

Appreciating Primary Investors in Education:  
Using Q-methodology to Quantify Parents' Priorities for a Future High School Program  
at Immanuel Christian School

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A thesis submitted in partial fulfillment of the Bachelor of Science degree

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**PERMISSION TO USE HONOURS PAPER**

Title of paper: Quantifying Priorities of Primary Investors in Education: Using Q-methodology to Quantify Parents' Priorities for Informing the Design of a Future High School Program at Immanuel Christian School

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Thesis Title:

Appreciating Primary Investors in Education:

Using Q-methodology to Quantify Parents' Priorities for a Future High School Program

at Immanuel Christian School

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in the Department of Psychology at the University of Prince Edward Island.

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### Abstract

In recent years, there has been extensive research on factors affecting education. As an outcome, this body of research describes how various factors pertaining to education have the potential to either support or inhibit good outcomes for learning. Even so, there are a number of problems identified between the current model of education and society's demands and expectations for its modern day graduates (Adams, 2013; Berger, 2014; Kashdan, 2009; Robinson, 2015). As a unique institution engaging in the process of designing a future high school program, Immanuel Christian School values its community as well as data-driven, informed decision making processes. Following this institution's interests, this study implemented a Q-methodology to assess the relative prioritization of education factors by addressing the research question, "how do parents, as primary investors in Immanuel Christian School, conceptualize priorities for designing a high school program". The data analysis revealed four key factors as illustrating parental prioritization, associated with two underlying orientation themes. From the results, the findings addressed two key components of this research. For the first key component, the factors associated with the highest prioritization values described what primary investors in a future high school program believed ought to be addressed first. The second key component emerged from the lowest prioritization values, where these results might open a dialogue for any necessary further discussion with parents. As informing the design decisions for the future high school program at Immanuel, this study connected community interests to the quantification of subjective opinion.

### Appreciating Primary Investors in Education:

#### Using Q-methodology to Quantify Parents' Priorities for a Future High School Program at Immanuel Christian School

*“The old systems of education were not designed with this world in mind... the success of those who do well in the system comes at a high price for the many who do not.”*— Ken Robinson

Over time, the education system has seen various changes to its approaches and goals that reflected the present needs of that society. Throughout history, the preparation of students has addressed these unique economical and occupational demands. As such, schools act to equip learners for diverse time periods and the requirements associated with life in that period of time. These societal epochs ranged from early historical agricultural and production efforts, to the industrial revolution and its accompanying need for labourers, and eventually led to the current information and technology era of today. Clearly, these differing societal demands require diverse approaches for preparing successful school graduates to flourish under these demands. Even so, although more recently times have changed dramatically and the demands students face today are different than they once were, school systems have hardly transformed their approaches to student education since the inception of the industrial revolution (Leslie, 2014; Robinson, 2015). Our education system has been in a period of stagnation.

The various communities invested in education would agree: graduates of our present day school systems are faced with new challenges, where an inability to successfully maneuverer life beyond public schooling only adds further complications. Statistics Canada (2009) suggested that a modern education system ought to be focused on providing students with strong basic competencies for life-long learning. This

foundation of learning skills is required in our society for success in post-secondary education and the workforce, where “without the tools needed to be effective learners throughout their lives, these individuals with limited skills risk economic and social marginalization” (Statistics Canada, 2009, p. 9). Interestingly, the qualities that are essential for positive outcomes in today’s society are not necessarily new skills or attitudes. According to a survey conducted by The National Association of Colleges and Employers, aptitudes that employers sought in new hires included the ability to work effectively in team situations, solve problems, communicate effectively, and prioritize work (as cited in Forbes, 2014). Furthermore, it has been observed that this need for adaptability in learning to suit occupational demands has existed throughout history. Whether the learning foundation would supply good farmers in the agricultural era, productive labourers during the industrial revolution, or creative problem-solvers for today’s society, the skills and attitudes vital to success beyond education have existed for a very long time.

Across history, self-directed life-long learning and adaptability have always been hallmarks of success, but now more than ever before this depends upon the individual to generate their own occupational and personal achievements. In today’s job market, it is less likely that an individual will have a job inherited from their parents or hold an industrial worker entry-level position with high levels of job security across the lifespan. According to Harris (2014), if existing job-related trends continue, the average Canadian can expect to occupy 15 jobs across their lifetime. With technology changing at its current rapid speed of advancement, the present day job market presents ambiguous occupational challenges which require life-long learning.

The present day situation however is more complicated than just having skills to succeed in the work world. Where education and inquiry act as bridges relating individual development to meaning in the world, another basic objective of the education system should be to enable students to become meaningfully involved with society (Adams, 2009; Jovanovic, 2014; Robinson, 2015; Schafft & Biddle, 2013; Willingham, 2009). Robinson (2015) suggests that a fundamental purpose of education is to “enable students to understand the world around them and the talents within them” (p. xxiv). With such ease of access to other viewpoints and possibilities in this technological world, society requires greater use of critical and creative thinking skills than ever before. Even so, there are reasons to believe that the public education system is inadequately meeting the needs of many of its students and future graduates.

### **Student (Dis)engagement**

The Pan-Canadian Education Indicators Program (2016) determined that annual expenditure on PEI school-aged students incurs an average of \$9,027 per student and between the ages of 6 and 14, Canadian students will spend an average of 8,282 hours attending mandatory instruction time (Statistics Canada, 2016). Alarming, in spite of these dedicated hours and finances, at national level Canadian students are experiencing difficulties with engagement in school systems. According to Statistics Canada (2012), 8% of students were reporting having dropped out of school. Although this rate has reportedly decreased since 1991, we are still seeing a number of students that fail to complete a minimum level of education. Additionally, in 2010 the rate of students graduating on time from the Canadian public school system was only 74%. This means that a quarter of Canadian students are having difficulty to the point of not being able to

complete their schooling on time. Furthermore, when added together, 30% of Canadian students are not completing or are struggling to complete high school. Although there is extensive financial and human capital invested in Canadian schools, challenges still remain as students struggle to complete their education.

In Prince Edward Island, education systems contribute to the shaping of fourteen percent of the PEI population, enrolling 20,164 students (PEI Department of Education and Early Childhood Development, 2014). Unfortunately, the reported education outcomes for Prince Edward Island are falling behind. The Program for International Student Assessment (PISA) demonstrated that in Prince Edward Island, literacy measures in reading, mathematics, and science are below Canadian national averages on all measures (Council of Ministers of Education Canada, 2012). PEI further demonstrated the lowest outcomes out of all Canadian provinces. It becomes clear that island education outcomes on standardized tests, as compared to national standards, are different. Moreover, given the present day focus on standardized testing, the unique abilities of students such as artistic and other extracurricular talents are not given credit, and have the potential to be ignored entirely. As summarized by Robinson (2015), “other talents and interests are systematically marginalized” and many students do not reach their full potentials or hone capabilities at learning institutions.

Beyond the nation and provincial demonstrations of students completely disengaging from education, there is also a more proximate effect where the education crisis exists at the level of the individuals who remain in the classroom as well. In today’s classrooms, educators are noting the increased disengagement of their students (Adams, 2013; Kashdan & Silvia, 2009; Willingham, 2009). According to the National

Center for Education Statistics (2009), the number of questions a child asked per day drops considerably across development (as cited in Berger, 2014). According to these results, older children are continually asking fewer questions than younger peers.

Similarly, Busted (2013) argued that an inverse relationship is shared between number of years in school and the percent of student engagement. This so-called “school cliff” of student engagement demonstrated a steady decrease in the percent of students who are engaged in classrooms as they become older. With the negative potential financial, societal, and personal consequences of an ailing education system for present day graduates, addressing the problem of student disengagement in schooling is a pressing issue.

### **Immanuel as a Unique Opportunity**

Change to large systems that have been in place for many years can be difficult, and often begins at the individual level (Robinson, 2015). While there are pockets of successful innovation in any school, in PEI there is an institution that has already been taking a unique, empirically supported approach to teaching. Immanuel Christian School has demonstrated its keen interest in growth and data driven approach to education since its inception. Immanuel Christian School, founded in 1986 with a first enrolment of ten students, has expanded to enrolment of 115 students for the 2015/2016 academic year. Immanuel’s mission statement describes a key message about their approach to education where it directly states that, “we’re about growth” (ICS, 2015). From program size to education standards, Immanuel adopts a model of continual development. For example, Immanuel routinely monitors student assessment as one demonstration of their success in academia. For example, monitoring the success of their academic performance

exemplified that the introduction of a new maths program saw the increase of math performance outcomes, where Immanuel's students performed in the 85<sup>th</sup> percentile when compared to Canada-wide outcomes (Student Progress, 2012). Immanuel Christian School has been making changes in their approach to education practices throughout their history. As such, Immanuel's interest in an approach to education supported by empirical research offered a unique opportunity that aligned with this thesis research.

With this interest in growth and data driven choices, Immanuel intends to design a high school program to add to their current school which offers kindergarten to grade nine. In doing so, Immanuel aspires to use empirically supported methodology to transform education goals and curriculum for their future graduates. Throughout their history, Immanuel Christian School continuously values their grassroots tradition of ensuring that different perspectives are accounted for. Guided by these values, Immanuel offered the opportunity to develop a research project that would allow the design to be informed by key components of their school community – the primary investors in a future high school program, parents who currently have children enrolled at Immanuel.

This unique opportunity to work alongside Immanuel in completing a research project informs two key components of the high school program design. Firstly, the literature review and data from the results of this study can inform program design considerations based on what is presently known by research outcomes on education. To date, there is an abundance of research on topics pertaining to pivotal factors in education which Immanuel will want to consider (Adams, 2013; Berger, 2014; Robinson, 2015; Willingham, 2009). In comparison, there is little research conducted on what immediate investors in education would like to see in their schools. More specifically, this thesis is

unique in that it addresses what one particular group of stakeholders, parents, would like to see be made priority in the design of a high school program, an often disregarded subject of research in education. The first key component of this study is to assess the priorities of parents in designing a high school program for Immanuel.

Once data collection and analysis has been completed, the second key component of this study is to inform parents about the value and support for education approaches that are important design components to consider for Immanuel's high school program. The results will demonstrate prioritization of an array of factors associated with positive learning outcomes, and as such there will be outcomes that demonstrate which of these factors are not priorities. As such, the lower prioritization outcomes can inform discussions with primary investors to explain the empirical support for their successes as predictors of good learning outcomes. In this way, the second key component is the information leading to further discussions and conversations for concepts that primary investors might need clarification on. Similarly, both the highest and lowest reported priorities could act as informants for design concepts that need further attention in regards to communicating and promotion of support by parents.

### **Immanuel Christian School as a Research Context**

In conducting research at an education institution, it is important to recognize the unique characteristics of Immanuel as a school. As a belief-focused institution, Immanuel embraces voluntary discipleship as a perspective within the context of education. As described by Harris and Koenig (2006), children learn about belief and religiosity when they are explained through verbal testimony. As described by the school's mission, being a student at Immanuel involves, "an excellent, Christ-centred



education to enable them to reach their full potential, and to do this in a safe and caring environment” (“The Immanuel Experience”, 2016). Hosting a variety of discussions on faith and worldly belonging is an important quality that Immanuel contains as a research context. Even so, Immanuel represents numerous denominations, and with their open admission policy presently represents 19 different churches (“Our School”, 2016). A second attribute that is important to recognize within the context of this study is that Immanuel is a private school. This means that designing a high school program is very important to its investors – the parents who would potentially enrol their children in this high school. Following its grassroots traditions, Immanuel embraces its community and values the input of those directly involved in its success.

As a school immersed in grassroots traditions, Immanuel values the perspectives of the people involved in their school community. As direct investors in the school, parents carry important visions for the future of this high school program. As such, the second objective of this study is to understand the priorities of the parents who would potentially enrol future graduates of Immanuel’s high school program. Additionally, many of these parents investing in Immanuel’s future high school program are community members who share connections to prosperous island businesses who may potentially hire future graduates. More specifically, this study will investigate parental priorities through data collection and analysis.

### **Research Question**

The purpose of this research is to understand the factors that Immanuel Christian School might consider while designing their high school program. This will include a literature review on current education research as well as a study to assess how parents at

Immanuel prioritize and rate education concepts for the high school program design. As such, the first objective of this study is to develop a literature review that will survey successful approaches to education, suggesting what factors ought to be considered for inclusion in the program design. The second objective of this study will be designing an online Q-Methodology sorting task. The research question for this Q-methodology task asks, “how do parents, as primary investors in Immanuel Christian School, conceptualize priorities for designing a high school program?”. The overall purpose of this study aims to demonstrate the priorities of parents for the sake of informed decisions for planning and justifying the data-driven research underlying Immanuel’s proposed high school program.

### **Literature Review**

*“Life isn’t about finding the answers, it’s about asking the questions”* – Brian Grazer

As an institution that values data-driven pedagogy approaches to education, the aim of this literature review on various factors influencing inquiry and learning is to inform the design of a high school program at Immanuel Christian School. In addition to the role of curiosity as a developmental primer, a supplementary three-tiered review of literary publications addressed the influence of attitudes towards learning, the social climate, and the physical environment as predictors of education outcomes. Additionally, the concepts identified in this literature review will be added to the Q-sort statements to address the second research question of this study.

### **Curiosity as a Developmental Primer**

As highly perceptive beings, humans explore their environmental stimuli to satisfy some need for curious engagement. As such, exploration and inquiry contribute to learning outcomes, personal development, and academic success (Berger, 2014; Boyd,

Johnson, & Bee, 2012; Cameron, 2012; Leslie, 2014; Robinson, 2015). According to Domjan (2010), the idea of learning is captured by “an enduring change in the mechanisms of behaviour involving specific stimuli and/or responses that results from prior experience with those or similar stimuli and responses” (p. 17). Indeed, according to Ofer and Durban (1999), curiosity shares relations with an array of important developmental tasks. To address the role of inquiry across development, learning has been studied via animal models, conditioning trials, and behavioural neuroscience. Additionally, recent research on inquiry and curiosity has also examined the processes and outcomes for learning in classrooms around the world (Adams, 2009; Domjan, 2010; Kashdan & Silvia, 2009).

The exploration of questioning began with Descarte’s pursuit of man’s perceptions of the world (as cited in Garber, 1998). Historically, human kind has been on a continuous quest for understanding that exists across life span development in present day. We ask very big questions of the world and of ourselves in an attempt to find meaning and feel a sense belonging. Questions guide and shape the world we live in, illustrating that we are beings that rely on our organically curious nature as an informant. Curiosity, being the exploratory attribute of the human condition, is a behaviour that broadly impacts the lived experience. By definition curiosity is, “the desire to learn or know more about someone or something” or “something that is interesting because it is unusual”. (Merriam-Webster, 2015). In using curiosity and inquiry to guide learning, it is important to introduce how these concepts align with developmental accomplishments that occur across the lifespan.

For many reasons, curiosity is important to study due to the relevance of this topic to issues that we face in today's society. According to Grazer (2015), people in the twenty first century are bombarded with the pressure to innovate and emulate creativity every day. This is in part due to the fact that we are in a growth state for technology and knowledge, where it is easier now than ever before to find answers to our questions. Information technology provides access to the plethora of information in the virtual world with stunning ease. With technology allowing access to the Internet on our smart phones and Google's search engine processing forty thousand search entries per second, our lived experience is saturated with a need to access instantaneous answers (Google Search Statistics, 2016). The information that we have such effortless access to, however, fails demonstrate the complexity of questioning processes that mankind has the capability of performing. Grazer (2015) suggests that perhaps these simple questions are not those we ought to be asking then, either. Questions that are complex and open ended require reflection and are laden with subjective interpretation – as such, their answers will not be easily found in an online database.

