In general, the students in this research believed that their goals for learning transcended particular courses, curriculum, and careers. They told me that they did not want to become just a virologist or a community health professional, or just an
epidemiologist, or only a physician, or just a health economist. The students expected their learning to prepare them to be involved in shaping a much broader health landscape, to enable and empower them to make differences in immediate and global health environments.

Most of the interviewed students were in their fifth or sixth years of study in the Faculty of Health Sciences (FHS) at SFU because they had explored many subjects and taken numerous elective courses that were not included in the FHS’s degree requirements. Since the students commonly understood learning as an exploratory process, many of them felt that the prescribed curriculum in the FHS was rather restrictive and decided to expand their learning to areas outside of FHS programs, for example, to British Columbia Institute of Technology (BCIT) or some vocational college programs, accepting that these decisions would make their educational journeys longer and more expensive.

The interviewed students affirmed strong desires to become educated individuals, agents of positive social changes, and leaders of community engagement, health promotion, and innovation. They all sensed a high degree of worth in making this world a better place. Their commitments to advocate, volunteer, and give to society while acquiring knowledge and understanding of the required course topics should be acknowledged and also nourished and kept alive. The university should recognize and celebrate the many different ways in which these students are demonstrating civic engagement by participating and contributing to their communities.

The issue of civic engagement as something that should be given more direct attention in university programs is a major point made in *A Crucible Moment: College Learning and Democracy’s Future*, a report from The National Task Force on Civic Learning and Democratic Engagement (2012). The report emphasizes that it is not sufficient just to assume that effective and engaged citizens will be a side effect of teaching the regular curriculum and advocates for the inclusion of such approaches as service learning in university curricula and teaching. Lisa, one of the student participants in my research, made a reference to having had experience with service-learning approaches in one of her FHS courses.

It was community service learning, which was a completely different format than any other FHS course that I’ve ever done, or any course in
general that I’ve ever done. You really engage with the material because you’re using it and you’re teaching it to other people, so you have to understand it. Actually, it was real life, it took me out of the university into the community and it changed the way I thought about my own limitations, and about community and public outreach. (Lisa)

Besides connecting learning to their own academic and intellectual enrichment and empowerment, the students also connected learning to societal expectations. They supposed that society expected them to be independent, multitasking, creative, and resourceful individuals. Many students reported having frequent inner dialogues about what it means to be an educated person. They also stated that they were often reflective and curious about whether they could become knowledgeable in ways that would be recognized and utilized by today’s society.

The social aspects of learning were evident in the students’ comments about the influences and importance of their peers, instructors, parents, and partners for decisions they were making related to their learning. Influences beyond the classrooms were described to be different from those in the classrooms. The students’ parents, partners, siblings, relatives, and even neighbors and family doctors were identified as important influences. The students stated that these influences provided general support, advice, and recommendations, and sometimes even applied pressure. It is worth mentioning that the students expressed very positive attitudes toward offers of guidance.

A majority of students described SFU classrooms as places for building a culture of collaborative learning, which helped them to learn with and from each other. As participant Erin said, “I have to study with somebody, I can’t study alone. Studying or just talking with my friend helps a lot, it makes both of us, like, more knowledgeable, more ready.”

This collaborative culture was interpreted to be important for sharing learning tactics and tools, as well as for facilitating peer learning and many other forms of group learning support. The students’ instructors and peers were stated to have major “internal” effects on their learning and in building effective communities of learners.

For the students in this research, learning was identified as a process that could be both easy and difficult. Learning was described as being easy when it was perceived to be applicable, relevant, and interesting. Personal interest in the subject matter and its applicability to real-life situations were particularly emphasized as contributing to ease in
learning. The students found that it was easy to learn when concepts were interrelated, associated with big, general ideas, and when they were connected to their previous knowledge. The importance of prior knowledge as an influence on learning has been repeatedly recognized in current general research on learning (Bransford et al., 2000; National Academies of Sciences, Engineering, and Medicine, 2018). The appreciation of prior knowledge has important implications for the relationships between faculty instructors and students. In times when university faculty were often seen as the most significant sources of knowledge and insight, students were sometimes viewed as being audiences or recipients rather than participants, or even peer teachers, in the co-construction of knowledge. This shift in relationships and classroom social structures is likely fueled by the emergence of multiple sources of information online and a lessened, or changed, influence of textbooks and lectures.

Learning was described as difficult when working on course and class requirements that neglected opportunities for the exercise of creativity. The issue of whether university and school programs could actually do more to foster creativity was brought into focus by a 2018 survey sponsored by the Adobe Inc. software company. The report was titled “Creative Problem Solving in Schools: Essential Skills Today’s Students Need for Jobs in Tomorrow’s Age of Automation” and reflected a survey of 1,600 educators (primary/secondary and university) and 400 policy makers from the United States, United Kingdom, Germany, and Japan. The report’s summary stressed that educators and policy makers agreed that creative problem solving is of critical importance as an educational outcome for the twenty-first century. Further, the surveyed participants, which included both educators and business representatives, agreed that creative problem solving is not emphasized enough in schools today and recognized inadequate budgets and outdated testing requirements as important barriers to fostering creative problem solving in schools (Adobe Inc., 2018, p. 6).

Rote memorizing was hard for some of the participating students, although for others it was not. Many interviewed students found that assessments, exams, and grading obscured the educational meaning of learning. Some students indicated that writing papers was particularly difficult while others stated that oral presentations were the most difficult assignments. However, some students expressed views that they would appreciate more oral presentations and would even welcome oral exams.
Although the students I interviewed had very different views of learning and themselves as learners, they all expressed high regard for their work in learning. They took charge of their own learning in many different and distinct ways and were confident that they could be successful in completing the work.

5.3.3. Studying and Self-Regulation

The term studying is used here in the context of the larger concept of studenting and refers to the various tactics that students use to help in developing recall, application, and understanding of course materials. These tactics are also often referred to as cognitive strategies (West et al., 1991, p. 26). In this study, the students described a fairly narrow range of tools and limited repertoires of tactics for developing and supporting their learning. They described the learning tactics that they used in their university work as being mostly self-developed. They all stated that no one had specifically taught them how to learn or instructed them about which learning tactics might be available and recommended for use in particular situations.

