A Sociocultural Interpretation of Gifted Secondary Students’ Transition-Related Experiences within University Communities

by

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Abstract

Students’ transitions from high school into university are a major concern in education literature, as post-secondary institutions seek to enhance students’ adjustment so as to improve retention, and secondary systems aim to prepare students for challenges they may face as new undergraduates. Much of this literature compartmentalizes transition into these pre- and post-matriculation phases, with most theoretical analyses, practical applications, and empirical studies focusing on post-matriculation experiences and emphasizing institutional over student perspectives. Literature on gifted learners in transition reflects this pattern; pre-matriculated gifted students’ voices are especially scarce, particularly when they are not following accelerated paths to college entry, despite this group being both sought-after and potentially at-risk during transition. This study addressed this gap by exploring the meanings that a group of gifted Grade 11 students made of on-campus transition-related experiences, to build understanding of effective ways to support similar students as they enter university communities.

Sociocultural theory invites viewing transition between educational communities as a process of identity shift, as newcomers participate in boundary activities with more expert community members. It allows for students to be seen as beginning to negotiate membership in university communities while still in high school. In this qualitative action research, nine gifted learners participated in transition-related experiences including: interactions with staff and students within a university campus community; partnerships with professors within Faculty of Science communities; and opportunities to share their own learning and support others’ within the participant peer group. Interviews, personal reflection pieces, observations, online discussions, and researcher notes were used to generate data, with both students and professors involved in interpretive processes.

Theoretically derived and inductively generated categories were combined to construct key themes of the students: negotiating the peripheries of the campus community; working at belonging within science communities, together with faculty partners; developing a sense of affinity with university students; interacting with the researcher in her role as a boundary spanner; and experiencing changes in academic, intellectual, and social identity through these processes. These interpretations offer insight into ways to engage pre-matriculated gifted learners in transition processes appropriately to their own perceived needs, within university communities.

Keywords: gifted; transition; high school; college; university; sociocultural theory
For Anna Lucia, Matteo Bjørn, and all the rest
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My supervisory committee has provided the kind of support that embodies their intuitive understandings of the inseparability of life and work, of the ethic of care in education, and of the importance of helping learners to find their own ways of doing and knowing, in their own time. They have each, during this process, listened patiently, posed challenging questions, demanded excellence, offered reassurance, taught me, and learned with me, just when each of these were most needed. Working with these incredible mentors – Dr. Lannie Kanevsky, Dr. Kelleen Toohey, and Dr. Marion Porath – has been immeasurably enriching for me on both professional and personal levels.

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Chapter 1.

Introduction to the Study

Prologue

I see high school – I don’t just mean this high school – as a big long waiting room for the next stage. You don’t always know what’s going to happen. You’re a little scared. I want to make sure I do something I’m passionate about. I have a concept ... but not what being there is really like, how professors and students work together – I mean actual interaction of people in the university. In high school you get all this info, but you don’t really have an idea of what the environment [at university] is like, if you’ll fit into the group there or if your ideas will fit with the professors’ ideas.

(Nico, interview, 2004)

Nico, a gifted Grade 11 student in the Canadian school district where I teach, shared these perceptions during an exploratory interview when I was formulating the current study, in response to my asking what he wondered or would like to know more about as he began his transition from high school to university. I begin with Nico’s statement for three reasons.

First, Nico’s words echo the stories of many other gifted students I have worked with who inspired this action-oriented research, as well as resonating with experiences of the nine student participants in the current study. All these students were following conventional university-bound academic paths along with their age peers; none planned
to enter college\(^1\) via early entrance programs or other accelerated models. Nico’s metaphor of the waiting room evocatively expresses the situation of many such gifted learners I have known who intend to go to university – and often have held such intentions for many years by Grade 11 – but find themselves in a conceptual space of passive reception (“you get all this info”) when they yearn to know, experientially, what they might actually do and be as university students (“what being there is really like”). This pre-college waiting space is characterized by anticipatory complexities – excitement about pursuing “passionate” interests, combined with anxiousness about whether there will be a good “fit” among the student and people she or he will encounter at university. There is little opportunity for participatory activity in this space; instead, students speculate, ranging from fearfully to optimistically, about “what’s going to happen” when the waiting is over. In the current study, college-bound gifted students participated in “actual interaction” within university communities instead of just “waiting” within their high school environments, and we focused together on what they thought was happening for them during that process, in relation to their ideas about becoming university students.