In an age so invested in uncomplicated information access, Grazer (2015) proposed that we should be priming the ability to vigilantly explore and probe the information we are barraged with so habitually. Through asking stimulating and provoking questions, we attain the ability to become familiar with other people and alternative life experiences. Discovering alternative perspectives may have powerful learning outcomes that contribute to critical thinking skill development that is necessary for dealing with the mass influx of information at ones' disposal. Similarly, Kashdan, McKnight, Fincham, and Rose (2011) postulated that curiosity then may be considered

the bridge between people of very different experiences and ideations. Therefore, the human connection to curiosity and inquiry provides a route to developing critical abilities sought out in today's society (Berger, 2014; Kashdan, McKnight, Fincham, & Rose, 2011; Robinson, 2015). Ultimately, curiosity is required for success in a modern lifestyle that demands increasing discovery, creation, and knowledge.

Beginning in early life experiences, asking curious questions facilitates how human kind learns about the world. The average preschool aged child asks their parent over one hundred questions per day (Berger, 2014). This is a normal developmental pursuit, even it is mentally straining for parents. As highly cognitive beings, we spend the first years of our lives asking nearly ceaseless questions. These queries are posed through verbal inquires or physical experiments that evolve with increasing age. According to Mills, Legare, Bills, and Mejias (2010), older preschool aged children were capable of asking questions that were more successful for solving problems than their younger peers in cognitively challenging activities. Furthermore, it was found that older children demonstrated an increased propensity to gauge the most appropriate source to direct their questions to. These findings posit that the oldest preschool aged children were better prepared than their younger counterparts, where "only 5-year-olds succeeded both at knowing who to ask and asking more effective questions than ineffective ones" (Mills, Legare, Bills, & Mejias, 2010, p. 555). Additionally, Overoye and Storm (2015) argued that coping with uncertainty through curiosity stimulates strengthened learning outcomes. According to Fry and Villagomez (2012), asking questions and interacting with learning in the classroom allowed students to engage with their learning processes in qualitatively supportive ways. As such, freely asking questions supported student

engagement in academic tasks. Indeed, as development enhances the level of sophistication in inquiry, these skills have the potential to translate into powerful tools for learning.

Even though questioning abilities grow in strength, where older children are capable of asking more sophisticated questions than their younger peers, they are not actively using these skills. Sadly, Berger (2014) illustrated that the daily number of questions asked drops substantially as childhood progresses, leaving middle school aged children asking only a small fraction of the number of questions that their preschool counterparts do. Similarly, an inverse relationship is witnessed between number of years in school and the number of questions verbally posed by children (Berger, 2014). Not only is there a decrease in the rate of questioning, but the quality of questions also changes across early childhood development. Unfortunately, although inquiry abilities improve with age, the rate of questioning both inside and out of the classroom environment declines over time.

The implications of this decline in the rate of question asking behaviour might impact many life experiences and developmental outcomes because it has been reported that engaging in inquiry has many potential benefits. For example, Kashdan and Steger (2007) suggested that one benefit of enacting curiosity and engaging in inquiry was that these activities positively affected subjective reports of emotion. This study found that individuals with high trait curiosity experienced an increase in subjective well being when they were able to engage in inquiry behaviours. Furthermore, participants also reported that they felt an accompanying overall increase in life satisfaction. This study by Kashdan and Steger (2007) focused on understanding how adopting an orientation

focused on growth positively correlated to levels of curiosity, meaning in life, and experiencing pleasure. The importance of this orientation towards growth was that it contributed to what Kashdan and Steger called broadening and building effects, in which the individual adds to their personal inventory of skills and knowledge that can support their well being. In this study, the experiences of college students via trait measures and daily diaries illustrated that on days which students were able to engage in the exploration of ideas that piqued their interest, they reported feeling subjectively happier. Still, these results in part attributed student engagement to a growth orientation that was related to a high level of curiosity, as opposed to passive reception of information or teacher driven questioning. Alternatively, the effect of experiencing pleasure had short-term effects that were not sustained to the next day. In summary, enacting curious engagement in students increased subjective well-being across several measures. Engaging in curiosity driven behaviour increased subjective feelings of enjoyment.

**Why people crave inquiry.** Previous models have attempted to explain the need for inquiry behaviour. Due to curiosity's profound impact on the lived experience and subjective well-being, many theorists have attempted to rationalize the human motivation for seeking new knowledge. Similarly, ethological theories have attempted to describe the need to know as a mechanism for meeting drives, such as those for food, shelter, and sex (Boyd, Johnson, & Bee, 2012). According to Leslie (2014), it has been demonstrated that there are other reasons than meeting basic needs that prompt people to engage in inquiry. To explain this, Leslie described a Piagetian theory based approach where a curious individual seeks to decrease the discrepancy between expectation and reality. Based on this, incongruity drive theory operates on an inverted-U shape relationship.

This theory suggests that curiosity peaks when incongruity is moderate, and is demonstrated to a lesser extent at extreme measures of incongruity.

To account for the differences in propensity to inquire about some incongruence, Leslie suggested that Piagetian theory explained that this suggested that a high incongruity might be less approachable due to the fear of what may be discovered (2014). Similarly, incongruity that is too low may be insubstantial for attention and be ignored. From a similar perspective, Pinker argued that genetically inherited traits form the foundation for characteristics that will be adapted over time to meet environmental demands (as cited in Boyd, Johnson, & Bee, 2012, p. 29). As argued by Pinker, evolutionary psychology posits that, “the mind, like the body, has been shaped by natural selection to serve adaptive functions and promote survival” (as cited in Boyd, Johnson, & Bee, 2012, p.29). Accordingly, evolutionary and biological theories for inquiry behaviours both suppose that adaptation is a product of necessitated change. Additionally, learning about the environment acts as a precursor for modifying activity.

To address the existence of inquiry when incongruity is not present, Loewenstein created a theory considering an information gap (as cited in Kontra, Goldin-Meadow, and Beilock, 2012). This theory suggests that curious inquiry is a product of a lack of understanding, where curiosity is stimulated when one has a desire to know. As such, the information gap theory results in questioning behaviour directed towards a void of knowledge. This cause for motivation is that of the need to fill in an information void, and as such demonstrates that curiosity is a consequence of metacognition. That is, in being conscious of what we do not know curiosity functions to fill in this information gap.



To address these voids in understanding, Kontra, Goldin-Meadow, and Beilock (2012) argued that bridging the information gap was affected by embodied learning structures that were formed through early life interactions. Learning through physical interactions made impressions on the developmental brain that have the potential to enhance learning on later tasks. This type of exploratory behaviour, called embodied learning, was defined as “cognition as arising from sensory and motor experiences” (Kontra, Goldin-Meadow, & Beilock, 2012, p. 738). Through this developmental lens, it was suggested that goal directed behaviours are a product of both physically performing actions and understanding them. As such, embodied learning is relevant to education in that “doing a relevant action leads to enhanced learning over passively viewing that action” (p. 736). Further, they suggest that learning experiences are partially affected by the potential for active engagement, where physical movement can have a powerful effect on learning outcomes. Embodied learning is a practical issue to consider in modern classroom design, in which the classroom can stimulate student engagement with hands on learning activities.

**Curiosity in academia.** As an important constituent of investigating novel stimuli and understanding the environment, asking questions has been also associated with stronger academic outcomes. As found by Raine, Reynolds, Venables, and Mednick (2002), sensation seeking and exploratory behaviour in children is correlated with higher intelligence quotient scores later in life. Intelligence in participants at age three was measured by a modified version of the Boehm Test of Basic Concepts and was compared to participants’ achievement on the Weschler Intelligence Scale for Children – Revised. Sensation seeking of the child at age three was measured by the observation of four

behaviours. These included physical exploration, verbalizations, friendliness, and social play. The results demonstrated that intercorrelations between exploratory activity rates at age 3 and subsequent scholastic ability at age 11 illustrated a strong positive relationship (Raine, Reynolds, Venables & Mednick, 2002). According to these results, engaging in questioning activity earlier in life is positively correlated to cognitive aptitude in later years.

Addressing the moderation of this cognitive quality, Chak (2007) found that the perceived value of curiosity by parents and teachers shared a relationship with the frequency of encouraging inquiry behaviours in preschool aged children. According to their findings, both parents and teachers shared similar positive feelings towards curiosity but teachers reported being more likely to encourage curious behaviour. As such, Chak pointed out that it is important to understand the underlying implicit value judgements that shape early curious behaviour manifestations through responses of caretakers. Many informants temper the positive outcomes associated with the propensity of a child to ask questions.

**Inquiry across adolescent development.** As maturation occurs and preschoolers grow to become adolescents, learning behaviours also evolve. Outcomes for exploratory behaviour in adolescence depend upon contextual factors, where teens must navigate risk versus benefit problems. According to Jovanovic and Brdaric (2012), learning in adolescence can transpire through risk-taking behaviour. Similarly, these findings reported that the relationship between inquiry and risk had been illustrated as particularly salient for the adolescent years. Additionally, there was an increased likelihood for this age cohort to engage in such behaviour. This study demonstrated curiosity in

adolescence was a predictor of engaging in risky-laden activity. Additionally, findings of this study confirmed that intrinsic motivation was a contributor to subjective well-being through acquisition of personal resources as a product of risk-saturated inquiry (Jovanovic & Brdaric, 2012). Ultimately, there is some level of conflict for motivation for risky behaviour, where curiosity must be stronger than the fear of assuming a risk. Even so, “certain aspects of curiosity can contribute to negative outcomes in adolescence” (Jovanovic & Brdaric, 2012, p. 41). This demonstrated how self-expansion involves potentially unknown consequences and that developmental inquiry must be considered in the larger context of its advantages and disadvantages for teens.

Alternatively, Jovanovic and Gavrilov-Jerković (2014) found that engaging in curiosity also offered advantages for subjective well being in adolescence. Findings from this second study by Jovanovic and Gavrilov-Jerković explored curiosity’s relationship with subjective well-being. This study found that trait curiosity was a specific predictor of positive well-being in adolescents, with the most significant influence of high trait curiosity predicting positive affect and hope (Jovanovic & Gavrilov-Jerković, 2014). Due to these results, it becomes clear that curiosity as a trait shares a complex relationship with adolescent developmental outcomes. Although exploration involves some degree of risk taking, there are also subjective benefits for enacting curiosity during this developmental period.

Even if there are inherent risks in questioning the environment and its novel stimuli, it is still a routine behaviour. Curiosity compensates for engaging in inquiry through neuropsychological reward mechanisms. To address the brain and behaviour connection to asking questions, Kang et al (2009) conducted functional magnetic

resonance imaging (fMRIs) brain scans on participants while the participant read trivia questions. The results demonstrated that caudate activity associated with anticipated reward that was activated by questions that made the participant curious (2009). Based on their findings, functional imaging reveals that neural reward activity is associated with the state of curiosity triggered by external circumstances (Kang et al., 2009).

Furthermore, memory areas were also activated when the participant was asked familiar questions, demonstrating a discernable relationship between the experience of curiosity and its implications for learning and memory activation. In this way, epistemic curiosity has neurological consequences for reward association and future recall. Similarly, Jepma, Verdonchot, van Steenbergen, Rombouts, and Nieuwenhuis (2012) found that the termination of curiosity, through deactivation of its acute arousal state, was a rewarding experience. Additionally, their study also supported curiosity as an experience that enhanced memory. In sum, well-being may be augmented by the activation of reward pathways in the brain and the subsequent memory enhancement associated with inquiry. These findings on activations of a neural reward pathway demonstrated a physiological basis for the desire to learn.

As cognitive capacities develop, entering adulthood offers a breadth of developmental challenges. According to Erikson, the psychosocial stages relevant to adulthood include “intimacy versus isolation” and “generativity versus stagnation” (as cited in Boyd, Johnson, & Bee, 2012, p. 34). To address this need for development, engaging in inquiry about other people promotes self-expansion and intrapersonal growth (Kashdan, McKnight, Fincham, & Rose, 2011; Emery, Walsh, & Slotter, 2015; Jovanovic & Gavrilov-Jerković, 2014). Specifically, self-expansion, as defined by Aron and Aron

(1997) is, “adding diverse content to the self-concept, including new identities, knowledge, or social roles” (as cited in Emery, Walsh, & Slotter, 2015, p. 259). Emery, Walsh, and Slotter (2015) found that low self-concept clarity was correlated with a disinterest in self-expansion. By association, social stimuli and situations contribute to self-expansion when there is a pre-existing clarity of self-concept. As such, self-concept clarity is a significant predictor for an interest in self-expansion. As found by Kashdan, McKnight, Fincham, and Rose (2011), a curious individual perceives the challenge and ambiguity of social situations as an opportunity for enacting this personal development. As such, social engagement with unfamiliar people offers exploration and potential bonding opportunities, and the curious person frames social engagement as an interesting opportunity rather than an intimidating situation. Engaging in social situations often resulted in a heightened feeling of connectedness and relational belonging, thus creating an appetitive stimuli for further engagements that emerge from building social bonds (Kashdan, Mcknight, Fincham, & Rose, 2011). In this way, interpersonal relations promote social curiosity that contributes to positive outcomes when an individual possesses specific precursors that support self-expansion. Developmentally, social curiosity offers growth opportunities when certain conditions have been met.

**Occupational benefits of curiosity.** Throughout the adult life, occupational activity captures a vast amount of time. In consideration of repercussions for a curious individual in the workplace, there exist clear relationships linking trait curiosity to successful work-related outcomes. According to Leonard and Harvey (2007), curiosity shared a positive relationship with emotional intelligence in the workplace. The results demonstrated that curiosity and emotional intelligence skills supported an individual

successfully managing challenges for job-related tasks. Mussel (2013) argued that a desire to learn facilitated professional development due to the personal characteristics of a curious person that match the occupational expectations for innovation and flexibility. The characteristics of a curious person which were also predictors for successfully meeting occupational desires included fluid intelligence, conscientiousness, and the intrinsic motivation to learn (Mussel, 2013). According to Mussel, curiosity could be considered the “nucleus of intrinsic motivation”, and this contributes to professional engagement (2013, p.457). In studying curiosity and occupational performance, Mussel found that three substantial indicators of job performance were indicators of curiosity by supervisors, descriptive goal attainment, and vocational school grades. Based on these results, Mussel reasoned that curiosity was associated to positive job performance due to the relationship with adopting a goal orientation towards learning. To address the need for occupational flexibility, Zacher (2015) found that confidence, daily adaptability, and control were predictors of task performance and satisfaction at work. On the contrary, curiosity negatively impacted daily task performance and shared a positive relationship with daily career satisfaction. As such, it was postulated that curiosity can also explain some variance in job performance due to the nature of the job and how it relates to curiosity itself. Based on these discoveries, curiosity is an important construct to embrace as it contributes to occupational performance and satisfaction in today’s transformational job market.