The students were rather effective in recognizing courses’ learning task requirements, distinctive features, and instructors’ particular expectations. They were able to separate course content from the more formal requirements. They were able to identify which tactics could be used effectively to meet course requirements and distinguished between “facts-focused” and “concept-based” courses. Facts-focused courses were described as focused on specific details that required a lot of memorizing. The students described concept-based courses as being more abstract and theoretical, requiring them to be able to synthesize, summarize, and simplify complex ideas rather than just memorize details. These ways of thinking and acting can be regarded as belonging to students’ capacities in self-regulated learning. Self-regulation is a key element of metacognition and involves the ability to monitor one’s cognitive processes, including learning and memory and control decisions, and actions related to how they approach particular courses or assignments (National Academies of Sciences, Engineering, and Medicine, 2018, p. 73).

Each student had their own “tool box” of particular learning tactics and they were very selective in deciding which tactic or process to use for a particular task. For example, analogies, mnemonics, acronyms, keywords, and flash cards were generally
described to be the tools of choice for memorizing facts in studying biology, chemistry, and statistics. Conversely, students reported using tables, diagrams, timelines, flowcharts, mind maps, and other forms of frames or illustrations to capture the organization and classification of newly presented information and to understand structures and relationships among complicated concepts. They mentioned using these tools for studying courses in health promotion and communication, global perspectives on health, or the philosophy and ethics of healthcare.

Since the students did not report having received any direct guidance about cognitive tools and tactics, they used very diverse and personal terminologies to describe their chosen tactics. For instance, students’ self-testing routines were referred to as study questions, or practice problems, practice questions, or “my own exam questions.” The students were unaware that scholars of metacognition usually describe self-generated questions as a form of rehearsal, a term that includes a number of general ways of studying (West et al., 1991). However, although they described the process using various terms, they saw self-testing as an important tool for exam preparation and in predicting exam questions. As noted in Chapter 2, students who are effective learners may use a variety of terms to describe their strategies, but students who are poor learners may make little or no consistent or effective use of cognitive strategies under any name.

Scholars of cognitive strategies and metacognition have stressed the importance of students developing a common language with which to discuss and describe their tactics for learning. Programs specifically designed to enhance students’ study skills often emphasize helping students appreciate the diversity of skills or tactics that are available to aid in learning (Brownlie, Close, & Wingren, 1988). Programs that systematically instruct students not only in the content and skills in a particular subject field or topic but also instruct them in what approaches and tools they might apply to learning that content by questioning, clarifying, summarizing, and predicting have been described as employing reciprocal teaching (Palincsar, 2013; Palincsar & Brown, 1984; White & Frederiksen, 1998).

For the students in this study, note-taking was the most commonly used strategy for recording, organizing, reviewing, and remembering information. Some students’ emphasized completeness and accuracy in their notes as means of documenting newly
presented information. Other types of notes were written by trying to selectively process new information in an attempt to acquire meaning and understanding and aid in recall. There may be several reasons why note-taking was the most often used learning tool for FHS students. One reason might be found in the interdisciplinary design of a curriculum that encompasses biological and cellular aspects of human health together with the social, economic, cultural, and ethical determinants of human health and disease. Properly recording rather dissimilar content becomes very important when, for instance, a biostatistics class is followed in a daily schedule by a health ethics course. Also, note-taking has an important role for FHS students because of the different ways instructors approach teaching and what they expect from students. A life scientist teaching the cell pathophysiology in a small laboratory setting may deliver a lecture very differently from a lawyer teaching a public health course in a large lecture theatre.

Most of the students distinguished between in-class notes, which were taken during lectures or labs, and study notes, which were created by thoroughly reviewing in-class notes and adding personal remarks. Study notes also included notes made while reading textbooks and other resources. The students explained that the main reason for creating study notes was to interpret new concepts in their own words and in ways that would summarize a large amount of information and make it easier to understand and remember. Many students described study notes as their primary resource for studying and preparing for exams. Although some of the students kept study notes for themselves, others reported sharing them with their peers, but never with their instructors.

Rewriting notes and making practice questions were also described as being very important tools for memorizing facts and grasping complex ideas. Many students echoed one participant’s statement that silence is never helpful for learning, reporting that they regularly read their notes aloud to themselves in order to aid in recall and understanding. When they had difficulties understanding concepts, students indicated that they were reluctant to ask instructors for clarification, despite reporting regular attendance and participation in classes. Instead, they claimed that they preferred to search for help from various online resources or from their peers. Students did not provide explicit reasons for not contacting instructors to clarify complicated topics. It is possible that an inability to synchronize their schedules with instructors’ availability could be one of the main causes for this lack of communication between students and
instructors as a potential aid to understanding and clarifying concepts. However, several students indicated that they felt that showing instructors their problems with the course material might negatively affect their grades.

Students closely connected understanding with the ability to explain a concept to themselves, as well as to somebody else, using their own words. They stated that helping others to understand contributed to their own understanding of the concepts. Peer teaching (Gartner & Riessman, 1994; Topping, 2001) is an approach to helping students learn concepts. It applies the proverb that “to teach is to learn twice.” Peer teaching is sometimes also referred to as peer tutoring and has been seen as very useful in classes where students with particular challenges are integrated with other students, although the approach has been found to be valuable in any class.

Students often distinguished between learning for understanding and learning only for grades. They considered learning for understanding as “real learning” and described it as a process of meaningfully internalizing new facts and ideas. They also indicated using a greater variety of studying tools to complete assigned readings and assignments when they were engaged in real learning for understanding. Their commitments to deeper understanding prompted them to be more systematic and creative in selecting study tools when they were learning for understanding. Learning for grades is focused on demonstrating knowledge about facts. When learning for grades only, the students reported using study tools that they self-identified to be the most productive for achieving a successful but short-lived demonstration of knowledge.