Second, Nico’s words initiated my journey into sociocultural theory of learning and identity, which became the conceptual framework for this research. His desire to learn how people “work together” at university led me to begin thinking of transition as characterized more by sociorelational processes than by particular events, and of schools and universities as constellations of academic, intellectual, and social communities of practice (Rogoff, 1995, 2003; Wenger, 1998, 2008), not just physical environments. Transition happens as students’ learning trajectories take them outward from familiar communities and toward deepening their participation within new ones. It engages students in figuring out similarities and differences between the educational

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\(^1\) In the Canadian context, ‘university’ usually refers to an institution that grants baccalaureate degrees, whereas ‘college’ typically refers to an institution that grants diplomas or university transfer credits, or designates a sub-structure within a university (Dunning, 1997). In the American context (which predominates the literature), ‘college’ can refer to a much broader range of institutional structures. I use these terms interchangeably where they refer to degree-granting post-secondary institutions with a focus on academic rather than technical programs.
communities of practice they are leaving and entering; they find ways to modify familiar, and/or to learn new, ways of doing things and relating to others (Crafter & Maunder, 2012). This process involves destabilizing and reassembling of one’s sense of self; as explained by Tobbell, O’Donnell, and Zammit (2010), educational transition entails “shifts in practice, within or between communities, coupled with identity transformation … [it is] the process of identity shift in the face of practice” (p. 266). This view of transition underlies the goal of this study: to explore gifted students’ evolving identities, through participation in practices, and interaction with members, of university communities. Sociocultural theory also informs how I define giftedness in this research: as one among multiple dimensions of identity, self- and other- understandings of which are always shifting through social relations and in the context of community practices.

Third, it is important to begin with Nico’s words simply because of the scarcity, within the existing literature on transition from high school into university, of research that explores students’ own perspectives on transition-related processes and experiences. As Crafter and Maunder (2012) have noted, historically there has been much more interest in “outcomes” of transition than on “the process of transition” (p. 11, emphasis in original). This is true not only within the literature on general college-going student populations, but also within the much smaller bodies of literature that address gifted learners in transition and, even more specifically, gifted learners’ transition-related experiences before college enrollment, especially when they are not affiliated with accelerated college entry programs. The current research, in occupying this niche – non-accelerated, pre-matriculated gifted students’ own perspectives on transition-related processes – addresses a hitherto under-explored area in the transition literature.

**Background to the Study**

Students’ high school to college transitions, generally, have been a growing concern in North American education literature since the mid-20th Century, fueled by post-secondary institutions’ drive to improve student retention as college populations diversify (Bonfiglio, 2006; Jacobs & Archie, 2008). This has led to a focus on helping post-matriculated students deal with challenges they may encounter as they move into university, both in the US (e.g., Braxton, Hirschy, & McClendon, 2004; Keup & Barefoot,
2005; Ward-Roof & Hatch, 2003) and in Canada (e.g., Feldman, 2005; Pancer, Pratt, Hunsberger, & Alisat, 2004; Pratt et al., 2000), and a corresponding interest in enhancing pre-matriculated students’ college readiness (e.g., Conley, 2008; Corwin & Tierney, 2007; Hicks, 2005; Venezia, 2003). In both cases, efforts have been made to tailor transition support to the needs of particular sub-populations.

Gifted learners comprise one such group – which has been identified as a relatively large one (Belanger, Akbari, & Madgett, 2009; Bers & Galowich, 2002; Frenette, 2007; Guerrero & Riggs, 1996; Hossler, Schmit, & Vesper, 1999; Lee, Matthews, & Olszewski-Kubilius, 2008) and also a sought-after one from a university recruitment perspective (Filter, 2010; Morse & Flanagan, 2008; Rinn, 2007; Wilson & Adelson, 2012). Yet, while assertions often are made about the transition needs of such learners, little research has explored their actual transition-related experiences, especially with regard to pre-matriculated students who are not following accelerated pathways to college entry. Although my focus is on this particular population, my view of transition as happening within overlapping peripheries of high school and university communities necessitates including some reference to and discussion of post-matriculation contexts and student experiences throughout this thesis.