Particular subtypes of curiosity driven inquiry further influence occupational success. By definition, diversive curiosity is the simple attraction to novel stimuli, epistemic curiosity as a channelled, deep, disciplined pursuit for knowledge, and

empathic curiosity is the interest in the lived experiences of those around us (Leslie, 2014, p. 16-18). All of these subtypes of trait curiosity have important implications for workplace interactions. Harrison, Sluss, and Ashforth (2011) found that enacting curiosity supported the occupational outcomes for participants in a situational investigation of newcomer adaptation. This study considered only specific curiosity, which they defined as the pursuit of “new, yet fairly discrete information” (Harrison, Sluss, & Ashforth, 2011, p. 212). In this study, newcomers to a telemarketing business were surveyed using likert-scale questionnaires pertaining to self-reporting on their own curiosity, information seeking, job performance, and leadership behaviours. The results suggested that specific curiosity predicted the behaviour of seeking information and endorsed positive framing of experiences (Harrison, Sluss, & Ashforth, 2011). Similarly, Reio and Wiswell (2000) found that adult curiosity in the workplace predicted learning supportive of job performance. Reio and Wiswell suggested that epistemic curiosity was significant in workplace learning. Thus, it is important to consider the role of epistemic curiosity for job performance outcomes.

In respect to specific and diversive curiosity in the workplace, the conclusions advocated that there are diverse behavioural displays of each type of curiosity considered. Furthermore, the manifestation of inquiry behaviour is contingent on the subtype of curiosity being channelled. As a component of social behaviour and learning, curiosity acted as a significant predictor for job-related performance.

Although curiosity is exhibited at the level of the individual, external factors may also have implications for the expression of curiosity in the professional environment. Beyond an individual aptitude, curiosity in the workplace is facilitated by a supportive

climate. Cameron (2012) established that the workplace climate has a strong influence over the qualitative experience of a professional atmosphere and that this perceived context partially regulates job-related engagement. According to this study, a supportive climate for inquiry was beneficial for workplace outcomes. A positive climate was one that was perceived by employees as having an optimistic outlook, where positive emotions are dominant over negative emotions. Such workplaces emphasize a philosophy that supports growth by returning to the notion of a, “broaden and build” philosophy (Cameron, 2012. p. 26). This philosophy within the workplace requires that employees be positively supported in their independent inquiry processes and growth. In addition, the professional climate was emulated by professional leaders who increased employee well-being and long-term retention. As such, the workplace climate is an important factor affecting the expression of inquiry and creative output.

In summary, personal growth in today’s world offers many challenges as the lived experience is bombarded with information, opportunities, and barriers. As illustrated by developmental research on the outcomes of curiosity as a trait, learning behaviour manifests itself in many situations across the lifespan. Such learning behaviours were habitually expressed throughout development, with repercussions for early life exploration, self-concept creation in teenage years, and social and occupational success in adulthood.

Curiosity acts as a coping mechanism for dealing with these challenges in a manner that is subjectively enjoyable. Therefore, curiosity offers a breadth of implications as benefitting individual developmental outcomes. In addition, the various obstacles and support systems that create the context of these developmental periods



guide the expression of curiosity. As a significant mediator of development in childhood and young adult years, the education system is of particular salience for research on learning and inquiry outcomes. How then can a school influence learning outcomes? To answer this question, researchers emphasize various factors impacting successful learning outcomes, including perspectives on individual mindsets and skills for successful learning, social climate, and the physical environment.

### **Individual Mindsets and Skills for Successful Learning**

Curiosity appears to be one avenue that contributes to a richer, fulfilling life. As such, there are internal mechanisms, traits, and behaviours that an individual performs that can bolster or inhibit curious inquiry. In consideration of the attributes embodied by a curious learner, it is important to understand how an individual attitude has the ability to mediate perceptions of learning. For the purpose of this section, these expressions and behaviours will be collectively referred to as attitudes. Attitudes are shaped by experience and a natural, inborn predisposition (Berger, 2014; Froiland & Worrell, 2016; Gerrard, 2014; Saxe & Stollak, 1971). Much like the nature and nurture mechanism, curiosity is understood as a universal inborn trait that is also shaped by the environment. Clearly then, ones' attitude towards curious inquiry must be important as a mediator of a learning experience. As such, it is important to address the features that contribute to curious and how exhibiting and supporting them strengthens this behaviour.

**Experiencing learning as intrinsically rewarding.** Certain activities can elicit strong cognitive emotional responses that act as temporary escapes from reality. This phenomenon is referred to by the positive psychologist Csikszentmihalyi as the experience of flow (as cited in Boniwell, 2015). Flow is defined as a period of intense

concentration where one's senses of self and worldly frustrations are temporarily cast aside in order to engage in that particular activity. As such, an activity that encourages this state of flow becomes intrinsically motivating. Weber, Wagner, and Ruch (2016) found that students who reported high levels of characteristics such as zest, love of learning, and perseverance were more likely to have positive affect regarding learning. As such, positive affect was an important factor for the joy experienced in learning. Additionally, positive feelings towards schooling do exist as traits and states and might offer similar joy to the experience of flow. Perhaps learning could exist as a form of flow in the classroom environment.

Similarly, curiosity can spark intrinsic motivation as well. Intrinsic motivation is seen in the classroom when students learn for the sake of finding joy in learning, rather than solely engaging in learning at the request of the teacher. Findings by Froiland, Mayor, and Herlevi (2015) demonstrated that intellectual curiosity and achievement were positively related but that the paths to these outcomes were unique to each individual. Although it is understood that outcomes of academic achievement were understood a function of curiosity, motivation appeared to make each process of reaching such outcomes unique to the adopted motivational style of an individual. As such, students who displayed intrinsic motivation for the class material were positively correlated with higher learning outcomes (Froiland, Mayor, & Herlevi, 2015). Additionally, Froiland and Worrell (2016) found that intrinsic motivation was positively associated with increased classroom engagements and good academic outcomes. According to Froiland and Worrell, "students who have learning goals or mastery goals are much more likely to enjoy learning than those who are focused primarily on avoiding failure or getting good

grades” (2016, p. 322). Although intrinsic motivation cannot be directly taught, it has a strong influence over student engagement and the subsequent outcomes. Thus, intrinsic motivation increases the potential for a curious inquirer to achieve an appetitive, flow-like, interest in the learning process.

**The ability to cope with challenges.** Although exploration and learning processes possess inherently pleasurable moments, learners also encounter diverse challenges. These challenges include new information, opposing ideas, and understanding their role as inquirer. As such, an individual engaging in curiosity must possess an enabling set of competencies to cope with these frustrations. This skill set might be considered an aptitude for inquiry. Aptitudes for inquiry are a set of competencies that contribute to a curious attitude in that they facilitate growth and increase the ability to manage the challenges that learning presents.

**Reflection.** One aptitude for curious engagement comes from the ability to reflect. This competency was supported by findings from Travers, Morisano, and Locke (2015), where reflection and goal setting activity supported academic performance. This study made use of journaling to allow for reflection on students’ schoolwork. The results also demonstrated that reflection positively impacts subjective well-being and stress management, apart from positive academic outcomes (Travers, Morisano, & Locke, 2015). According to Schober et al. (2015), positive outcomes in education were facilitated by self-regulated learning competencies. As said by Peeverly, Brobst, Graham, and Shaw, self-regulated learning is an essential competency for learning because “students have to deal with rather unstructured contexts and diverse learning challenges” (as cited in Schober et al., 2015, p. 64). Similarly, Cohen (2012) argued that self-

regulation acted upon a learner's ability to monitor the effectiveness of their learning and conceptualize the importance of the relationship between approach to learning and performance outcomes. Indeed, possession of basic competencies enables students to cope with challenges to learning progress.

**Metacognition.** Curiosity often requires deep, reflective thinking on behalf of a learner and as such, learning outcomes might be affected by metacognition. According to Litman, Hutchins, and Russon (2005), metacognition was significant for confidence, or feeling of knowing, in relation to general knowledge questions. The results suggested that curiosity was associated with the largest information gaps and smallest confidence levels in answering questions, whereas the responses that the participants were most confident in invoked the least amount curiosity (Litman, Hutchins, and Russon, 2005). Their findings suggested that interest and metacognition was provoked where a lack of knowledge exists and that respondents had some ability to predict the correctness of their answers. As such, metacognition is related to curiosity in that an awareness of one's own knowledge is a feature of the level of curiosity exhibited in knowledge-based tasks. Similarly, Zepeda, Richey, Ronevich, and Nokes-Malach (2015) found that training in metacognition was correlated with improved performance on conceptual tests and self-guided learning activities. According to their results, students provided with metacognition training also demonstrated less biases and heightened motivation. In summary, metacognition has powerful implications for learning outcomes in adolescence and supports self-regulated learning.

Similarly, metacognition allows the inquirer to see a bigger picture in that they are able to conceptualize the limitations of their thoughts. Thomas and Anderson (2014)

asserted that students reported being aware of their altered view of learning when metacognition was addressed in the classroom via a pedagogical shift. The learning environment and teaching approach, as assessed by quantitative measures, moderated the level of awareness of students learning high school chemistry. As such, being aware of limitations also pertains to understanding and working with inherent strengths and weaknesses. When a learner is aware of their unique abilities as well as their limitations, they are able to exude their personal skills while using resourcing behaviours to make up for any weaknesses in abilities (Litman, Hutchins, & Russon, 2005; Zepeda, Richey, Ronevich, & Nokes-Malach, 2015). In summary, awareness of the self becomes a critical aptitude for the learner as it supports adapting, achieving, and outsourcing for the best possible classroom outcomes.

**Learner versus judger mindsets.** Orientation towards learning motivates the approach method a learner will adopt in tackling the various challenges and opportunities associated with education. As such, orientation style has been illustrated as manifesting as either supportive or inhibiting attitudes towards achievement outcomes. According to Lebow (1993), a precursor to approach orientation in academia was the underlying mentality an individual adopted in conceptualizing their experiences at large. Lebow suggested that these mindsets influence how situations are perceived, where students can take either a learning or judging mindset. Addressing the benefits of a learning mindset, Lebow argued that the learning mindset in particular allowed the student to be at the centre of their experiences and increases feelings of autonomy. Supporting further this notion of learner and judger mindsets for the approach to learning, Adams (2013) asserted that espousing a learner mindset involved frequently returning to active

identification of the qualities surrounding their appraisals. Adopting a learner mindset requires that the individual assumes mindfulness for the cognitive assessments of learning opportunities. The perception of learning opportunities is strongly affected by the qualities of the mindset that is utilized. As an extension of mindsets for learning, orientations are central to motivating learning engagement.

**Learning versus goal versus performance orientations.** A study by Simmons and Ren (2009) considered how risk and creativity were influenced by particular orientations of students. As defined by Simmons and Ren, goal orientation is, “a stable dispositional variable that has an impact on how people choose to respond in achievement situations” (2009, p. 401). Such orientations that a learner may adopt in their style of addressing a task include a learning orientation, or the pursuit of skill acquiring and valuing concept mastery, and performance orientation, where the individual values confirmation of their abilities from an external source (Simmons & Ren, 2009).

Performance orientation is further broken down into subtypes of performance-avoid and performance-prove. In greater detail, performance-avoid orientations were described as being motivated by hiding flaws or shortcomings, while performance-prove orientations sought to flaunt their strengths and best attributes. Similarly, Kover and Worrell (2010) found that learning attitude was affected by the perception of education as instrumental to future goals. As such, a learning orientation that valued extrinsic rewards of long-term gain was a predictor of motivation in school. Clearly, orientations maintain a focus on the outcome of behaviours, where action or inaction is motivated by a preconceived set of expectations for performance.

According to Zourbanos, Papaioannou, Argyopoulou, and Hatzigeorgiadis (2014), one antecedent to learning mindset and goal orientation is the style of self-talk that an individual adopts. Across three primary studies, Zourbanos, Papaioannou, Argyopoulou, and Hatzigeorgiadis looked at the differences in reported perceived competence of elementary and high school physical education students through the theoretical framework of Achievement Goal Theory (AGT). These findings demonstrated that increasing task and master orientations were negatively correlated to poor self-talk. Furthermore, their results showed that engaging in negative self-talk was positively related to decreased levels of perceived competence. As said by Zourbanos, Papaioannou, Argyopoulou, and Hatzigeorgiadis, “adoption of task and mastery approach goals was linked to the most adaptive patterns for students’ positive self talk” (2014, p. 248). As such, approach orientation towards goal-motivated behaviour is meaningfully associated to positive self-talk. Perceived competence and abilities are important factors contributing to the potential selves in student motivation.

**Failure and the fixed versus growth mindset.** Although a lack of success in striving for mastery learning can be emotionally frustrating, failure in a learning pursuit is not entirely negative, nor does it mark the end of a process. Yeager and Dweck (2006) posited that a learning mindset that conceptualized abilities as fluid rather than crystalized was associated with stronger academic achievement. Furthermore, it was cited that responding positively to challenges, or the quality of resilience, was an indicator of source of success both in and out of the classroom. Similarly, Martin and Marsh (2003) argued that a fear of failure was facilitated by how failure is perceived and

by the implications that accompany it. The combined effects of these consequences provoke protective behaviour.

Furthermore, Martin and Marsh proposed that the perception of failure in school setting was embedded in the contextual need for achievement. As characterized by the orientation towards failure, students adopted differing strategies to negotiate successful outcomes in school. Even so, failure might incorporate unanticipated supplementary learning. Indeed, Berger (2014) explained that the result of failure lends itself to the discovery of more beautiful questions.

The experience of failing to meet a goal can also provide a learner with salient information. As demonstrated by Holmes, Day, Park, Bonn, and Roll (2014), productive failure is, “activities in which students generate solutions to novel problems prior to receiving instruction on the same topics” (p. 542). In their study, productive failure was accompanied by scaffolding from a mentor relationship that provided commentary and support to address student outreach. Their findings illustrated increased long term retrieval of an academic invention laboratory exercise when mentors who provided some scaffolding supported productive failure activities. These results suggested that scaffolding and student lead invention strategies supported project based learning outcomes.

Additionally, the act of generating solutions appears to be a strong component of this type of learning. Holmes, Day, Park, Bonn, and Roll (2014) also suggested that learning was reinforced when students generated their own solutions, even if they did not immediately put forth the correct answer. Thus, productive failure facilitates encoding and conceptual understanding, illustrating that failure may have positive learning



outcomes. As such, failure has the potential to be a basis for learning as long as one does not give up.

**Perseverance and grit.** Learning requires continuous effort. As defined by Duckworth, Peterson, Matthews, and Kelly (2007), perseverance towards goals and long-term pursuits could be known as “grit”. It was found that grit predicted increased success in goal directed behaviour, where the pursuit of such goals was supported by this conscientious determination. In this way, effort may be understood as the fuel for inquiry – one may have all of the necessary components to get an idea going, but without some form of power or energy source, the material components matter significantly less (Duckworth, Peterson, Matthews, & Kelly, 2007).

According to Koriat, Nussinson, and Ackerman (2014), judgements of learning and study time were associated with investing effort into studying. The contribution and framing of effort required by a topic affected study time. Indeed, complex predictors associated with orientation and judgements of learning facilitate effort and study time. Similarly, understanding that inquiry requires extensive effort at times underscores work ethic as essential for successful inquiry. According to Fox and Grams (2007), high school students prioritized behaviours across three overarching constructs that pertained to work ethic. These constructs were initiative, dependability, and interpersonal skills. In sum, work ethic was important for learning experiences.

In addressing the benefits of effort for developmental outcomes, Gerrard (2014) postulated that education itself is a form of power, development, and is an extension of the self. Inquiry necessitates effort, introducing the concept of work ethic as a predictor for learning engagement. Apart from individual drive and work ethic, moderating factors

of what Gerrard described as a learning ethic included culture and the need for acquiring personal capital. Depending on a larger cultural medium, the drive or learning ethic can be increased or decreased. Indeed, effort is a necessary precursor for personal development in the classroom.