The students often described themselves as learners who appreciated visually presented information and teaching styles and course materials that were rich in visual content. They commented that a majority of FHS instructors did not seem to pay much attention to the appearance of the PowerPoint slides that they used in lectures or to the importance of designing visually rich and interactive lecture components as aids to students in grasping novel ideas or complex structures and relationships. Students also commented that, in their experiences, FHS and SFU instructors never used flowcharts or mind maps to present and explain concepts, preferring instead to use colours and diagrams just to sort and categorize large quantities of new content. Since the students felt that lectures and textbooks lacked visual components, they indicated their readiness to add a variety of visual aids to the study materials they created for their own use.
5.3.3.1. **Textbooks**

Student participants did not appear to have a high regard for textbooks. They stated that the majority of textbooks were disconnected from the lecture topics and instructors’ notes, expensive, and unhelpful for their learning. However, most students valued and appreciated handouts and other materials created by and given to them by instructors, mainly because they saw them as likely to be much more connected to exam topics.

Textbooks often refer to and employ a number of cognitive strategies in the organization and presentation of content but very few explain the reasoning behind how they organize and present the content. Certainly, the students’ general reactions to texts would indicate a need for much better attention by text authors and publishers to the content and the organization of the material along with annotations to explain the reasoning behind presentation. It has been reported that “the texts that students viewed as less interesting interfered with comprehension in that they, for example, offered incomplete or shallow explanations, contained difficult vocabulary, or lacked coherence” (National Academies of Sciences, Engineering, and Medicine, 2018, p. 114).

5.3.3.2. **Digital Technologies**

The National Academies of Sciences, Engineering, and Medicine (2018) note that there have been dramatic developments in the use of digital technologies to support learning. It might further be said that these technologies have even redefined the processes of learning and the nature of knowledge and skill as learning outcomes.

In the research for this thesis, students indicated that digital technologies were central to their studying and learning. They stated that online learning management systems (LMS) like Canvas, the LMS used at SFU, as well as online resources for collaborative sharing and editing, like YouTube and Google Docs were both helpful and easy to use. They also reported using technology and digital resources for studying in ways similar to those they use to study from hardcopies of textbooks and instructors’ handouts, or their study notes. Digital resources were mostly seen as tools used to find relevant information and clarify lecture subjects; to refine and deepen understanding and analyze ideas; to connect and apply course topics to real world situations; and to
exchange feedback with their peers and engage in collaborative learning. Although students identified mobile devices and particularly social media to be major distractors to their studying, they felt fairly confident in their abilities to control the negative effects of these online resources on their learning.

I found it interesting that none of the 22 students interviewed for this research owned a desktop computer at the time of the interviews. I even had to explain to some students the meaning of the term “desktop computer” because their understanding and utilization of digital hardware was related to cell phones, laptops, and tablets. The students were accustomed to using mobile digital devices, which enabled them to have access to all the information and information processing that they believed was important with them at all times. They were also accustomed to locating a wide range of new information anywhere and at any time, even in the midst of an instructor’s lecture. Several implications for understanding students as workers of learning arise from their reported immediate and mobile access to an exceptional richness and diversity of information.

There can be little doubt that students, at almost any level and in any field or area, will make at least some use of a range of online media and resources. There is clearly a need for the development of students’ critical thinking about the quality of the information they access online. Further, students will come to learning situations with prior knowledge and attitudes that will have been affected by their access to and processing of online media and resources. The students who were involved in this study began their formal schooling before the explosion of social media and the widespread access to the resources of the Internet via affordable and powerful tools such as tablets, laptop computers, and cell phones. While they were users of these media and devices, they were perhaps somewhat less fully acculturated to them than will be the students who are currently entering the first years of university and college programs.

5.3.4. Teaching

In understanding students as workers in learning and as engaged in the practices of studenting, it is important to consider what they perceived as quality or effective teaching and instruction. The participants in this study reported a variety of criteria by which they judged the quality of teaching and the effectiveness of teachers. It is also
clear that while the students did a lot of the work of learning on their own or with peers, often outside formal classes, and without direct instruction from professors or instructors, they recognized the importance of good teaching to their learning. However, just as their personal approaches to learning varied, so too did they report a range of views about what constituted good teaching and effective instruction.

A major element of student descriptions of effective teaching concerned whether or not the professor appeared to be able to clearly communicate the purposes and structure of the courses they taught. Almost every student mentioned the importance of an instructor being able to convey a sense of having effectively structured the course material and activities and to have a clear sense of purpose and direction in their teaching. Many students expressed the view that learning the content of a course is made easier and more manageable where an instructor provides a clear outline of the course outcomes and the overall structure and purposes of each lecture or other learning experiences. In this way students can understand what to expect and can connect individual lectures, lab exercises, or other activities to the general structure and purposes of the course. Although particular lectures and experiences can be stimulating and enjoyable, whether or not they facilitate durable learning and understandings will depend on the students’ ability to connect them to the overall purposes of the course and perhaps further to the structure of the whole curriculum for their degree program.

Students varied in the amount of structure that they appreciated from lectures. Some preferred instructors who presented the lecture material in a very clear, step-by-step manner with lots of examples and cues as to the relevance of the content to larger concepts and intended course outcomes. Others mentioned that instructors who communicated personal interests in, and enthusiasm about, the course content awakened their interest and made learning easier. Many students looked for instructors to communicate a sense of openness and fairness in their style of interaction with students. They also appreciated professors who were approachable, had a sense of humour, and conveyed an attitude of trust in the students. However, although students regarded courses that were effectively structured and organized as being important, they also felt that it was important for the instructor to communicate the relevance and applicability of the course material—in other words, they should address a frequent student question: why are we learning this? A satisfactory answer was not to be found in the reply, “Because it is on the curriculum or requirements.” As a participant Anika put it,
“The learning would be a little bit sad or depressing if the knowledge is just all stuck with the syllabus only.”

Students highly regarded instructors who created a “teaching atmosphere” (van Manen, 2002) in their classes that enabled them to feel protected and at the same time empowered. The students particularly valued teaching that developed a positive learning atmosphere, created and mainly shaped by instructors’ abilities to appreciate and adapt to students’ unique, ever-changing, and often implicit needs. Topics in organic chemistry and microbiology, for example, can be made more engaging and relevant when they are connected to real-world settings and students’ personal contexts and situations. Research suggests that learners may not engage in a task or persist with learning long enough to achieve their goals unless they value the learning activities and goals. The concept of value encompasses learners’ judgments about

(1) whether a topic or task is useful for achieving learning or life goals, (2) the importance of a topic or task to the learner’s identity or sense of self, (3) whether a task is enjoyable or interesting, and (4) whether a task is worth pursuing. (National Academies of Sciences, Engineering, and Medicine, 2018, p. 113)

In the game of studenting, the participants in this study looked intently for cues from instructors as to the priority or importance of elements of content. In almost any university course it is not to be expected that everything presented in lectures or labs will be part of the formal examination or assessment process, so students appreciate it when instructors give pretty clear indications as to the relative importance of different parts of the content or particular skills.