**Gifted learners in transition: Who are they?**

Delineating gifted learners as a sub-group of college-bound or college-going students is challenging, in large part due to the problematic nature of defining giftedness. There is a wide range of definitions of giftedness found in transition-related literature. One group of students often named gifted includes those accelerating toward or participating in early entrance programs. Usually, they have been identified by exceptional performance, relative to age norms, on quantitative achievement measures such as SAT scores (e.g., Stanley, 2005). Elsewhere in this literature, criteria for operationalizing giftedness can range from evidence of academic talent such as high grades (e.g., Christensen, 2001; Filter, 2010), to participation in K-12 school gifted programs (e.g., Grayson, 2001; Olenchak & Hébert, 2002), to acceptance into advanced post-secondary programs such as honours (e.g., Hébert & McBee, 2007; Rinn & Plucker, 2004). As well, many students who could be considered gifted according to these or other criteria likely are subsumed in research populations drawn from college-
prep programs such as Advanced Placement (AP) or International Baccalaureate (IB) that cater to highly capable students (e.g., Wilson & Adelson, 2012). Further complexity arises when gifted students seem to underachieve (e.g., McCoach & Siegle, 2003; Peterson, 2000b) or belong to societal groups that are typically under-represented in gifted programs at all levels of schooling (e.g., McBee, 2009; Yoon & Gentry, 2009). Of course, it is also likely that many underachieving or unrecognized gifted learners do not end up going to university at all (Hansen & Toso, 2007; Zabloski, 2010) or enter with profiles that do not reflect their potential. With all of these factors at play, it can be difficult, when looking at students in transition, to ascertain who gifted learners are and what they may be experiencing.

From a sociocultural perspective, conceptualizations of giftedness – even acceptance of giftedness as a concept – are mediated by historical, cultural, and community-based beliefs, norms, and practices (e.g., Armenta, 1999). Whether individuals perceive themselves or others as gifted at any given time depends upon historically and culturally developed perceptions about the kinds of attributes and behaviours that signify exceptional ability or talent within a community (e.g., Peterson, 1999), upon kinds of practices being employed (or not) to recognize and respond to perceived ability or talent (e.g., Brown, Renzulli, Gubbins, & Chen, 2005), and upon ways in which individuals engage with those practices and with other people (e.g., Mudrak, 2011; Olszewski-Kubilius, 2003). For example, individuals may: accept, question, or deny attribution of gifted characteristics to themselves; make decisions about their participation in processes designed to label them as gifted; attempt to reconcile their self-concepts with others’ perceptions of them; and try to situate their abilities within their communities’ definitions of giftedness.

In North American educational communities of practice, the idea of giftedness has developed historically along essentialist lines, with a focus on identifying what often are assumed to be innate tendencies in order to name individuals as gifted (Armenta, 1999). Identifying and naming are bound up in educational practice (Schulz, 2005); schools are usually where those with power to assign the label look for giftedness, and they tend to find what they seek – evidence of facility with academic tasks. Giftedness is thus often equated with exceptional school performance, and intellectual capability often defined within limiting contexts (Kornilov, Tan, Elliott, Sternberg, & Grigorenko, 2012).
The concept of giftedness can be seen similarly to the way McDermott (1993), within a sociocultural frame, described the construct of learning disability, as a cultural “category … [which] will acquire a certain proportion of our children as long as it is given life in the organization of tasks, skills, and evaluations in our schools” (p. 271). However, this critical view of educational labels makes their effects “no less real to the participants of life in schools” (p. 272). Likewise, the gifted label carries academic and social implications for students (Matthews & Foster, 2008). I assume all these factors to be at play whenever students are explicitly or implicitly identified as gifted within the literature I will discuss.