**Appreciating the value of “wicked” problems.** Perseverance is particularly important when you consider that even at the core of education, and in the broader context of life, there are situations that exist where a student will find that no single solution exists. Pacanowsky (1995) suggested that “wicked problems present no known algorithms for solution; simply identifying the problem can turn into a major task” (p. 37). Similarly, Kolko (2012) suggested that wicked problems emerged when there was a conflict of ideas, the relation of one problem to multiple other issues, or complexity due to extenuating circumstances such as the size of the subject population the problem pertains to. Such wicked problems also often grapple with topics of morality. A curious learner may have to deal with questions of this magnitude in their learning pursuits, and as such will be faced with incomplete conclusions.

While wicked problems are not directly a failed attempt at finding an answer, they are issues that typically result in more questions than answers (Kolko, 2012). Furthermore, Pacanowsky (1995) posited that team approaches to wicked problems offer positive outcomes when the approach is mindful of specific factors affecting the problem solving process. As such, team approaches to wicked problems ought to consider spirit of inquiry, priority management, reflection, managing the surround, and shared displays (Pacanowsky, 1995, p. 49). In summary, wicked problems offer growth opportunities for learners as they require dynamic problem solving and often involve teamwork.

The research on these mindsets suggests that being a time consuming, passion-driven, question saturated progression, it is important for the learner to conceptualize curiosity-based learning as a process rather than a discrete performance. Attitudes of a learner contribute to the underlying theme that learning exists across the lifespan, and can predict the successes and detriments of learning outcomes. According to Saeki and Quirk (2015), engagement with learning was more complex than simply being involved. They found that meeting basic physiological needs was important for protecting social and behavioural functioning. Basic physiological needs included perceived autonomy and connectedness in the school environment. In addition to attitudes towards learning, external factors clearly influence personal development and the attainment of education. As such, the following sections will cover the research on the impact of social climate followed by the importance of physical environment in the context of education.

### **Social Climate**

The quality of a social climate mediates learning and engagement. The social climate in which learning takes place is important from the time a child is born. Although people are born with inherited traits and dispositions, attitudes towards curiosity are in part shaped by experiences. Just as the attitudes embedded in education systems can be stifling of questions, other external forces in our social sphere can exhibit power over the attitude towards inquiry.

**Parents.** Berger (2014) suggested that attitudes towards curiosity are modeled and shaped by early life experiences. As such, parents impact their children's attitudes towards curiosity in their responses to their children in early life experiences. When parents are receptive to inquiry, the child learns that this is an acceptable, rewarding way

to have their needs met. In the opposite case, when parents disengage from their children's curiosity or even suppress it, the child learns that curiosity cannot satisfy them (Berger, 2014). Similarly, Saxe and Stollak (1971) posit that maternal responses to novel stimuli act as reinforcement for exploratory behaviour in first grade boys. As such, the reaction and perceived support of the mother elicited social learning in children. The moment we begin expressing our interests to the world, the feedback and support received determined the response. Froiland (2015) posited that parental behaviour contributed to feelings of autonomy and support. These qualities have important implications for later experiences in the school environment. This exchange with the world shapes one's attitude towards inquiry and exploration. As a result, it is notable that attitudes towards curiosity are influenced by the social learning as well as through early life experiences.

Interpersonal relationships that exist as bridges to the education system are important to consider for social climate. According to MacIver, Epstein, Sheldon, and Fonseca (2015), students transitioning into the ninth grade were impacted by the level and quality of interactions between teachers and their families. The successful transition of students into the earlier years of high school acts as a predictive factor for academic success (MacIver, Epstein, Sheldon, and Fonseca, 2015). MacIver, Epstein, Sheldon, and Fonseca found that the relationship between difficulties in transitioning to high school and family involvement in this adjustment was significantly negative, even when poverty levels were controlled for. Similarly, Rovis, Jonkman, and Basic (2016) found that relationships with family members influenced the propensity of adolescents to engage in risky behaviour. As such, negative relations with parents in particular were significantly

associated with engaging in risky behaviours such as drinking, gambling, and antisocial activity.

As a developmental milestone, Harper (2015) recommends that school transitions be supported by parent attitudes and action. According to Harper, parents can become actively involved in supporting their child's transition to a school by becoming familiar with the institutions through attending tours, meetings with teachers, and regularly hosting brief discussions about their child's school experience. By becoming actively involved in the school experience of their children, parents act as support systems that are significant predictors of academic outcomes for learners.

In relation to academic outcomes, research advises that the role of social climate is an important precursor for student engagement and academic performance (Cooper, 2014; Engel, 2011; Lantz, 1965; Willingham, 2009). Indeed, Berg and Aber (2015), found that the perceived social climate in middle and high school classrooms contributed to feelings of security, potential fear, and acted as a moderator on the perception of social relationships. Indeed, in social situations Kashdan and Silvia, (2009) argued that inquiry in education was a corridor to increased feelings of closeness to those we interact with and becomes a means by which both parties gain pleasure from the interaction. These findings illustrate that trait curiosity was a buffer for social interactions where its activation protected the individual from potentially negative experiences from social interaction (Kashdan, 2009).

The contextual framing of social interactions meant that the curious person framed unfamiliar social encounters as an opportunity for growth, rather than as an aversive situation. A caveat is that curiosity most readily creates intimacy in social

engagements when partners are perceived as supportive, warm, engaging, and secure (Kashdan, 2009). In this way, the perceived social climate impacts inquiry behaviours. As such, social climate factors are essential to recognize due to the influences they exert on learning outcomes.

**Teachers.** Emotional climate has the potential to exert influence over the experience of education, and the investigation of emotional classroom culture has thus been of interest for many decades. Early investigation in this field was completed by Lantz (1965), which considered how teachers influence classroom culture in regards to the level of emotional rapport that encapsulated teacher-peer interactions as a function of self-reported measures. Participants were student teachers who completed placements at elementary schools. The self-reports were tested for three dimensions: self-concept, self-other, and self-idea. The self-concept dimension represented the relationship between the student teacher and their classroom, whereas self-other considered a student teacher's own ranking to that which they assign to other teachers. The third, self-ideal, was interested in the dimension of discrepancies pertaining to the teacher themselves.

Results demonstrated that self-other yielded significant results that were hypothesized to demonstrate some element of student teaching feeling able to express themselves and exhibit their uniqueness within the teaching profession (Lantz, 1965). Perhaps a second principal outcome from the research Lantz (1965) was that, "it is an initial attempt to study the possibility of predicting the relationships of self reports to the classroom emotional climate as observed by psychologically oriented observers" which opened an area of research on emotional climates of education (p. 82). It is essential to understand the impact of emotional atmosphere in education.

**The best-fit level of challenge.** An important attribute for the positive experiences of schooling includes a perceived goodness of fit between the student and the social quality of their school. O'Malley, Voight, Renshaw, and Eklund (2015) found that the perceived social climate of a school predicted positive academic outcomes. Furthermore, a positively perceived climate of a school illustrated improvements for students coming from homelessness, single parent, and two parent home lives. These findings also illustrate that positive school climate was most strongly associated with stronger academic outcomes for homeless students. Similarly, Booth and Gerard (2014) found that the individual level of self-esteem and self-efficacy possessed by the student affects the perception of a school's social climate. The compromised perception of a goodness of fit was affected by perceived decrease in the quality of relationships shared with teachers and peers.

Across the longitudinal project, Booth and Gerard considered "associate between children's perceptions of their school environments and their self-appraisals" across classrooms of grade 7 to 10 over four years (2014, p. 739). They found that perceptions of school climate decreased over the school year for both grade 7 and 8 students, but that high school students' perceptions were consistent across the academic year. Self-esteem levels were significantly higher for boys than girls for the sample overall with all levels increasing across the school year for high school students. Findings on self-efficacy demonstrated that boys' scores started higher than girls in the beginning of the school year, but dropped to be lower by the end of the school year. Booth and Gerard suggest that these findings indicate that "7<sup>th</sup> grade students appear to experience a honeymoon effect" in regards to their positive appraisal of school environment (2014, p. 750).

Decreasing quality of relationships between students and their peers and teachers affects students notably as they continue in school, demonstrating that social relationships have important implications for the perceptions of goodness of fit with their school. Additionally, Hopson, Schiller, and Lawson (2014) found that higher grades were associated when the student reported receiving social support and demonstrating prosocial activity in the school environment. Furthermore, their results demonstrate that positive social climate is a protective factor for performance in classrooms. In sum, positively perceived school climate predicted positive outcomes for students.

Another positively perceived social climate quality was the balance of challenges and support for student learning. Kashdan and Yuen (2007) found that perceptions of level of challenge offered at school influenced value judgements. The perceived measures were specifically those pertaining to the academic standards of an institution, where these included the “availability of intellectual challenge and learning opportunities” (Kashdan & Yuen, 2007, p. 260). The participants of the study were high school students in Hong Kong, a country with high academic rigor. The purpose of this study was to assess how curiosity moderates school performance, the role of happiness and self-esteem, perception of school characteristics, and objective measures of academic performance of the institution. The results illustrated that students who possessed high scores on the Curiosity and Exploration Inventory (CEI) had the best academic performance when they perceived the school environment as challenging, where academic performance was measured by graded outcomes (Kashdan & Yeun, 2007). Institutions that were perceived as being highly challenging suited students who rated highly on measures of trait curiosity as they offered more opportunity for development



and content mastery. Alternately, the results showed that outcomes were lowest for students who had lower ratings of trait curiosity occupied less challenging environments. This illustrates how “person-environment mismatches can lead to a quick deterioration in motivation and performance” (p. 267). The level of challenge that a school environment offers is an important indicator of academic performance based on the trait curiosity of the students.

**Individual differences in the classroom.** As highly social beings, relationships with others and interpersonal interactions influence both experience and development. As demonstrated by Zhang et al (2015), relationships are an important factor influencing the quality of belonging that one perceives in the high school environment. It was cited that specific types of relationships, such as same-sex, opposite-sex, and teacher-student relationships, each had important implications for the resulting loneliness that the participants experienced (Zhang et al, 2015). Furthermore, there were unique findings regarding gender that had shown that girls demonstrated significant loneliness associated to same-sex relationships, where boys demonstrated that significant loneliness was associated to all three types of relationships. According to Zhang et al., a significant element of this study pertained to the negative factors associated to subjective feelings of loneliness. Furthermore, loneliness has relationships with negative behaviours and poorer reported mental health, such as lower academic performance, decreased global satisfaction, and poorer adjustment. In terms of the relationship between peer social climate and gender, Carlone, Johnson, and Scott (2015) found that performing gender also influenced classroom engagement between the ages of 9-13. Even early work, such as that by Gold, Brush, and Sprotzer (1980), demonstrated that outcomes for self-

confidence differences due to sex in the classroom demonstrated that females reported significantly lower self confidence levels. As a function of agency, social structures impacted the culture of agency in a science classroom. Indeed, complex social informants contribute to the formation of personal development within a classroom.

Addressing another facet of self-concept development, Wouters, Colpin, Van Damme, De Laet, and Verschueren (2013) found that the academic self-concept formation was associated with comparison amongst peer reference groups. According to their study, classmate and close friendship reference groups were predictors for academic self-concept. Class average had the strongest negative effect on academic self-concept, where comparison with classmates academic performance was the more salient measure for judging one's performance on. In sum, these findings suggest that interpersonal relationships with peers in a school environment may significantly impact classroom perceptions.

**Teaching qualities that shape education experiences.** As mentors and teachers, the transfer of knowledge aims to be supportive. Educators and schools intend to instill ideas pertaining to concepts and processes within their students. As such, schooling provides a skill set to its graduates that are anticipated to be advantageous for future achievement-guided pursuits. As such, conveying these tools to the range of abilities and attitudes within students is one challenge faced by post-modern educators. To address this challenge, Willingham proposed the notion that, “children are more alike than different in terms of how they think and learn” (p. 147, 2009). From research to date in cognitive psychology, the accepted information is that there are cognitive styles or preferences for learning approaches. However, these are have not been demonstrated as

being stable across differing tasks nor are they dichotomous from ability assessments (Willingham, 2009). There has been no demonstration of cognitive style as a stable feature of learning. Willingham suggested that cognitive styles could be varied and that an individual may use more than one, or multiple styles, based on the specific task. Consequently, cognitive styles seem to be fluid rather than crystalized. Even so, a learner exhibits inborn strengths and preferences that have been studied as a intermediaries within the academic environment.

A second cognitive neuropsychology concept deconstructed by Willingham (2009) was the model of teaching through a preferred modality. This common idea recommended that a learner experienced soundest acquisition of information when the lesson was adapted for his/her modality of preference. Widely used terminology refers to modalities as belonging to three categories: audio, visual, or kinaesthetic learners (Willingham, 2009). In addressing this common fallacy, Willingham points out that learning and memory does not depend on the sense that was activated but relies on the meaning of information (2009). Furthermore, examination of cognitive styles had illustrated inconsistent findings and a lack of theory support.

Learning is primarily concerned with adaptation of schemas and previous ideas when new meaning has been discovered. As such, Willingham emphasizes that the learning theory of cognitive styles and modality preference is not support where, “matching the preferred modality of a student doesn’t give that student any edge in learning” (2009, p. 156). There is a lack of support for the benefits of teachers adjusting lesson delivery method for individual differences. A more positive finding, however, emerged from the work by Black and Deci (2000), where teachers demonstrated having

an ability to impact student learning when they supported student autonomy in the learning process. Indeed, it would appear as though tailoring the teaching approach to support student autonomy has a stronger influence over learning outcomes than addressing specific modalities. In sum, the role of best practices in teaching for successful individualization in the social climate does exist within reasonable, empirically supported boundaries.

As an important influence over social climate, teacher motivation is an important predictor of classroom social climate. Generally, teachers and administrators working in the school system enter the profession fuelled by a combination of intrinsic and extrinsic motivational factors (Skaalvik & Skaalvik, 2011). As such, the stifling of questions within learning institutions appears to be a fault of pedagogy and not of personhood. Freire (2005) suggests that it is inflexible pedagogy that extinguishes questioning behaviour, and this can act as a mechanism of inquiry oppression. Freire describes how struggling with power imbalances in the classroom is a function of how education holds a degree of authority, but that empowerment through schooling is an afterthought rather than a primary purpose. In this way, pedagogy holds the ability to create transformations yet it is often a form of classroom oppression. Learning is a powerful form of social change, and best practice techniques are necessary to facilitate this change. For this reason, Freire suggests that best practices in educate ought to place the learner at the centre of the education experience. Until education systems display this, the current model of classroom pedagogy may not be a best practice for developing students as independent learners and thinkers.

Question-asking behaviour shares a relationship with student engagement in learning. As said by Engel (2011), losing ones' curious nature has ramifications for academic disengagement. Engel posits that students' decreased rate of questioning their world of external and internal experiences inhibits a learner from receiving rewards associated to academic exploration. Due to the intrinsic rewards of engaging in exploratory behaviour, the lack of inquiry-based instruction in the modern classroom conflicts with the cognitive developmental needs of students (Engel, 2011). Furthermore, it is argued that question-asking is a natural feature of the developmental process. Moreover, engaging in inquiry exists in a social context, where the perceived acceptance of inquiry moderates the propensity of students to actively engage with the classroom lessons.

As an important setting for influencing the qualities of youth, Engel suggested that the classroom is a learning context that has important implications for engaging learners in question-asking activity. Furthermore, it is important to recognize the classroom as a space that ought to encourage curious question-asking as this provides the opportunity for students to engage in learning. Developmentally, questioning is abundant in the school years and leads to enormous mental stimulation and growth. Unfortunately, this is hardly the case in today's classrooms. Engel and Randall (2009) argued that although inquiry behaviour exists in classrooms today, it is often disrupted or prevented by the need to meet predetermined class outcomes within the strictly standardized learning modules set forth by predetermined learning outcomes. Even when questions do arise in the classroom they are often teacher driven and have a clear-cut answer. Students usually only ask low-level, "how do I do this right" types of questions.