Instructors’ content knowledge was not highly regarded by students; it was assumed and not described to be critical for students’ learning. In other words, instructors were not viewed by the students as “living libraries.” Further, contacting instructors for clarification was the last and the least frequently used option mentioned by most of the students, even when they reported regular class attendance and participation. Perhaps this finding reflects the disjunction in the schedules of faculty versus those of students. Many of the students in this study were taking several upper division courses in the same semester. As was shown in Chapter 4, many also had very busy lives and competing schedules outside the university. The idea that faculty are available by setting up particular hours in which students can meet with them in their
physical offices on campus may reflect a limited understanding of the schedules and
demands of both students and faculty. Greater and more effective use of online media
and communications might be of assistance. It may be necessary for universities to
break down the tight walls that can exist between face-to-face versus online or Distance
Learning (DL) courses and make moves to effectively hybridize more learning
environments. Both students and faculty need to be oriented to moving effectively
between the elements of hybridized curricula.

While students have clearly developed fluency in the use of some learning
tactics, their knowledge of a range of other, possibly more effective tools and processes
is limited. It has been suggested that instructors can extend students’ repertoires if they
explain, illustrate, and model a range of learning tactics in their regular instruction
(Palincsar & Brown, 1984; West et al., 1991). For example, notes prepared by
instructors for distribution to classes can serve as models for note-taking and revising,
including the use of headings and subheadings, different styles of text, page numbers,
references to sources, the use of tables, flow charts, or concept maps. Since these
examples are richly contextualized in the subjects being taught, they are likely to have
more meaning to students and be more effective as examples of practice than might be
expected from decontextualized instruction in “note-taking” or other study tactics.
However, for this sort of modelling effect to occur, instructors must themselves be
familiar with and use a repertoire of tactics and be aware of how these elements can be
used effectively.

Efforts are being made in the FHS and at SFU, as in other universities, to provide
faculty with workshops and resources that focus on the improvement of instruction and
learning environments. These sessions often allow faculty to share their experiences
and innovations while also allowing open discussion of less-than-successful approaches.
It can be questioned, however, whether instructors are provided with enough time and
resources for self-study, guided analysis of practices, and an atmosphere that permits
them to step back and reflect on some or all of these important but somewhat delicate
questions. University faculty are expected to perform effectively not only as teachers,
but, especially in research universities like SFU, as researchers and scholars in their
disciplines, while also undertaking services to the university and external communities
(Gerber, 2016).
In summary, it is clear from the results of this study that students appreciate good teaching and prefer teachers who effectively communicate the purposes and relevance of what is being taught, how a course will be structured, and what is expected from them. They also like instructors who are engaged with their subjects and are enthusiastic about the content while also indicating that they care about students as people. For these students, good teaching mattered not just for mastering content but also in developing their own enjoyment and interest in learning.

5.3.5. Reflecting

Students’ reflections on their general learning experiences and expectations, the effectiveness of their chosen studying techniques, and their understanding and appreciation of helpful teaching were described previously in this chapter. Students’ reflections about themselves as learners and about the knowledge they acquired in the FHS and at SFU are also worthy of consideration here.

The students viewed themselves quite differently as university learners than as they recalled their experiences as high school learners. They described their transitions to university learning as a matter of initial solitudes, followed by discoveries, self-improvements, and growth. They also saw their approach to learning in the FHS and at SFU to be much more organized, focused, efficient, confident, and self-directed than it was in high school. Some students even admitted that they finally started loving learning and believing in its lasting benefits once they were at SFU.

Students agreed that their study habits had been self-developed over the years at university. As a result, they generally felt being more effective, independent and creative learners. As participant Anika noted, “I became more of an individual learner compared to a standard student [emphasis added] in high school.” Students saw their university education as an important step toward achieving their major personal goals, plans, and hopes. Many described their days at high school as free of any profound mindfulness and planning for the future, as if “there’s just no life outside of high school.” Participant Erin’s comment about university studies was reiterated by many of the interviewed students.

It’s university, you have to be serious now. This is a step closer to your career. This is what’s going to identify how far you go. So, it’s kind of
coming close to your future and your career, and if you really care about
where you’re going to go, you start to take things seriously.

The ability to adapt to change was also described as an important skill that they
learned about their own learning. Participant Mia nicely summarized this view: “You have
to mold and adapt when you are in university and you have to self-motivate yourself to
do that.”

The students in this study were confident that the knowledge they gained in the
FHS was certainly wide ranging, long lasting, and relevant for their future careers. While
they profoundly appreciated the interdisciplinary nature of FHS programs, they believed
that integrating multiple academic disciplines into one curriculum presented them with
very challenging learning tasks, that is, to comprehend both biological and sociocultural
aspects of human health, and to demonstrate that understanding using both quantitative
and qualitative paradigms.

These students also believed that ongoing developments in the fields of human
health and well-being would require them to be attentive to these changes and to be
ready to continue their education, either formally or in any other informal ways.
Commitments to continuing education were represented by applying to medical schools
and other various clinical or professional programs, attending polytechnic colleges, or
obtaining very hands-on, short-term training in particular biomedical skills. For these
students, continuing education could also involve applying to graduate programs in the
population health programs offered by other Canadian and international universities.
Getting a job, working for a while, and learning on the job after graduating from the FHS
was also seen as an alternative form of continuing education. It was interesting that all of
the students interviewed for this study planned to continue their educations, including the
students who planned to get a job immediately after graduation.

Students indicated that they wanted more than just classroom-based learning. A
number of students commented on the importance and power of Co-Operative
Education (co-op) experiences and field work done in community settings and agencies.
They want to learn in and with their local communities as well as on a wide-ranging
global scale. They also want the curriculum to include variety of opportunities for
experiential and collaborative learning and to lastingly embed these opportunities in
course syllabi, curriculum, and general program design. A question that was not clearly
addressed in the interviews was whether students felt that they had been prepared for
lifelong learning. It will always be difficult for a university program to be right up to date
with change, especially in fields that involve a lot of technology, such as health care.
University programs can help ensure a degree of relevance through the use of co-op,
practica, apprenticeships, and the like, but their main role may be to develop the core or
foundational knowledge and skills and then, more than anything, ensure that their
graduates are committed to their own life-long learning and have the skills and attitudes
needed for it.

5.4. Curriculum

Students generally expressed an appreciation for the content and structure of the
curriculum of the FHS. They appreciated the interdisciplinary orientation of the program
and also valued its commitments to including questions of ethics and social justice in
some of the courses, although at times students found it difficult to make connections
among the different topics and courses. Bransford et al. (2000), writing about
knowledge-centered environments, commented on some issues that should be of
concern in curriculum design and development.

Traditional curricula often fail to help students “learn their way around” a
discipline. The curricula include the familiar scope and sequence charts
that specify procedural objectives to be mastered by students at each
grade: though an individual objective might be reasonable, it is not seen as
part of a larger network…. Stress on isolated parts can train students in a
series of routines without educating them to understand an overall picture
that will ensure the development of integrated knowledge structures and
information about conditions of applicability (p. 139).

Students are often not generally taught the questions that they should ask
about how the curricula they experience are structured and the assumptions about
learning and knowledge on which they are based. A challenge worthy of
consideration by faculty in complex postsecondary organizations is the extent to
which they collaborate and communicate with each other about the courses they
teach and whether they communicate to students a sense of engagement in a larger
and meaningful structure. Practices such as team teaching seem to be less common
than the one instructor–one class pattern of organization, and timetables and
schedules seem to make lateral communication difficult among students and faculty
involved in courses offered in the same term or semester.
Although students described knowledge and learning that was deprived of creativity to be “sad or depressing,” they mainly agreed that creativity did not seem to have a prominent role in the hierarchy of relevance of learning outcomes and assessment practices in the FHS at SFU. It would be worth considering what could be done better to design a curriculum that fostered creative thinking and problem solving and incited creative pedagogy. There is growing agreement among many educators and employers that creative problem solving is critical to students’ future career success, especially in an age of automation. This need is underlined, as noted in Section 5.3.2., by a recent global survey (Adobe Inc., 2018) that found that creative problem solving is not given enough emphasis in curricula today and that current policies in regard to grading and testing as well as program budgets are often barriers to the development of creativity (Adobe Inc., 2018, p. 6).

The students’ perception of knowledge seemed to be shifting from remembering for recall to understanding for application. They viewed lectures as instruments that might help them to picture the real world and to be ready for it after they graduate. They also expect the FHS curriculum to recognize that many of the common perceptions of the nature of knowledge and knowing are now developed via the Internet.

While all participating students were very content with the FHS curriculum and its interdisciplinary nature and relevance, the fact that many students decided to expand their learning to areas outside of the prescribed FHS program requirements invites a discussion about rethinking the true meaning of “interdisciplinary knowledge” in health sciences. Do we give our students enough flexibility when trying to help them gain intended interdisciplinary knowledge? Do we include students’ diverse understandings and perceptions of interdisciplinarity when we design the interdisciplinary curricula?

5.5. Implications for Student Services

A large number of undergraduate students need to be employed at salaried jobs or other remunerated work in order to finance their university educations and to support their dependents or families. A majority of the students who participated in this research had multiple part-time and even full-time jobs while taking classes in the FHS. Students are also engaged in various extracurricular activities, some of which they approached with the same sense of importance and learning relevance as they apply to their course
work. FHS students viewed their volunteer work in hospitals, hospices, or self-injection sites as an essential addition to in-class learning about the significance of providing comfort, compassion, and support to people having various health problems. These extracurricular commitments should not be ignored when we design programs and interventions to address issues related to student transition, persistence, retention, and overall success at university.

A student on academic probation is not necessarily lacking work ethic or dedication. The reasons for academic difficulties are multifaceted and are best appreciated by properly understanding the distinctive complexities of students’ general life contexts, as well as by understanding the students’ interpretations of their particular learning experiences. A lesson I learned from this research is that if our real goal is to support student learning, we need to understand that the students do not live only as FHS students. Instead, they live, suffer through, enjoy, and learn from many different life settings: as wives, baristas, soccer players, sons and daughters, single mothers, disillusioned singers, and many, many others.

Modern universities and colleges are complex and often large organizations faced with many different demands and challenges. Sometimes those responsible for the management of these organizations are faced with conflicts concerning whether to operate to satisfy the needs of the organization, the students, faculty, or other stakeholders. Should students be considered to have priority because presumably the university exists primarily to meet the educational expectations and needs of students?

Faculty, however, may argue that while students flow through the university experience and spend comparatively short times in the institution and its programs, faculty have a long-term commitment and a responsibility to maintain program quality while adapting the curriculum to changing realities. Faced with reconciling these forces and requirements, operational policies and practices may be designed to satisfy “average” conditions and attempt to strike reasonable compromises. Managing diversity and change is a challenge for many modern organizations and faced with these challenges there may be a tendency to develop and implement very complex policies and inflexible practices that allow for little exercise of judgement and discretion on the part of those dealing with the actual diversity of the needs of clients at the front-line—students, in the case of universities.
5.6. Study Limitations

The study reported in this thesis can be described as exploratory in nature and phenomenological in method. The number of participants from which the basic information was derived was quite small and the participants were volunteers who were solicited from a particular segment of potential candidates. The research focused on students in a single faculty, the FHS, at a mid-sized western Canadian research university, SFU, located in a large metropolitan area. The students were recruited according to a set of predetermined criteria.

As a member of the program management and student advisory staff of the FHS, I had prior contact with some of the participants in the course of my normal duties. In order to separate myself from the participant recruitment and selection process, that stage of the research was conducted by a colleague who was not involved in the research design or the conduct of the study.