To further complicate the classroom situation, teachers are bound by set curriculum and standardized examination procedures that inhibit organic learning processes that emerge in constructive learning settings. Engel and Randall suggested that the seemingly endless questions from learners can be time consuming and this conflicts with strict lesson plans that educators are required to follow. Furthermore, this is not a direct flaw of the teacher, but rather reflects some deeper problem within the system. According to Black and Deci (2000), factors that control behaviour and remove an internal locus of control are detrimental for autonomy outcomes. Based on the current classroom model, good learning outcomes leave little time for questions (Black & Deci, 2000). As significant factors influencing the social climate, teachers ought to receive recognition for the restrictions that, they too, work with.

In articulating information to students, teachers act as moderators of student engagement. Moreover, “disengagement with school has also long been cited as a critical precursor to the decision to drop out” (Cooper, 2014, p. 363). As such, it is important to recognize how teaching style impacts engagement in classroom activities and learning. Cooper (2014) suggested that three components of teaching related to student engagement were connective instruction, academic rigor, and lively teaching. In these components, connective instruction pertains to relating class material to the experiences of individual students, rigor focuses on academic qualities of instruction that require concentrated efforts, and lively teaching encourages learning by participation. The results of a mixed-methods case study on high school students revealed that teaching practices associated with all three components of teaching significantly correlated with student engagement, and that the most salient method of teaching that promoted student

engagement was connective instruction (Cooper, 2014). Another important finding of this study suggested that predictors for the adopting a successful style of teaching for engagement include both the individual student and the specific class being taught. Learning outcomes ought to be considered in addition to student preferences. Furthermore, these findings conceptualize identity formation is an important developmental task during high school years.

In consideration of this, Cooper acknowledged that identity formation theory has shared similarities with connective teaching. Complementing these findings, Wang (2013) found that adopting a teaching style that emulated coaching facilitated improvements in classroom engagement where students reported benefitting from this style of teaching. Results from focus groups discussed that a balance of traditional teaching and coaching received the most general approval from participants, where students “expected a balance between ‘teaching’ elements and ‘coaching’ elements” (Wang, 2013, p. 42). Overall, teaching for engagement in a high school classroom encompasses multiple factors in selecting an accessible teaching style.

**Engaging in play for learning.** The social nature of a classroom environment supports play based learning, where social interactions offer scaffolding opportunities between the teacher and students. The term play refers to interaction and co-construction of social activity that takes in various forms across the lifespan. Although it is a term that is ambiguous and often difficult to define, Eberle (2014) suggested that play encompasses six distinct elements. These are anticipation, surprise, pleasure, understanding, strength, and poise (Eberle, 2014, p. 221). In consideration of this practices’ fit within a classroom setting, a study by Edwards and Cutter-MacKenzie (2013) demonstrated that play based

learning is cohesive with a classroom environment and is a form of non-traditional learning that successfully scaffolds education outcomes. Play-based learning in this study was used to teach environmental sustainability education through Vygotsky's theory of combinatorial activity. Combinatorial activity occurs when learners combine new sources of information with thoughtful play that involves imagination and social interaction to explore a topic (as cited in Edwards & Cutter-MacKenzie, 2013). As such, play based such as combinatorial activity brings the student directly into the exploration process in understanding new information, as activities invoking active play cannot occur without cooperative effort on behalf of the learner. It is a process of generating educational outcomes that brings together favourable elements of curiosity within the context of active engagement (Edwards & Cutter-MacKenzie, 2013). As such, play based learning can be transformed in this way to meet learning objectives in ways that are enjoyable for the learner.

Although play may not be conceptualized and manifested in the same ways as it evolves throughout time, it does exist in various forms across the lifespan. As such, play based learning has salient benefits for personal growth and stimulation through enjoyable experiences with novel conditions. As described by Edwards and Cutter-MacKenzie (2013), play based learning situates curiosity and engagement within education. The perceived joy experienced by engaging in play has the capacity to fortify learning outcomes in an exploratory model that is cohesive with teaching pedagogy.

Addressing more reasons to incorporate play-based learning into high school education, Fine (2014) argued that academic rigor and student engagement are not mutually separable entities. Developmentally, Fine attributes the developmental position



occupied by older adolescence to be an ideal age range for engaging in playful experimentation that supports learning outcomes as well as student engagement. Fine further contests that neurologically, adolescence find exploratory behaviour exceptionally rewarding and that this quality makes high school students well suited for learning environments that stimulate inquiry and play. Finally, Fine (2014) describes the classroom as a space with the opportunity to combine the inherent developmental capacities of older adolescent learners with academic pursuits that stimulate the acquisition new information through the connection to intellectual risk taking. Indeed, although play has been given a bad reputation in education and society, it is the heart of experimentation and discovery.

The social climate of a school shapes engagement with teachers, peers, and learning processes. As such, the social context of a classroom offers ideal opportunities for play based learning. For the purpose of development, Evans and Boucher (2015) demonstrated how play based learning has strong ties to positive learning outcomes. Through play, curiosity became an initial engagement with joyful exploration early in development. Furthermore, findings by Evans and Boucher established that a crucial reward of play-based learning occurs with the presence of autonomous choice (2015). As such, choice and personal autonomy contribute to amplified motivation for participation. Play encourages deeper engagement in learning when intrinsically motivational autonomy is an outcome for the learner (Evans & Boucher, 2015).

Likewise, Wimpenny and Savin-Baden, (2013) demonstrated that another incentive for engagement is a sense of relation to peers. A sense of confirmation and belonging in social interactions is equally as valuable as the right to autonomous decision

prerogative (Wimpenny & Savin-Baden, 2013). Play continues throughout the lifespan, but is expressed differently as one matures. Van Vleet and Feeney (2015) argued that play behaviour in adulthood has positive implications for personal, relational, and long term outcomes. Central to the idea of play is the notion of learning by engagement, where a participant becomes an active creator in the act of play (Van Vleet & Feeney, 2015).

Collectively, social play offers positive developmental outcomes when it allows the learner make deliberate choices within the group negotiation of play. Moreover, research suggests that play based learning is developmentally beneficial due to its exploratory nature, the promoted a sense of belonging and connection, and the ease of ability for a teacher to incorporate play based practices in classrooms.

### **Physical Environment**

The human mind is stimulated, in part, by a natural curiosity about the world and oneself. If curiosity provokes exploration, the external surroundings that shape one's experiences are important to consider as in some way shaping inquiry and learning activity. For this reason, the physical environment as exerting some influence over processes and experience of learning activity becomes salient to dissect and understand. According to De Giuli, Zecchin, Corain, and Salmaso (2014), students' perceptions of the classroom environment represented subjective preferences that are important to consider for comfort levels. Objective standards combined with subjective preferences ought to be considered simultaneously for determining changes in light, heat, and fresh air. As said by De Giuli, Zecchin, Corain, and Salmaso, "people are the users of buildings and their satisfaction should be preferred to recommended values" (2014, p. 1046). In summary,

the environmental preferences of those who occupy a space should guide the design of physical environments, including the design of classrooms.

In consideration of the educational experience of curiosity, the physical environment specifically within the school setting is meaningful. Willingham (2009) said that learning occurs as a process of exchange between the working memory and long-term memory as influenced by the environment. Moreover, Willingham described the external environment as a form of stimulation, inciting examination by a learner. This interaction of exploration and formation of memory determines learning and is primarily responsible for concepts about experiences. As said by Willingham, inquiry in this way occurs as mental representation of one's world "when you combine information in new ways" (p. 12, 2009).

Acting as this stimulant for thought, the environment and its respective qualities act as moderators of the learning experience. Similarly, Macedo et al. (2015) found that classroom furniture largely did not suit the classroom and its students, and this mismatch of dimensions was slightly associated with increased physical pain and discomfort for learners. Findings of this study report that only a minority of students reported that they were comfortable with classroom furniture and its dimensions, where furniture failed to meet ergonomic needs (Macedo et al., 2015). Thus, students spend many hours at school in a seated position in furniture that does not work well for the majority of students. In summary, the physical environment of the classroom may shape the qualitative experience and outcomes of learning.

**Keeping students moving in the classroom.** The physical environment of the classroom can allow for non-disruptive movement, where students are able to complete

school-related tasks without being excessively restricted from physical activity.

Alternative furniture, such as stability balls, standing desks, and freedom of movement has been cited as supportive for various learning outcomes. As found by Lanningham-Foster et al. (2008), children who were exposed to a classroom environment that was permissive of movement during the school day, including the use of standing desks in the classroom, engaged in increased healthy levels of physical activity. Engaging in this physical activity further targeted childhood ailments associated with a sedentary classroom environment. Furthermore, Fedewa and Erwin (2011) found that replacing conventional classroom chairs with stability balls enhanced concentration and behavioural outcomes for students in the 4<sup>th</sup> and 5<sup>th</sup> grades. Results depicted that students who were diagnosed with attention deficit hyperactivity disorder were observed as having dramatically enhanced outcomes when a stability ball replaced their normal chair.

An important detail of this study pertained to the size of the stability balls used – students were independently fit with a stability ball that was suitable for their size. The need for appropriately sized classroom furniture was further cited as an important feature of classroom design by Wingrat and Exner (2005), where students exhibited increased focus when the size of classroom furniture was appropriate and comfortable. As reported by Benes, Finn, Sullivan, and Yon (2016), teachers perceived physical movement in the classroom positively and were willing to incorporate more active movement into their teaching routines. Indeed, allowing students to engage in low levels of comfortable movement while attempting to concentrate in the classroom appears to allow for better learning outcomes, especially for students who present with concentration deficits.

The physical classroom space can enable or inhibit the potential for activities and movement within the classroom. Within learning activity that involves physical movement, it is important to address if active learning is perceived as beneficial to students. To address this, Lumpkin, Achen, and Dodd (2015) conducted action research to examine how students perceive active learning in the classroom. As a primary method to disseminating knowledge, lecturing is a fundamental way to share class material and remains as one of the main teaching methods in the current education system. Feedback on exploratory writing and lectures punctuated with small group activities was supported with positive feedback from students. Lumpkin, Achen, and Dodd described how “students find participating in active learning activities an invigorating break, interesting, interactive, and enjoyable” (2015, p.129). Additionally, their study found that students reported that instructional strategies complemented appointed learning outcomes for the course work.

This research suggests that there are multiple strategies that can be employed by teachers that will engage students in learning that are perceived as beneficial by learners. Similarly, Cavanagh (2011) found that students who took part in a course that adopted an active learning style valued the opportunity to engage with the course material through small tasks that punctuated the lecture. Students enrolled in a university mathematics course participated in active learning style classes, where decimation of course material was shared between traditional lectures and participation in content-related activities. According to perceptions on the value of active learning, results from a questionnaire concluded that learners valued several aspects of engaging with active learning. Based

on these studies, learners perceive active learning as a benefit to their education experience.

**Planning classroom architecture.** Classroom architecture has been studied for its impact on learning for many years. According to Van Wagenberg, Krasner, and Krasner (1981), in addition to teaching responsibilities teachers also occupy the role of, “classroom ecologist” and “environmental designer” (p. 350). In this study, the organization of learning resources and supplies were to be supported by a classroom designed by third grade students (Van Wagenberg, Krasner, & Krasner, 1981). This group of students participated in architecture workshops and sessions of students designing a classroom. This group of students were contrasted to untrained third grade students in a competition to design a classroom. There was an emphasis on positive feedback to students regarding their classroom designs. The results demonstrated concern for purposeful space usage, attention on the outdoors complemented by large windows, and the organization of the schoolroom into reduced subsections with student-assisted instruction of small peer groups.

Beyond the study results, it was demonstrated that students are explicitly aware of physical environments that moderate delivery of practical and theoretical knowledge. Returning to the concept of embodied learning as cited by Kontra, Goldin-Meadow, and Beilock (2012), the physical environment and architecture of a classroom also have the ability to allow for or restrict embodied learning. As argued by Kontra, Goldin-Meadow, and Beilock (2012), the classroom with the space and design to allow students to engage in active, kinaesthetic interaction in the learning process supported stronger education outcomes.

Indeed, Chao, Huang, Fang, and Chen (2013), found that students who were exposed to embodied teaching methods which included elements of play versus passive convey of information significantly outperformed their peers upon the examination of memory recall. Additionally, Allen and Barber (2015) demonstrated that when students were presented with opportunities to play in the classroom that inappropriate activity, such as disruptive behaviour, was significantly decreased. As such, it has been well documented in research publications that embodied learning has many benefits for classroom education.

Another important aspect of introducing new approaches to teaching is the practicality for implementation. The ideal classroom would maintain a space that would physically facilitate practical teaching activities. To address active participation activities as a learning approach, McMullen, Kulinna, and Cothran (2014) considered teachers' perspectives on including short breaks from predetermined learning plans. Participants in the study were teachers in a high school with a student population of 95% enrolled students identifying as indigenous (McMullen, Kulinna, & Cothran, 2014). The teachers participated in ten professional development programs across the school year and were instructed to incorporate a minimum of one physical activity break per week, but were able to introduce any additional breaks with their discretion.

Emerging from interviews of the teachers were the benefits and downfalls of introducing activity breaks, which included student misbehaviour during breaks, physical constraints imposed by the classroom, and the ease and enjoyment of introducing short breaks from classes. Teachers were less likely to introduce breaks if they found they could not re-establish control of the class, but also discussed that activity breaks could

promote learning material and were easy to use when they were limited to a short period of time. McMullen, Kulinna, and Cothran recommended that improved professional development would support teachers in increasing their comfort in using activity breaks. In summary, the results pointed out that teachers were open to inclusion of activity breaks but would have increased confidence if they were offered more support and management training.

**Exposure to Distractions in the Classroom.** The physical environment design and quality has significant implications for learning outcomes. Marchand, Nardi, Reynolds, and Pamoukov (2014) examined how students who were exposed to noise, light, and temperature levels outside of the comfort zone would perform on tests. The findings demonstrated that students performed more poorly on comprehension tests than their peers in a control group when noise levels were outside of the comfort zone, particularly when being taught by the oral dissemination of information. Unfortunately, Marchand, Nardi, Reynolds, and Pamoukov suggested that many students are exposed to learning environments with sensory information outside of this comfort zone, and argued that “failure to maintain adequate facilities may leave students vulnerable to academic underperformance” (2014, p. 195). As such, noise levels and other environmental factors outside of the comfort zone have the potential to detrimentally affect learning outcomes.

Similarly, Winterbottom and Wilkins (2008) reported that lighting conditions in classrooms were frequently beyond comfortable ranges of illumination and glare levels. Classroom environments contained light discrepancies, light flickering, issues with projector light levels, and glare from windows that lacked sufficient coverings. Furthermore, Winterbottom and Wilkins suggested that many of these lightening



problems in the classroom were unnecessary, and possibly a selection oversight, and “action to correct these problems would be simple, and any costs would be offset in the medium term” (2008, p. 74). Clearly, meeting standards as well as comfort levels of students for classroom activities are salient for an ideal school environment.