Because the number of willing participants was small, all those who volunteered were included in the research. The interviews were designed to be semi-structured conversations around a predetermined set of topics. The topics focused broadly on the learning experiences of the student volunteers and although some topics reflected current research on learning, it was not a goal of the study to verify particular theoretical models or claims. The participants were enrolled in a variety of the upper division required and elective courses at SFU. No attempt was made to use the data from the interviews as a means to compare different courses, instructors, or degree program areas.

The interview transcripts were read repeatedly and, while recurrent themes were identified, no attempt was made to quantify the interview data, and unique comments and insights were preserved. The final report represents an attempt to capture the main characteristics and concerns expressed by the student participants in the tone and specifics of their comments. In reviewing and summarizing the transcripts I made a deliberate attempt to avoid imposing my own biases and expectations, however, given my long-term experience as a program advisor and administrator in the FHS, it is possible that my opinions and expectations have shaped my selection of excerpts as included in Chapter 4 and in the emphases indicated in these concluding remarks.
5.7. Conclusion

As noted in Chapter 1, the research reported in this thesis was based on several premises. First, learning is a constructive, intentional cognitive activity that involves a learner engaging with the learning process. Second, the learning process involves psychomotor and affective elements and also social interactions, whether in physical or virtual space or both. A third premise was that, like any other form of work, learning is more effective and efficient when the worker, a learner, has developed an understanding of task requirements, has knowledge of and skill in using and connecting certain tools and processes, and is able to self-regulate and to adjust their activities to the requirements of the tasks. In short, learners engage in selecting and applying cognitive strategies and in monitoring and reflecting on their learning process, that is, they are metacognitive. The fourth premise was that the work of learning happens within the complexities and unpredictability of the “everydayness of daily life experiences.”

The study addressed two broad questions:

- What experiences and perceptions are reported by a group of fourth-year students in the FHS with regard to their learning processes and tactics?
- How do students describe the ways they adjust their approaches to learning in response to a variety of different task requirements and learning environments?

With these premises and questions in mind, I believe certain conclusions are justified by the study’s findings. First, the students’ comments demonstrated metacognition, the ability to monitor their learning processes and regulate their behaviours, including elements of affective behaviour—their feelings about their work, including self-confidence and persistence. Second, the students’ comments about their approaches to the work of learning demonstrated that they apply a variety of cognitive strategies to their work in learning (West et al., 1991). Student descriptions of their approaches to a variety of learning projects indicate their ability to evaluate whether particular tactics or deployments of resources, including time and effort, are effective in achieving desired objectives. Overall, student descriptions of their approaches to learning-related tasks are consistent with the concept of self-regulation, which refers to learning that is focused by metacognition, strategic action, and motivation to learn.
The students in this study have developed a number of cognitive strategies that they regularly apply to their learning. The application of these strategies was apparent in their descriptions of approaches to taking notes and working to enhance recall and develop understanding of concepts. The terminologies that they used in describing these strategies are not similar to those that would be found in the literature on learning processes and cognition. This finding reflects the dominant view expressed by these students to the effect that they had never received formal instruction about tactical learning, and that many of the strategies they have developed and applied resulted informally from advice or demonstrations from fellow students or friends. A growing body of research in the area of metacognition and self-regulation has reported that it is very difficult for people “to regulate their own learning in formal educational settings,” while also emphasizing the “value of training to improve this capacity” (National Academies of Sciences, Engineering, and Medicine, 2018, p. 149).

It should be noted that instructors can help students develop cognitive fluency by demonstrating ways in which particular content can be more effectively learned and recalled. The use of effective imagery, analogies, frames, metaphors, and mnemonics integrated into the content of lectures and seminars can be of assistance in helping students learn about learning while at the same time learning content and skills. However, for that to happen, instructors must have some knowledge of cognitive strategies and model a metacognitive reflective approach to their teaching.

In thinking about the overall results of this study, I was left with a question about how students’ reflections and comments about their learning connected with current research and thinking about the learning process, as summarized in the 2018 report “How People Learn II: Learners, Contexts, and Cultures.” That summary suggests that learning as a system involves interactions among three important elements: cognitive strategy, metacognition, and executive functioning, which come together in self-regulated learning (National Academies of Sciences, Engineering, and Medicine, 2018). It is possible to describe these three processes through the use of a metaphoric comparison with the work of a skilled and expert tradesperson who is familiar with the tools used in their trade, understands the contexts in which the various tools are applied,
monitors and adjusts the flow of their work, switches processes as required, and assesses how the work is progressing toward goals. While engaged in the work, this tradesperson will also be affected by elements of affect such as prior experiences, motivation towards the meaning and value of the job at hand, and self-confidence, persistence, and patience.

My conversations with the students who participated in this study revealed the operation of many of the components of the learning system, although described with different words and grounded in a range of contexts and situations. These students are skilled workers who have taught themselves much about how to do their work effectively. The work in which they are engaged is learning, a form of work that is situationally complex, variable, and personally demanding. Educational institutions and programs would be well advised to pay more systematic attention not just to the content or outcomes of the work but also to the nature and demands of the work and the lives of the workers themselves.

As the research for this thesis progressed through the series of interviews, it became increasingly evident that these students had very full lives outside their work at the university, and that their work in learning and their views of the nature of knowledge and the scope of the field of health sciences were all affected by their overall life experiences and by their prior knowledge. I did not particularly focus interview topics on sociocultural factors, but a number of comments clearly indicated that they affected how students approached their studies and made decisions about priorities and options. When students come to university classes they bring these social and cultural factors with them, along with their prior knowledge and mindsets about themselves as learners. In a typical, large, lower division course, it is very difficult for an instructor to have more than incidental knowledge of the effect of these factors on individual students. As students progress into smaller upper division courses, it becomes more possible to structure learning environments to acknowledge, encourage, and build upon the assets that they bring with them to their work as learners. This is not likely to happen when majority of classes are framed by 50- or 110-minute blocks of time and scheduled to meet only once or twice per week in rooms designed strictly to be “multipurpose.”

Students’ perception of knowledge and learning is closely associated with the Internet. In the view of the students in this study, the Internet is the site of tutorials,
online courses, lectures, discussions, and interactions. Students are not only consumers or audiences, but also producers, directors, and thespians in Internet productions. Further, student involvement online often includes membership in various communities of practice and special interest networks, which may be global in scope. While universities were once seen as the major and most credible resources for curriculum and instruction, they now are challenged in that role. The challenge for everyone included in students’ learning is to sort the noise from the signal, sense from nonsense, and to recognize how apparently factual data can be manipulated and reconfigured to serve particular agendas.

The students in this research sought curriculum and instruction that would partner with them in cherishing uncertainties, nurturing curiosities, and empower them to understand life and the world on their own terms in spite of all widely accepted general standards and truths.

The students in this study were a very busy group of people that worked hard to achieve academic success and high grades. They were not proud of their grades, as such, but rather were proud of their mostly self-taught capacities to focus, prioritize, and commit in the midst of competing demands, never-ending distractions, and elusive and constantly changing values. I found them to be proud of their capacities in "studenting."

They hope that their interdisciplinary degrees in health sciences will qualify them to fearlessly and safely navigate their careers from hospitals to boardrooms, or back to laboratories or fields and forests. They do not explicitly articulate these values and opinions during lectures or tutorials or when completing the evaluations of teaching, because those approaches to gathering feedback do not give them time and space for deeper opinions. Through my research for this thesis I have been helped to become aware of the individual students’ perceptions, expectations, desires, and hopes.

While the research described in this thesis was not designed as a type of curriculum or program evaluation, the implications that arise from this report might help the FHS and SFU to rethink some of their policies and practices related to curriculum design, learning support, and student services in general. The voices I heard in this study will certainly help me in approaching my everyday work through a better understanding of students as workers of learning.
References


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Appendix A.

Approval Letter from the Dean

October 31, 2013

Subject: Application for Education Research at the Faculty of Health Sciences

Dear Mr. Miladinovic,

I have reviewed your request to collect data from Faculty of Health Sciences’ students for the completion of your EdD doctoral thesis entitled: The Work of Learning — An Inquiry into the Metacognition of University Students.

On behalf of the Faculty of Health Sciences, I approve your request to conduct the research specified in your application, on the condition that the identity and privacy of your participants will be respected and protected throughout your research and its published reports.

Kind Regards,

[Signature]

Dr. John O'Neil
Dean, Faculty of Health Sciences

BLUSSON HALL, ROOM 11300
8888 UNIVERSITY DRIVE
SIMON FRASER UNIVERSITY, Burnaby BC
CANADA, V5A 1S6
Appendix B.

Letter of Invitation

Invitation Letter

October 31, 2013

Dear Faculty of Health Sciences Student,

We are looking for volunteers to participate in a research study about experiences and perceptions of senior year students in the Faculty of Health Sciences (FHS) with regard to their learning processes, strategies and the ways they understand and describe their learning styles or approaches to various types of learning assignments.

The study will be conducted by Bratislav Mladenovic, Manager of Undergraduate Programs and Senior Academic Advisor at the FHS at Simon Fraser University (SFU), who is also a graduate student in SFU’s Doctor of Education program (EdD). The study is part of the requirements for Bratislav’s EdD thesis research.

The research study will focus on how university students approach their own learning and on the students’ views of themselves as learners. This study also focuses on how students organize their learning in ways that allow them to obtain knowledge, to retrieve and apply it.

You have been invited to participate in this study because you are an FHS student who has completed 105 or more academic units at SFU, have an above FHS average upper division GPA, and are enrolled in the Spring 2014 semester courses. Participation will involve a one-on-one interview that will last approximately one hour. Interviews will be conducted by Bratislav and will take place at Blusson Hall at a time to be arranged at the student’s convenience. Interviews will be conducted during the Spring 2014 semester prior to the start of the exam period. With the consent of student participants, the interview will be audio recorded. All participants will be given an opportunity to review the transcripts of the interview and make any desired corrections or additions.

The approval for this study has been acquired by the Dean of FHS and the SFU Office of Research Ethics.
You will receive a $20 coffee card as a token of appreciation for your participation in this study.

Please find attached two copies of a Consent Form that provides more detailed information regarding the research study. The signed Consent Form is required for your participation in the study. If you agree to participate in the study, please read and sign both copies of the Consent Form and bring them to the interview.

Please inform me, not Bratislav, if you agree to participate. Your confirmation should be communicated to me by January 20, 2014.

Please contact me if you have any questions regarding your participation in this study. Thank you.

Arlette Stewart
Undergraduate Advisor
Faculty of Health Sciences
Simon Fraser University
Appendix C.

Consent Form

Consent Form

Study Title

The Work of Learning – An Inquiry into the Metacognition of University Students

Study Team

Principal Investigator: Bratislav Mladenovic, M. Ed, Graduate Student, Faculty of Education, Simon Fraser University (SFU);

Senior Supervisor: Dr. Milton McClaren, Emeritus Professor, Faculty of Education, SFU;

Study Purpose

The study will investigate the experiences and perceptions of students in the SFU Faculty of Health Sciences (FHS) in regard to their learning processes and their views of themselves as learners under a variety of conditions and task requirements.

The study will involve FHS students who have completed 105 or more academic units at SFU, have an above FHS average upper division GPA, and are enrolled in the Spring 2014 semester courses.

Voluntary Participation

You do not have any obligation to take part in this study and your decision to participate or refuse to participate is totally voluntary. You can refuse to participate or you can agree and then withdraw from
participation in the study at any time without giving reasons and with no effects on your progress in classes, on your academic status, grades and other forms of evaluation at the Faculty of Health Sciences (FHS) and Simon Fraser University (SFU).

If you agree to participate in the study and then withdraw from participation, the data that you have already provided will be destroyed and will be not included in the study.

**Study Procedures**

Your participation in this study will involve you being interviewed by the Principal Investigator. The one-on-one, semi-structured interview will last approximately one hour. The interview will take place at Blusson Hall, the home of the FHS at SFU in Burnaby and will be conducted during the Spring 2014 semester, before the start of the Spring semester exam period. The interview session will be arranged at a time and FHS location that is convenient for you and outside of class time.

You will be asked to bring to the interview a sample of textbooks that you have used in courses that you have completed or in which you are currently enrolled. You may select texts that have been very helpful to your learning, or texts that you consider not to be useful, or examples from either category. You are also asked to bring a sample of lecture notes or other notes that you make during course study. The notes may be in any form that you choose (on paper, in a laptop or tablet, etc.).