Both teachers and students have reported recognizing frustrations in the classroom environment. According to Zannin and Marcon (2007), a study in Brazil showed that classrooms that were built in congruence with noise standards limits experienced disruptions from interruptive sound levels. The noises disturbing the classroom were reported as coming from sources such as the classroom itself, surrounding classrooms, teachers in other classrooms, and noise levels from the streets outside (Zannin & Marcon, 2007). Furthermore, the undertakings in the classroom described as being most intensely disrupted by this noise included reading time, test taking concentration, and teacher lectures. Indeed, acoustic qualities of classrooms have important implications for classroom outcomes.

It becomes clear that the current standard limits may not be suitable for practically acceptable schoolroom noise levels. In terms of students recognizing these impracticalities, Bernardi and Kowaltowski (2006) found that students were environmentally aware of conditions in their classroom that needed improvement. Observational data observed that students frequently shifted and moved in chairs throughout the day, suggesting that comfort levels in the classroom were low. Furthermore, students reported an interest in better ventilation systems and larger windows, as these pertained to issues of air quality and thermal conditions (Bernardi & Kowaltowski, 2006). Additionally, rearranging the classroom was difficult due to “lack

of space and excessive noise when moving chairs and tables on hard floors” (2006, p. 169). These results show that students are aware of their physical environment in a school and that physical discomfort inhibits concentration and learning performance.

As a place where students spend the majority of their time in education systems, physical classrooms and schools are important predictors of activities and learning. Characteristics of these spaces either impose limitations or offer advantages to teaching methods and learning activity. The successes and failures of classroom design have consequences for education. Furthermore, the people that occupy these spaces have additional influence over the experience of education. Turning a physical space into a place of exploration and inquiry, it is the people who inhabit these rooms that influence learning and developmental outcomes in education.

### **Literature Review Conclusion and Need for this Study**

The review of published literature on various features of education considered curiosity as a developmental primer, attitudes for learning, social climate, and the physical environment. Across each of these groupings, research publications illustrated how an array of factors potentially acted upon learning experiences and outcomes. Furthermore, these concepts were reflected upon for their respective roles in classroom and school design. Thus, these factors will now be used to assess the extent to which parents associated with Immanuel Christian School perceive each of these research concepts as a priority in designing a future high school proposal.

## **Materials, Measures & Procedures**

### **Rationale for Q-methodology**

The research question, “how do parents, as primary investors in Immanuel Christian School, conceptualize priorities for designing a high school program?” was approached by means of a Q-methodology sorting task. According to Valenta and Wigger (1997), a Q-methodology consists of “a unique combination of qualitative and quantitative research techniques that permits the systematic study of subjectivity” (p.501). A Q-methodology offered advantages that other methods, such as surveys, do not. For example, in assessing subjective value assignments a Q-methodology allows participants to compare statements to one another, rather than rating each statement in isolation, as a survey would do. A Q-methodology further avoids participants ranking all things as important, and also suits smaller samples because the unit of measure is the individual and not the Q-statement. A Q-methodology task presents an array of statements pertaining to a research question accompanied by a selection of descriptive categories. The Q-methodology instructs the participants to sort the Q-statements into these categories based on the relative perceived priority of each statement.

### **Generation of the Q-statements**

The first step in designing the Q-methodology procedure was generating the statements to be sorted in the online sorting task. Q-statements were a compilation of concepts from our detailed literature review, highlights from previous parent and student focus groups held by the school, and ideas from the evolving high school vision being debated by the planning committee. The documentation outlining the high school vision was provided to the researchers by Immanuel Christian School, which briefly

summarized a working model for the potential program. This included an introduction to the vision statement, philosophy, curriculum, physical space, teaching style, school day, and scheduling. To better understand parental interests in the future high school program, the researchers attended two focus groups held by Immanuel Christian School where observations of parent questions and general conversation at large were recorded and included in the generation of Q-statements. In addition, findings from research publications in the literature review on curiosity as a developmental primer, attitudes towards learning, social climate, and physical environment were also informative for the development of the Q-statements.

In total, 22 statements were created to represent potential concepts that a future high school program at Immanuel Christian School might consider. These statements were written in a uni-directional style, and were framed positively and this was done to ensure that statements shared a similar, uniform style for the online sorting task.

### **Q-statements included in the Sorting Task**

1. The high school program should focus on mastery learning where students can learn at their own pace and move ahead only when they have mastered a concept rather than moving ahead before they are ready or having to wait for the rest of the class.
2. Mentoring relationships between senior and junior students, teachers and students, and with community members should be an important part of this high school program.
3. This high school program should prepare students for college, university or technical programs including grades and opportunities for scholarships.
4. This high school should teach students how to respond to both success and failure as opportunities for continued learning about both the topic and themselves as people.
5. At this high school, learning should be structured around themes and topics that combine subjects, as opposed to teaching subjects separately.
6. Within this high school, students should have the ability to move around during the day to encourage learning rather than be restricted to a desk.
7. This high school should be clear on its goals and intentions for student learning but flexible in how those are achieved.

8. Students at this high school should be able to explore specialized interests (e.g. fine arts, computer programming) in addition to core subjects.
9. At this high school, resilience should be taught and practiced as a tool for learning and life in general.
10. At this high school, learning should occur through both individual and group projects that accompany book learning whenever possible.
11. Students at this high school should be allowed to focus their studies into certain streams or concentrations in senior years (eg. Arts & Social Sciences, Physical Sciences, Trades).
12. This high school should use a grading system for graduation that closely resembles others in PEI for the purposes of post secondary education.
13. This high school should inspire enthusiastic learners who demonstrate focus and strive for personal excellence rather than simply putting in the time to get their diploma and being bored.
14. This high school should offer a flexible learning environment, furnished with round tables, benches, couches, stand-up desks, and a counter with stools to encourage learning and engagement, both individually and in small groups.
15. Students at this high school should be able to increase their knowledge by specializing in a topic of interest to them rather than be limited to predetermined courses.
16. This high school should be a safe place for students to ask tough questions about personal identity development.
17. At this high school, teachers should be able to divide the amount of time they spend on core subjects based on each student's need rather than expecting every activity to fit in a proscribed time slot.
18. Direct teaching at this high school should involve the teacher sitting down with groups of students in the moment whenever possible rather than having the teacher primarily lecturing in front of a passive class.
19. Students should be encouraged to work collaboratively in groups with teachers monitoring progress and checking in on the various groups.
20. At this high school, learning should focus on making connections between the subject material and the world around us.
21. We should draw on expertise in our school community to mentor any skills not taught by faculty when our students are interested in a subject.
22. This high school should encourage a combination of students learning about things they are passionate about and things that they find challenging.

### **QSoftware Software**

To design the sorting task, the researchers selected an online Q-methodology software called QSoftware as the instrument for data collection. This software was designed by Pruneddu, at the University of New York (2013). QSoftware allowed for

the creation of a fully online interactive Q-methodology sorting task that recorded and privately saved data responses to a secure, password protected account. The software allowed for the inclusion of the Consent Letter (see Appendix F), instructions for the participants, and the supplementary demographic questions to accompany the primary and secondary Q-methodology sorting tasks.

### **Procedure**

Before conducting this study, approval was granted by the UPEI Research Ethics Board (see Appendix D). An invitation to take part in the study was extended to potential participants via The Beacon, the online school newsletter for Immanuel. The electronic invitation circulated to parents of children enrolled at Immanuel included a brief explanation of the study, a linked letter to participate in the study, and an online link to the live Q-methodology task (see Appendix E). The study would remain live and open for submissions for a period of five days and invitees were advised in advance of this timeline via email communication by the school principal.

In the initial sort, participants were asked to sort each of the 22 Q-statements into one of two categories labelled “I understand this clearly” or “I need more information to understand this clearly”. The purpose of this initial sort was to allow participants to read each Q-statement, reflect on it, and practice using the software before completing the secondary sorting task. The submitted responses to this primary sorting task were not recorded. The secondary sorting task then asked the participants to sort all 22 Q-statements into four separate ranked categories. Each of these four categories was allocated a specific numerical identity. At the end of the task when the Q-methodology was complete and the responses were submitted, the Q-statements within each category

were given the number value associated with the category they were allocated to. For example, all statements sorted into the first category would receive the corresponding value of 1 in the response report. The four categories, in ascending numerical order were as follows, being “without this, my child would not be attending”, “without this I’d reconsider whether my child would attend”, “this would be great to have but is not necessary for my decision”, and “this wouldn’t impact my decision whether to have my child attend”.

Each of the four categories was restricted for a specific number of Q-statements that each could contain (see Table 1). The first category allowed space for 3 Q-statements. The second and third categories allowed 8 Q-statements to be sorted into each category. Finally, the fourth category was allowed to contain 3 Q-statements. According to Valenta and Wigger (1997), forcing a quasi-normal distribution of this nature facilitates quantitative factor analysis as well as illustrating priorities of the participants. The instructions provided to the participants for completing the online sorting task asked them to read and evaluate each statement they were given before assigning it to a category that best described their subjective value judgement of the statement as a priority for the future high school program at Immanuel. These instructions were the same for both the initial sort and the secondary sort. Each category represents the degree to which each statement is conceptualized as relative priority to other statements. If any statements were missing for a category, or if a category contained too many, the software alerted the participant. Once each category contained the prerequisite number of responses, the participant could relocate statements until they were satisfied with the prioritization task. After this was completed, they could submit

their responses at their leisure. Additionally, there was no time restriction to complete the task.

Table 1:  
*Categories and their values in the Q-methodology*

Numerical Category Representation	Category Title	Required Number of Responses
1	Without this, my child would not be attending.	3
2	Without this I'd reconsider whether my child would attend.	8
3	This would be great to have but is not necessary for my decision.	8
4	This wouldn't impact my decision whether to have my child attend.	3

### **Data Analysis Strategy**

Both Valenta and Wigger (1997) and McKeown and Thomas (1988) suggested that quantitative factor analysis of Q-methodology data allows for discrimination of patterns in the data that otherwise would not be apparent. Furthermore, this allows for this analysis to uncover preference-based profiles for factors that are based upon participants' similarities, thus illustrating clusters of likeness. This would later allow the researchers to conduct factor analysis considering the participants' values to one another, rather than comparing the statements. As such, factor analysis could illustrate how each Q-statement as a variable loaded onto the factors that would represent common variance amongst parental priorities.

The purpose of quantitative data analysis was to access how the prioritization of Q-statements sorted participants into factors in order to make sense of parents' priorities



for a high school program at Immanuel Christian School. To complete the data analysis, the file containing Q-methodology submissions by each participant was downloaded from the QSoftware account and inserted into a Microsoft Excel document. The initial data matrix in Excel ordered participants as rows and their respective statement values as columns in the table. The data matrix was transposed, which changed the orientation of the table to columns representing each participant's responses rather than rows. This transposed data matrix, also known as an R-matrix, was imported into SPSS for data analysis. Using SPSS, factor analysis was completed. Factor analysis allowed the researchers to conceptualize how participants exhibited shared commonalities with one another and how their responses to assigning values to Q-statements illustrated groups of common prioritization schemes. As such, conducting factor analysis allowed the researchers to understand common variance by a minimum number of exploratory constructs, called factors. According to Field (2013), factor analysis represents these exploratory constructs as "clustered variables that correlate highly with each other" (p. 667) or in this case, clusters of parents sharing common priorities.

For this analysis, the initial extraction of factors included any eigenvalues greater than 1. This meant that the criteria for the number of factors extracted from the data would be included so long as they explained a minimum computed amount of common variance.

Although this factor loading explained common variance, further clarification of the factors was accomplished factor rotation. According to Field (2013), factor rotation increases the interpretability of factors due to an increased discrimination between them. Furthermore, factor rotation rotates axes upon which responses fall. This action allows

each response to load maximally on to its specific factor, acting as a clarifying agent for interpretation of data analysis. The style of factor rotation selected was orthogonal. This style of factor rotation assumes that factors are unrelated. As such, orthogonal rotation manipulated factors in a way that maintained independence.

Once the factor analysis was complete, the R-matrix was transposed in Excel back to its original, participant focused orientation. Participants were rearranged into the four factors they loaded most heavily on to. To represent the response values more visibly, the values assigned to statements were reversed (R) to more accurately represent the associated interest in priority. As such, S-values were converted to R-values, where a score of 1 became a 4, 4 became a 1, 2 became a 3, and 3 became a 2. This allowed the numerical value assignments associated with a Q-statement to conceptually represent priority, where the lowest priority was a 1 and highest a 4.

Each Q-statement value was then given a weighted average, where the value assigned to the Q-statement was multiplied by its factor loading given by the SPSS data analysis output. The weighted average for each Q-statement was further averaged between all participants across each factor statement. This process of reversing values and calculating weighted averages was repeated for each Q-statement per participant across all factors. The completed data table, including original value, reversed value, weighted value, and weighted averages for each Q-statement across all factors was further analysed for interpretation of meaning.

To interpret the shared priorities of each factor, the weighted scores for each Q-statement were compared. The highest and lowest scores were noted within each factor,

as well as the relative weights between factors. Statements at the extreme ends of the average weighting for each factor were then highlighted and interpreted.

### **Results**

Analysis of the data was completed through SPSS factor analysis. The results demonstrated that several key factors explained common variance by Q-statement loadings (see Appendix B). In analysis of the Q-methodology task, by-person factor analysis was conducted in SPSS. Taking an orthogonal varimax rotation increased the number of factors from 2 to 7. In forcing loading on to 4 factors, factors containing one participant were amalgamated into groupings of participants. The four factor prioritization factor types that emerged were (1) preparation for future, (2) interest-based, flexible learning, (3) balanced learning, and (4) collaboration for success (see Appendix C). According to the factor analysis, 63.48% of the variability in participants' perspectives was accounted for by these four factor prioritization styles.

#### **Factor 1: Preparation for the Future**

This factor accounted for 33.26% of the variance ( $\lambda = 7.32$ ) and represented views endorsed by nine participants (41%). This factor captured several issues pertaining to the goals of a high school in terms of preparing their child for post-secondary studies. Participants positively endorsed the importance of preparing students effectively for postsecondary education including grades and opportunities for scholarships (2.43). To accomplish this, they cited a need for a grading system that closely resembles others in PEI (2.12) and opportunities for students to explore specialized interests in addition to core subjects (1.85). Looking beyond the post-secondary issue, these parents also endorsed an attitude of life-long and life-wide learning as exemplified by their emphasis

on students being encouraged to make connections between academia and the “real world” (1.98) and a desire for their child’s education to be both passion-evoking and challenging (1.82). These parents were least concerned with the pedagogical approaches used to attain these goals, citing least concern with the high school involving themes rather than subjects (.92) and collaborative student-based approaches to learning (1.19). They were also relatively unconcerned with the physical environment in which learning occurred, rating as relative non-issues the idea that students be allowed to move around during the day (.92) and having a physically flexible learning environment (.91)

### **Factor 2: Interest Based, Flexible Learning**

This factor accounted for 12.32% of the variance (eigen = 2.71) and represented views endorsed by six participants (27%). This factor captured several issues pertaining to the approach to high school education, particularly in terms of offering a flexible learning environment. The strongest interest exhibited by these participants pertained to a high school program design that is clear on its goals and intentions but is flexible in the ways they are achieved (2.53). Additionally, these participants were also highly invested in the importance of preparing students effectively for postsecondary education including grades and opportunities for scholarships (2.45). To accomplish this, they desired a high school that ought to inspire enthusiastic learners who aspire for excellence rather than simply putting in the time to get their diploma (2.30), where students have the opportunity to explore specialized interests in addition to core subjects (2.22) and values mastery learning where students can learn at their own pace and move ahead only when they are ready, regardless of the pace of the rest of their classmates (2.20). To support this flexibility, participants supported the concept of learning that is structured around

themes and overarching topics, rather than restricting instruction to isolated subjects (2.11). Beyond the idea of the flexible learning approach issues, these parents also endorsed an attitude of life-long and life-wide learning as exemplified by their emphasis on students being encouraged to make connections between academia and the “real world” (2.09). Finally, these participants valued a flexible system for the purpose of its ability to enable its graduates to go on to postsecondary education, just as students from other PEI schools would be able to (2.08). These parents were least concerned with the pedagogical approaches used to attain these goals, citing low levels of concern with the division of time on core subjects based on need rather than proscribed time slots (1.15). Furthermore, group based work was cited as lower priority, where there was less interest in students working collaboratively in groups with the teaching checking in periodically (1.03) and learning occurring in individual and group projects that accompany book learning (1.06). They were also relatively unconcerned with the physical environment in which learning occurred, rating as relative non-issues the idea that students be allowed to move around during the day (1.17).

### **Factor 3: Balanced Learning**

This factor accounted for 9.46% of the variance ( $eigen = 2.71$ ) and represented views endorsed by five participants (23%). This factor captured several issues pertaining to the goals of a high school in terms of preparing their child for post-secondary studies. Participants positively endorsed the importance of preparing students effectively for postsecondary education including grades and opportunities for scholarships (2.30). To accomplish this, they cited a need for a high school program that supports collaborative learning between students with a teacher monitors and checks in on progress (1.99). To

accomplish these goals, participants desire this high school program that allows students to explore specialized interests in addition to core subjects (1.97). To encompass all of these issues, the participants cited that a high school program for Immanuel ought to be clear on its goals and intentions but flexible in how they achieve them (1.85). These parents were least concerned with the pedagogical approaches used to attain these goals, citing least concern with the division of time on core subjects based on need rather than proscribed time slots (1.01) and also rated the concept of learning that is structured around themes and overarching topics, rather than restricting instruction to isolated subjects as a non-issue (0.92). They were also relatively unconcerned with the physical environment in which learning occurred, rating as a relative non-issue the idea that students would be allowed to move around during the day (1.23).

#### **Factor 4: Collaboration for Success**

This factor accounted for 8.41% of the variance ( $\text{eigen} = 1.85$ ) and represented views endorsed by four participants (18%). This factor captured several issues pertaining to the goals of a high school in terms of preparing their child for post-secondary studies. Participants positively endorsed the importance of preparing students effectively for postsecondary education including grades and opportunities for scholarships (1.96). To accomplish this, they cited a need for a high school program where there would be opportunities for students to explore specialized interests in addition to core subjects (1.79). As a pedagogical approach, participants also demonstrated an interest in collaborative learning with the teacher checking in on student progress (1.87). These parents were least concerned with the pedagogical approaches used to attain these goals, citing least concern with the high school involving themes rather than subjects (1.09) and

the division of time on core subjects based on need rather than proscribed time slots (1.21). For these participants, teaching resilience as a tool for learning and life in general was relatively not demonstrated as a concern (1.13). They were also relatively unconcerned with the physical environment in which learning occurred, rating as relative non-issues the idea that students be allowed to move around during the day (1.15).

### **Discussion**

*“Questions are places in your mind where answers fit. If you haven’t asked a question, the answer has nowhere to go.” – Clay Christensen*

This study was designed to address the question, “what are the priorities of parents in designing a high school program at Immanuel Christian School”. As primary investors in the future of the program, and as an institution that intensely values community, understanding the priorities of parents was an organic research interest. As such, the opportunity to work with Immanuel was a good fit for both the planning committees’ interests and this honours thesis on an empirically supported high school design. These results illustrated both convergent and divergent interests, as well as some idiosyncratic findings that might offer some insight in designing a high school program for Immanuel.

### **Convergent Priorities Of Parent Groups**

The results of this study illustrated several key convergent interests that were agreed upon by all of the participants. First, all four groupings of parents (factors) endorsed the idea of preparation for postsecondary and accompanying opportunities for scholarships as being significant for the prospective high school program. Furthermore, this was the highest endorsed priority by the groups, “preparation for the future”, “balanced learning”, and “collaboration for success”. Even the, “interest-based, flexible

learning” subscribing parents rated it as the second highest endorsed priority. As a universal interest across all four participant groupings, all parents who participated in this study strongly highlighted the need for a high school program which will enable its future graduates to succeed in the studies that they pursue after graduation.

This interest by parents in the successful transition to future schooling was further supported by the literature review. The benefits of parents as supporting student transitions to new school experiences were supported by MacIver, Epstein, Sheldon, and Fonseca (2015), where they suggested that parents who were involved with their students were supportive of a successful transition. Indeed, parental support for the transition to the future learning endeavours of Immanuel’s high school graduates offers great hope based on the unanimous interests demonstrated by these results. Based on this interest, it seems likely that parents hope to see support for future studies by this high school program that will complement the general familial encouragement for learning.

A second highlighted priority for this high school program was an interest in a grading system that closely resembled that of other PEI high schools for the purpose of postsecondary education pursuits. Once more, it was demonstrated that collectively, this statement was deemed a priority by “preparation for the future”, “interest-based, flexible learning”, and “balanced learning”. As a subject of significance, this suggested that many of the participating parents desired that their graduates would be afforded equivalent opportunities to their public school peers after graduating from this high school.

According to Simmons and Ren (2009), this sense of achievement orientation has the ability to colour the perception of learning and outcomes. The threatening side of this



priority might suggest that the outcome of the high school program is the yardstick by which it could hypothetically be judged. As such, this shared interest in a recognizable grading system might insinuate that an outcome orientation had a strong influence over prioritization for some factors. For this reason, it is noteworthy to scrutinize the importance of appearance, where according to this statement there is a notion that the grading system ought to appear the same as others in the province but may contain a unique approach to achieving this outcome. As a unique high school program, Immanuel might have to deal with challenges associated with appearing dissimilar from other school institutions, even when these differences are positive distinctions. As such, recognizing the differences in appearance that make a true difference for student outcomes ought to be given some consideration when making design choices. Even so, this convergence of priority offers optimism where parents profoundly agreed that graduates should be offered sound opportunities for postsecondary advancement.

In contrast to these common high priorities unanimously valued by the four parental grouping, there were several priorities that were unanimously rated with less interest across the four factors. Generally, several of the low rated concepts were associated with some pedagogical approaches in the classroom as well as the details of the physical environment. There was very little urgency across the four parent groupings advocating for the importance of the physical classroom environment.

One explanation for this lack of prioritization might be the saturation of problematic learning environments that dominates present day schools. As found by Marchand, Nardi, Reynolds, and Pamoukov (2014), there are many disruptions and sources of discomfort in the classroom, but it has become commonplace for these

qualities to exist in the classroom. As such, this inherently problematic for classroom comfort and design might have been less conceptually as a priority by all of the groups as it might be considered a minor, status quo expectation for the learning environment. Conversely, the parents might be satisfied with the current Immanuel model, where the classroom environment is already highly satisfactory and therefore the participants saw no immediate priority necessary to change it. It is important to understand that if certain pedagogical and environmental needs are already being satisfied by what Immanuel has provided so far in the elementary and junior high school that participants may not see these qualities as pertinent to address in the high school program. In sum, the lowest convergent priorities across all groupings of parents primarily appealed to specific, detail saturated design ideas.

Overall, parents agreed that several key education factors ought to take precedent for Immanuel's future high school. Based on these converging prioritizations across a majority of the parents who participated in this study, this meeting of interests tells us that parents investing in Immanuel's future high school are very attentive and desire a high level of involvement with their school. As noted by Harper (2015), these types of parents who maintain an active relationship with their schools act to strengthen student outcomes in education pursuits. As such, the learning community investing in Immanuel boasts a unique and strong parent network that maintains a delightful interest in seeing this institution flourish.

### **Divergent Priorities Of Parent Groups**

In addition to the shared priorities, the separate groupings of parents also illustrated some divergent prioritization of factors. For example, the grouping titled

“preparation for the future” had the greatest amount of participants associated with it and it became immediately apparent that the emphasis by these parents was placed upon post-graduation planning and long-term success. Moreover, this group of parents was predominantly devoted to the idea of a best-prepared graduate who, upon completion of this new high school program, would enter the next phase of his/her life equipped with the strong potential candidacy for postsecondary pursuits. “Preparation for the future” almost exclusively captured the prioritization of statements that captured a strong orientation towards goal-directed achievement. Connecting this priority to published literature, Kover and Worrell (2010) said that this sort of instrumental approach can motivate higher performance in school. Following this idea, Froiland and Worrell (2016) also found that learning fuelled by learning or mastery goals could contribute to an increased interest in achievement. With this in mind, achievement and end-goal orientations offer benefits to student outcomes due to their motivational qualities.

Other clearly demonstrated interests that parents subscribing to the “preparation for the future” group had shown included further goal-oriented outcomes. Parents in this grouping hope that the outcomes for Immanuel’s high school graduate that will resemble other graduates in Prince Edward Island to an extent. Although parents promoting this interest are connected to Immanuel, a private institution with a unique approach to student centred learning, parents in this grouping still established the importance of long term outcomes for future graduates to appear very similar to those who attended other PEI high schools.

Furthermore, one more underlying theme for this grouping was the notion that students exhibiting excellence in this program would be essential. Interestingly,

accompanying the goal orientation for Immanuel's future high school program is the aspiration for a elevated level of performance by its students. Reflecting on this concept in the literature, Zourbanos, Papaioannou, Argyopoulou, and Hatzigeorgiadis (2014) found that mastery and positive outcomes were influenced by self-talk, suggesting that Immanuel's high school program might want to consider personal development within the context of the high school design. Viewing distinction and students who excel as a priority for the future high school program, parents who subscribed to the "preparation for the future" grouping prioritized a goal orientation that was also saturated with student excellence.

Divergent prioritization continued in the second grouping of parents, which was given the title "interest-based, flexible learning". Firstly, this parent grouping contained the greatest total number of highly prioritized Q-statements, which suggested that these participants felt strongly about a number of factors pertaining to education. Although these parents continue maintained good outcomes for graduates as a priority, it was the path to attaining this outcome was most strongly emphasized. As such, these parents appreciated an approach oriented design rather than valuing a goal orientation. For these parents, the value of a future high school program emerges if the methods used by the program are worthy.

Connecting the importance of an approach orientation in research literature, Cooper (2014) found that teaching methods that stimulated active engagement within the classroom were particularly important for student engagement. Additionally, Cooper mentioned that decreased student engagement was associated with poor outcomes such as drop out. Freire (2005) likewise posited that flexible pedagogy is an important precursor

for question-asking activity in the classroom. As such, many studies suggest that approach orientations, such as teaching methods adopted in the classroom, are important predictors for learning success.

In addition to teaching methods as a stated interest for the “interest-based, flexible learning” parental subscribers, these participants illustrated attention towards students who would eagerly demonstrate personal excellence, adhere to mastery learning, and explore their own interests in addition to studying core courses. Parents prioritized student learning as somewhat self-determining in nature, where the learners in this high school program ought to be able to authentically explore different ideas while in school. Reflecting on how research supports this concept, Froiland, Mayor, and Herlevi (2015) posited that intrinsic motivation and curiosity in learning was associated with high achievement outcomes. Moreover, the unique approach style adopted by a learner underscored their interest in achievement. Froiland and Worrell (2016) also found that intrinsic motivation for academic achievement supported learning outcomes. As said by Froiland and Worrell, “students who have learning goals or mastery goals are much more likely to enjoy learning than those who are focused primarily on avoiding failure or getting good grades” (2016, p. 322). Indeed, active engagement with learning might be enhanced by intrinsic motivation. As illustrated by these results, the group “interest-based, flexible learning” diverged from the others in that it was predominantly invested in seeing enthusiastic, engaged students who they believed should demonstrate mastery learning and flexibility in order to accomplish the goals of education at Immanuel’s future high school.

The remaining two groups, which were respectively titled “balanced learning” and “collaboration for success” illustrated convergence in that each prioritized a few key concepts for Immanuel’s future high school program. Where “balanced learning” parents prioritized a similar grading system appearance to others in PEI, “collaboration for success” subscribers conceptualized collaborative learning as a priority. These two groupings shared several of their priorities where both illustrated an interest in students who would be able to explore their own interest in addition to core courses at Immanuel’s high school program. Considering this concept in research publications, Leslie (2014) described the human interest in learning and inquiry as acting to fill a knowledge gap, where curiosity enables a learner to fill in a void in information. Furthermore, Fry and Villagomez (2012) found that students who explored their learning processes qualitatively reported feeling that inquiry pursuits supported how they engaged with material and learning. Although the groupings “balanced learning” and “collaboration for success” did not illustrate unique divergence relative to the aforementioned parental groupings, their respective priorities for the student experience at Immanuel’s future high school program demonstrated that parents perceive high school students as being deserving of important passion-driven and self directed learning activities.

### **Idiosyncrasies in Findings**

Although results demonstrated four distinctive parental groupings, there was a data anomaly that impacted these results and participant subscription to the prioritization styles. In this study, there was one participant who shared very similar views with “preparation for the future”, “balanced learning”, and “collaboration for success”. It seemed as though this individual possessed priorities that were similar to multiple parent

grouping styles. Due to these parallel priorities, this participant's views were accounted for by all three of the different groupings. As an idiosyncratic finding, this participant was the only individual to load on to more than one factor. This merging of prioritization types illustrated that although each of the groups had unique qualities, that it was also possible that a parent could have their primary interests split between several of them. This finding suggests that relative prioritization ultimately occurs across a continuum, where it is possible to maintain a nearly equal subscription to several of the parent groupings simultaneously.

### **Dual Orientations**

Although parent prioritization was well contained within four distinct groupings of opinions, there were two strong ideations underlying the interests of these participants. These underlying ideas were two exclusive design focuses, which were accounted for either a goal orientation or an approach orientation. The former refers to the idea that Immanuel's future high school ought to conceptualize future postsecondary education as the focal interest for enrolled students. This goal orientation emphasizes a design model where the end goals of this future high school program were conceptualized as the program designs' focal point. As such, this underlying goal orientation takes a long-term perspective in making program design decisions. Alternatively, the latter underlying approach orientation inclination placed an emphasis on the day-to-day experiences of the students at Immanuel's future high school. Those parents who supported an underlying approach orientation felt as though methods and approaches for Immanuel's high school education ought to be at the centre of program design. This orientation maintained an interest in the student experience and approach to education at Immanuel's high school,

rather than solely its outcomes. This focus adopted a design model where more methods of the high school program ought to be the focal point in its design.

It is important to mention that neither orientation devalues the other, but that they are complementary interests which both offer benefits for students. Additionally, while both goal orientation and approach orientation offer unique advantages for a high school program design, a combination of the two would result in a truly successful approach to education design.

### **Prioritization as Representing Relative Interest**

As demonstrated by the results, it was noteworthy that the prioritization of factors pertaining to designing a future high school program for Immanuel offered insight into the interests of parents as primary investors. In comparison with the literature on student learning, there are various factors that support good learning outcomes both within and outside of the classroom. To understand this study's contribution in a larger context, it is important to conceptualize how the scale of the Q-methodology represented parental interests in a unique manner. The range of categories accompanying the Q-methodology sorting task described varying degrees of relative interest. According to the categories of prioritization of the Q-methodology, the four sorting categories ranged from very important to neutral. More specifically, there were no categories that represented any direct dislike or disinterest. As such, the Q-statements representing factors supporting learning outcomes were each prioritized according to a relatively positive baseline interest. In summary, it cannot be concluded that participants perceived any of the factors negatively as the purpose of this design intention was to focus on relative prioritization rather than any potential disapproval of education factors.