You can also decide not to bring your textbooks and lecture notes.

With your permission the interview will be audio recorded. You will have an option to decline recording at any time before or during the interview.

The following are the topics that will be discussed during the interview.

- Having in mind your own learning experiences and your views of your approaches to the complex work of learning:
  - How would you describe your perceptions of yourself as a learner and the learning process in general? Do you have particular learning projects in which you are actively engaged outside of university or formal education—hobbies, new sports or recreational activities, on-the-job training for part time work, or just for your own general interest?
What are your opinions of the learning environments and instructional approaches at the FHS? What activities, assignments, projects have engaged you the most in your learning? In your experience, what instructional approaches were used most frequently at the Faculty of Health Sciences (FHS): lectures, tutorials, laboratories? How important have they been for your learning?

How do you approach the process of studying or learning to meet certain requirements or develop certain skills? What are your learning tactics? For example, how do you prepare for exams, how do you complete homework assignments, and what steps do you usually follow? If you have brought some samples of your personal notes for various courses, may I see a copy of your notes?

If you have brought along to the interview some examples of textbooks that you have used in your courses, may I see a copy of a very useful textbook, or copy of a textbook you find not to be useful, or both?

Do you use the Internet and WWW for your learning? What other digital resources do you use in your learning and study: podcasts, online courses?

What is the importance of the learning community at FHS: your instructors, academic advisors, classmates and peers? How would you describe your working relationship with them? What does collaborative learning mean to you?

Have you been involved in team-based or group assignments or projects? How do you feel about team or group-based learning experiences?

What do you think of assessment practices at FHS? What form of assessment for grading has been most common: i.e. scheduled examinations, practical laboratory tests, written assignments—essays, term papers, etc.?

If you have a scheduled, timed, written exam, how do you prepare for it—how do you study for this type of assessment?

What was the most common type of feedback you received about your work and how useful was it? Is there anything you like or would like to change about assessment at FHS?

What do you feel you learned about yourself as a learner from the FHS program? What is your personal learning plan after the graduation? How long do you think your current knowledge will be professionally relevant in the workplace? What plans have you made to keep up with the changes in the health science field?

You can agree to participate in this study and still decide not to answer some interview questions.

Your answers to the topics will be transcribed and a digital version (Microsoft Word file) as well as a hard copy of the interview transcription will be stored in a secure place. You will be invited to review the interview transcription and to recommend any needed modifications.
Potential Risks of the Study

Participation in this study does not pose any anticipated risks, vulnerabilities, or inconveniences to you. Your participation in the study will have no impact on your grades and your statements made during interviews will never be connected to your identity. The study will be designed and performed in a way that will protect you and other participants from any avoidable risks.

Potential Benefits of the Study

There are no explicit benefits to you as the study participant. However, we hope that your participation in this study may help you better understand your learning processes and yourself as a learner. That understanding might be beneficial for your future personal learning plans inside and outside of formal educational settings. Findings of this study may also help the Faculty of Health Sciences (FHS) to analyze and improve its curriculum, teaching practices and program outcomes, and to align them with students’ actual learning processes.

Payment

At the end of the interview session you will receive a CAD $20 coffee card as appreciation for your participation in the study.

Confidentiality

Your identity and privacy will be respected and protected throughout this study. The study will never release the names, contact information, or any other descriptors that could identify the participants in the study, or make them publicly recognizable and accessible. The study will use pseudonyms instead of participants’ real names in all published study results. Any direct references to the names of other students, faculty, or staff that may occur during the interviews will be removed from the transcripts. Any references (particular events, or courses) that might serve to identify you or other persons by name will also be removed.

The original recorded audio files of the interview discussions and all other digital files will be stored in a password protected USB flash drive as well as on a password protected external hard drive. The audio files from the interviews will be destroyed as soon as the interview transcriptions are completed.

Page 4 of 6
password protected USB flash drive as well as the password protected external hard drive containing digital copies of the interview transcriptions and other relevant digital files will be kept for three years in a secured and locked cabinet in the Principal Investigator’s (PI) office at the Faculty of Health Sciences (FHS) in Burnaby, accessible only by the PI. Hard copies of the interview transcriptions, PI’s field notes taken during interviews, returned copies of the Consent Form, and all other sources obtained during data collection will be kept in the PI’s FHS office in Burnaby and will be retained for three years in a secured and locked cabinet, accessible only by the PI.

After three years, the PI will permanently delete all digital files and format the USB flash drive and the external hard drive where the files were stored. At the same time, the PI will destroy and shred all hard copies of the files related to this study.

Organizational Permission

Permission to conduct this study has been obtained from Dr. John O’Neil, the Dean of the FHS. The approval to conduct this study has also been given by the Simon Fraser University’s Office of Research Ethics.

Study Results

The data collected in this research study and all findings and results will be used for the completion of the PI’s doctoral dissertation, and might also be presented at academic conferences and published in scholarly journal articles and books.

Contact for Information about the Study

For any questions or concerns related to this study, its procedures and its results, you may contact the PI at any time before, during and after the interviews. You may also contact the PI’s senior supervisor Dr. Milton McLaren at

Contact for Complaints

If you have questions or concerns with respect to your participation in this research study as a research participant, please direct them to Dr. Jeff Toward, Director, Office of Research Ethics at
Consent Form

I verify that I have read and understood the study procedures, potential risks and the expectations of my participation in the study stated in this document (pages 1 – 5).

I understand that my participation in this study is entirely voluntary. I also understand that I have the right to refuse to participate in the study, or to agree and then withdraw from participation in the study at any time without giving reasons and without any negative effects on my grades and my class standing.

The interviews will be audio recorded.
☐ I agree that the interview with me be recorded
☐ I do NOT agree that the interview with me be recorded

Please check appropriate box.

My signature below indicates that:
• I have received a copy of this Consent Form for my own records.
• I consent to participate in this study.

______________________________
Participant Signature

______________________________
Date (yyyy/mm/dd)

Printed First and Last Name of the Participant signing above

Please sign and date two copies of this Form and bring both copies to the Interview. You will keep one copy and the Principal Investigator will keep the other.