### **Opening a Dialogue with Parents**

This study found that parental groupings commonly prioritized various factors pertaining to education. Emerging from these findings were highly valuable discussion features. Firstly, understanding which ideas the primary investors already conceptualized as priorities offered valuable insight that could facilitate better informed, community based design. As such, this information on parents' top priorities can assist the various planning committees in working alongside this community to meet their hopes and expectations for a future high school program at Immanuel. Addressing the first key component of this research, the combination of the literature review on factors influencing learning outcomes and the accompanying highly prioritized Q-methodology results can inform the various planning committees of some potentially salient issues to address in designing a future high school program. Furthermore, addressing the highest priorities of parents could facilitate greater cooperation and increase understanding between Immanuel as an institution and its genuine investors. Indeed, accessing these highly rated priorities might inform design for the future high school program in a way which complements its grassroots, community oriented traditions.

Alternatively, the Q-methodology sorting task also illustrated which concepts were proscribed relatively lower priority to address for design decisions in the future high school program at Immanuel. These findings address the second key component of this study. As mentioned in the priority convergence section, the underlying themes to an array of Q-statements given the lowest priority rating across the factors included specific

pedagogical approaches and physical classroom design components. Indeed, this information will enable the various planning committees to open a dialogue with the parents of Immanuel regarding these lower priorities. Perhaps these findings might inform conversations that will increase awareness of the importance of an unfamiliar or novel concept that support strengthened learning outcomes. In sum, the results demonstrating the lowest priorities for parents may act to invite further discussion to communicate the importance of these factors and advocate for their value in the future high school program.

### **Parents of Immanuel as Participants**

As a compulsory activity, a majority of Canadians will have obtained a minimum level of education. Therefore, as participants who have had varied experiences with education in their lifetimes, the parent participants in this study possessed preconceived ideas and schemas about school in general, classrooms, and education in a broader context that would have influenced what this study found. Furthermore, although these parents may not have specifically attended Immanuel Christian School, they were eligible to take part in this study based on an existing association with Immanuel Christian School and are therefore likely familiar with its qualities and practices based on the elementary school approach. As such, their prioritization may have been affected by certain expectations for priorities within a classroom already having been met at the elementary and junior high school levels.

For example, one convergent prioritization that was of relatively lower interest was peer-mentoring relationships as important support systems within the educational context. In consideration of this concept possessing a relatively low priority rating, if a

parents' child had previously been involved with many years of peer mentoring activity during their time enrolled in Immanuel's elementary school program, this might indicate that prioritization shares some relationship with the experiences and expectations of the parent. If a parent feels that their child had already received amply exposure to a concept, this might affect the salience of that same idea for the high school program. More simply put, any previous exposure to a concept could affect its relative prioritization if the parents felt that this need had already been satisfied for their child.

### **Limitations of this Study**

Although this study was designed through a thought-intensive process, there were potential limitations to its design. Firstly, the invitation process primarily occurred through online communication via email communication and an online school newsletter. Any potential participants who could not gain access to this electronic information as blocked by technical or other difficulties may have been unable to participate in the study.

Addressing a design feature of this study, the Q-methodology did not record what the participants did with the statements during the initial sort. This initial sort pertained to whether the participants understood each concept clearly or did not, and there may have been items included in the Q-statements that the participants did not understand and we would not have known this.

Finally, the experimental design was delimited to only accessing the priorities of the parents. As such, it did not capture the interests of any potential students. This delimitation acted as a clarifying agent for understanding the prioritization of parents. Considering a different audience could provide different, salient information pertinent to

Immanuel's future high school program design. In sum, these issues may be addressed for the future replication of this study and affected what was found.

### **Conclusion**

In order to fully understand how the various planning committees for Immanuel's future high school program could satisfy the interests of parents, it was important that this study addressed how these primary investors rated the relative priority of an array of education factors. Although the immediate results of this study indicated to what extent each factor was a relative priority for parents, they furthermore highlighted concepts that might benefit from further discussion and explanation between Immanuel's planning committees and the parents. As planning and design ideas for this future high school program evolve and grow, the strong ties to the parent community might be strengthened further through continual reflection on these results, hosting conversations on what was found by these results, and considering how future research inquiries might further support Immanuel as this future high school program materializes. Indeed, this data-driven, community supported development of a future high school program organically couples with Immanuel's process of continual expansion and evolution.

### **Going Forward – Maintaining Support**

With the hope of acting as an informant to Immanuel Christian School, the literature review on factors affecting learning outcomes and the results of this Q-methodology study might act as a useful informant to Immanuel's various high school program planning committees. The literature review, although broad, may not be exhaustive and may act as a springboard into the research findings on supportive learning

factors. Thus, the research might act to guide the planning committee to additional literature on these topics to support their design process.

### **Future Research**

Future studies in this area might consider the prioritization of education factors by alternative investors. These alternative informants might include future high school students in Immanuel Christian School's future program, university students, or university professors who teach undergraduate courses. As such, a study similar to this nature might take on a different lens to better understand additional perspectives representing priorities for high school education experiences.

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**Appendix A**

Table 1:  
*Categories and their values in the Q-methodology*

Numerical Category Representation	Category Title	Required Number of Responses
1	Without this, my child would not be attending.	3
2	Without this I'd reconsider whether my child would attend.	8
3	This would be great to have but is not necessary for my decision.	8
4	This wouldn't impact my decision whether to have my child attend.	3

**Appendix B**

Table 2

*Q-statement Factor Loading Table*

Statement #	Statement	F1: Prepare for the Future	F2: Interest- based, flexible learning	F3: Balanced approach	F4: Collaboration for Success
1	The high school program should focus on mastery learning where students can learn at their own pace and move ahead only when they have mastered a concept rather than moving ahead before they are ready or having to wait for the rest of the class.	1.75	*2.2	1.63	1.27
2	Mentoring relationships between senior and junior students, teachers and students, and with community members should be an important part of this high school program.	1.54	1.37	1.36	1.22
3	This high school program should prepare students for college, university or technical programs including grades and opportunities for scholarships.	2.43*	2.45*	2.3*	1.96*
4	This high school should teach students how to respond to both success and failure as opportunities for continued learning about both the topic and themselves as people.	1.8	1.99	1.59	1.31
5	At this high school, learning should be structured around themes and topics that combine subjects, as opposed to teaching subjects separately	0.92	2.11*	0.92	1.09
6	Within this high school, students should have the ability to move around during the day to encourage learning rather than be restricted to a desk	0.92	1.17	1.23	1.15
7	This high school should be clear on its goals and intentions for student learning but flexible in how those are achieved	1.65	2.53*	1.85	1.62
8	Students at this high school should be able to explore specialized interests (e.g. fine arts, computer programming) in addition to core subjects.	1.85	2.22*	1.97*	1.79*

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9	At this high school, resilience should be taught and practiced as a tool for learning and life in general.	1.74	1.61	1.39	1.13
10	At this high school, learning should occur through both individual and group projects that accompany book learning whenever possible.	1.79	1.06	1.65	1.56
11	Students at this high school should be allowed to focus their studies into certain streams or concentrations in senior years (eg. Arts & Social Sciences, Physical Sciences, Trades).	1.6	1.85	1.58	1.28
12	This high school should use a grading system for graduation that closely resembles others in PEI for the purposes of post secondary education.	2.12*	2.08*	1.99*	1.47
13	This high school should inspire enthusiastic learners who demonstrate focus and strive for personal excellence rather than simply putting in the time to get their diploma and being bored.	2.21*	2.3	1.28	1.44
14	This high school should offer a flexible learning environment, furnished with round tables, benches, couches, stand-up desks, and a counter with stools to encourage learning and engagement, both individually and in small groups.	0.91	1.64	1.23	1.29
15	Students at this high school should be able to increase their knowledge by specializing in a topic of interest to them rather than be limited to predetermined courses.	1.57	1.47	1.51	1.31
16	This high school should be a safe place for students to ask tough questions about personal identity development.	1.39	1.71	1.55	1.71
17	At this high school, teachers should be able to divide the amount of time they spend on core subjects based on each student's need rather than expecting every activity to fit in a proscribed time slot.	1.48	1.15	1.01	1.21
18	Direct teaching at this high school should involve the teacher sitting down with groups of students in the moment whenever possible rather than having the teacher primarily lecturing in front of a	1.25	1.5	1.56	1.58

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19	passive class. Students should be encouraged to work collaboratively in groups with teachers monitoring progress and checking in on the various groups.	1.19	1.03	1.45	1.87*
20	At this high school, learning should focus on making connections between the subject material and the world around us.	1.98	2.09*	1.64	1.72
21	We should draw on expertise in our school community to mentor any skills not taught by faculty when our students are interested in a subject.	1.38	1.27	1.36	1.35
22	This high school should encourage a combination of students learning about things they are passionate about and things that they find challenging.	1.82	1.39	1.69	1.42

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**Appendix C**

Table 3

*Participant Based Factor Loading*

Parent ID	Parent sex	Parent age	Oldest child age	F1: Prepare for the Future	F2: Interest-based, flexible learning	F3: Balanced approach	F4: Collaboration for Success
1	F	45	6	.290	.126	*-.773	.439
2	M	42	13	.357	.415	*.467	.220
3	F	26	5	*.663	.288	.130	.184
4	F	33	5	.173	.353	.033	*.622
5	M	50	12	*.748	-.013	.239	.172
6	F	45	12	*.562	.095	.143	.295
7	F	39	13	*.620	.328	.251	-.079
8	F	40	14	.048	*.737	-.026	-.275
9	F	45	14	*.449	.115	*.428	*.428
10	M	46	14	.287	-.035	*.657	.341
11	F	46	12	*.787	.044	.029	.149
12	F	40	14	*.640	.411	.189	-.011
13	F	57	13	.255	*.689	.207	.423
14	F	32	7	-.016	.014	.080	*-.706
15	M	35	6	.143	-.261	.171	*.553
16	F	37	11	.238	*.756	.093	.328
17	M	31	5	.401	*.728	.139	-.092

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18	F	27	5	.402	*.583	.281	-.126
19	M	37	5	*.622	.289	.369	.344
20	F	46	14	.204	.276	*.740	.068
21	M	43	6	-.124	*.674	-.470	.102
22	M	40	11	*.628	.114	-.398	-.423

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**Appendix D**  
**UPEI RESEARCH ETHICS BOARD APPROVAL**



550 University Avenue  
Charlottetown  
Prince Edward Island  
Canada C1A 4P3

**To:** Cadence Almasi  
Department of Psychology

**Protocol Number:** REB Ref # 6006558

**Title:** Designing an effective and engaging high school experience at Immanuel Christian School: Determining Parents' Priorities

**Date Approved:** February 19 2016

**End Date:** February 18 2017

The above mentioned research proposal has been reviewed and approved by the UPEI Research Ethics Board. Please be advised that the Research Ethics Board currently operates according to the Tri-Council Policy Statement 2: Ethical Conduct for Research Involving Humans (2014) and applicable laws and regulations.

It is your responsibility to ensure that the Ethics Renewal form is forwarded to Research Services prior to the renewal date. The information provided in this form must be current to the time of submission and submitted to Research Services not less than 30 days prior to the anniversary of your approval date. The Ethics Renewal form can be downloaded from the Research Services website (<http://www.upei.ca/research/forms>).

Any proposed changes to the study must also be submitted on the same form to the UPEI Research Ethics Board for approval.

The Research Ethics Board advises that **IF YOU DO NOT** return the completed Ethics Renewal form prior to the date of renewal:

- Your ethics approval will lapse
- You will be required to stop research activity immediately
- You will not be permitted to restart the study until you reapply for and receive approval to undertake the study again.

*Lapse in ethics approval may result in interruption or termination of funding.*

Notwithstanding the approval of the REB, the primary responsibility for the ethical conduct of the investigation remains with you.

Sincerely,

James E. Moran, Ph.D.  
Chair, UPEI Research Ethics Board

**Appendix E**  
**PARTICIPANT INFORMATION NOTICE/EMAIL:**

You are invited to participate in a research project on " Designing an effective and engaging high school experience at Immanuel Christian School: Determining Parents' Priorities" conducted by Cadence Almasi under the supervision of Dr. Stacey L. MacKinnon in the Department of Psychology at the University of Prince Edward Island.

This research study has been designed to determine how the needs, desires, and goals of parents of potential high school students at Immanuel Christian School can best be prioritized and potentially implemented by the design committee in a manner grounded in the research literature on successful learning environments. The only requirement for participation is that you are a parent of a child and are interested in the possibility of a high school program at Immanuel Christian School OR are a teacher at Immanuel.

In order to do this, we have designed a simple and brief online sorting task called a "Q-sort" which will allow us to see how you, the parents and teachers, prioritize the issues already identified by the planning committee and others that we have identified from the research literature on successful learning environments.

Participation in this project will take approximately 15 minutes of your time. Your participation in the research project will pose no harm to you and will provide the benefit of ensuring that your voice will be heard in considerations of the design for the proposed Immanuel high school program. Your participation in this research project is entirely voluntary. You may stop your participation in this study at any time, without penalty or prejudice. All information collected in the course of this project will remain confidential and no names or other identifying information will be recorded. You will also receive an electronic copy of the final analysis via email.

Only Dr. Stacey MacKinnon and Cadence Almasi will have access to the raw data resulting from this research project, which will be kept in a locked research lab and on a password protected computer. All data resulting from the research project will be retained for a period of five years after the completion of the project, after which time it will be destroyed.

In the interests of full disclosure, Dr. Stacey MacKinnon, the supervisor of this project, is also the mother of an Immanuel student and volunteers on the high school program proposal committee.

If you have any questions or concerns about this research project, you may consult with Dr. Stacey MacKinnon, (902) 566-0402 , [smackinnon@upei.ca](mailto:smackinnon@upei.ca).

This research project has been approved by the UPEI Research Ethics Board.  
Any concerns about the ethical aspects of your involvement in this research project may be directed to [reb@upei.ca](mailto:reb@upei.ca) or by calling (902)620-5104.

If you are interested in participating in this study, please go to  
<http://www.XXXXXXXXXXXXX>  
before March 1<sup>st</sup>, 2016

**Appendix F**  
**PARTICIPANT CONSENT FORM**

I consent to participating in research on the study on " Designing an effective and engaging high school experience at Immanuel Christian School: Determining Parents' Priorities" conducted by Cadence Almasi under the supervision of Dr. Stacey L. MacKinnon in the Department of Psychology at the University of Prince Edward Island.

I understand that my participation involves completing a online sorting task which will take approximately 15 minutes of my time.

I have read and understood the material about this study in the Information Email, and understand that:

1. My participation in the study is entirely voluntary;
2. I may discontinue my participation at any time without any adverse consequence;
3. My responses will be kept confidential, except where the researcher is required by law to report them.
4. Once all data have been submitted I will no longer have the opportunity to request that my data be removed from the study;
5. I have the freedom not to answer any question included in the research;
6. I may print off a copy of the signed and dated consent form to keep.

This research is being conducted by Dr. Stacey MacKinnon and Cadence Almasi in the Department of Psychology at UPEI. Any questions or concerns about this study can be directed to Dr. Stacey Mackinnon, (902)566-0402, [smackinnon@upei.ca](mailto:smackinnon@upei.ca)

This research has been approved by the UPEI Research Ethics Board. Any concerns regarding your involvement in this study may be directed to [reb@upei.ca](mailto:reb@upei.ca) or by calling (902) 620-5104.

If you consent to have your data included in the final analysis, please click "submit" at the end of the Q-sort task.