What sense can be made of the term gifted, then, that will be helpful to understanding why students who are or could be identified – and/or who self-identify – as such might experience high school to college transition differently from their age peers, or benefit from particular kinds of support during this process? In North American educational communities where giftedness is acknowledged and addressed in practice, there are some descriptors associated with giftedness, and related transition needs, that have been asserted repeatedly by scholars, researchers and practitioners. First, gifted students are described as exceptional in cognitive domains, having greater capacity to learn, remember, process and manipulate information than age peers (e.g., Kanevsky, 1999; Rogers, 2007), which may or may not be evident in school performance (e.g., McCoach & Siegle, 2003; Peterson, 2000b). Second, while some display strong talent in one area, others exhibit multipotentiality (e.g., Colangelo, 2002; Emmett & Minor, 1993). This is the image of the well-rounded gifted individual – highly capable and very successful in many areas of life and work – first presented by Terman (1926).

Third, gifted students are seen to evince unusually complex socioemotional profiles, experiencing feelings and social situations with extraordinary intensity (e.g., Daniels & Piechowski, 2010; Piechowski, 2006; Silverman, 1998) and seeming prone to stress or anxiety related to their perceived intellectual ability. Examples include perfectionism (e.g., Dixon, Lapses, & Hanchon, 2004; Neumeister, Williams, & Cross, 2007; Schuler, 2000), pressure to excel (e.g., Chen, 2007; Geddes, 2011), or social stigma or isolation (e.g., Cross, Coleman, & Stewart, 1993, 1995; Gross, 2004; Silverman, 1995). Fourth, gifted learners often are seen to experience mismatches among their chronological age, physical growth, intellectual ability, and/or
socioemotional maturity, termed asynchronous development (Columbus Group, 1991; Greenspon, 2000; Silverman, 2002). This can contribute to anxiety, self-criticism, hypersensitivity, or frustration (Alsop, 2003); students may feel bored or intellectually out of place in school settings (Kanevsky & Keighley, 2003) or have difficulty building friendships with age peers (Gross, 2009).

Any of these attributes or experiences may be factors as gifted learners’ sense of self develops and changes (e.g., Coleman & Sanders, 1993; Glaeser, 2003; Gross, 1998). They intertwine, as well, with other aspects of identity including but not limited to gender (e.g., Bouchet & Falk, 2001; Miller, Silverman, & Falk, 1994; Ryan, 2005; Shoffner & Newsome, 2001), sexual orientation (e.g., Miller, Falk, & Huang, 2009; Treat, 2006), ethnicity (e.g., Graham & Anderson, 2008; Plucker, 1994; Rodgers, 2008), socioeconomic status (e.g., Ambrose, 2005; Elhoweris, 2008), and/or family relationships (e.g., Hébert, Paganini, & Hammond, 2009; Henderson, 2002; Wu, 2010). The label of giftedness thus adds a layer of complexity to processes of identity growth and change, including those that arise in relation to high school to college transition.

**Transition needs of gifted learners**

With all these identity dimensions at play, it often is asserted that gifted learners need differentiated support during transition, relative to their age peers. Many authors emphasize that these learners continue to require high levels of intellectual challenge in their academic environments, preferably in like-ability peer groupings, in order to sustain their interest and engagement as they enter college (e.g., Christopher, 2003; Fredricks, Alfeld, & Eccles, 2010; Hébert & McBee, 2007; Noble & Childers, 2008; Rinn, 2007). Sometimes radical acceleration into university is seen as necessary to accommodate these needs (e.g., Colangelo, Assouline, & Gross, 2004; Gross & van Vliet, 2005). It is argued, as well, that gifted students need early, and individualized, assistance with activities such as planning campus visits, preparing program and scholarship applications, and developing clear understanding of their strengths and goals so as to make confident academic and career-related decisions (Berger, 1998; Greene, 2003, 2006; Greene & Levy, 2004; Stewart, 1999), especially when multipotentiality is a factor (Higgins & Boone, 2003; Rysiew, Shore, & Leeb, 1999; Wessel, 1999).
There have been calls to provide gifted students with specialized counseling (e.g., Ford, Webb, & Sandidge, 1994; Moon, Kelly, & Feldhusen, 1997; Olszewski-Kubilius & Laubscher, 1996; Robinson, 1997; Smith, 1997; Wood & Gavin, 2009; Yoo & Moon, 2006) or formal or informal support groups (Friedlander & Watkins, 1984; Peterson, 2000a; Willings, 1985a, 1985b) to assist them with their socioemotional concerns as they move from high school into college. One of the most recommended practices to address asynchronous development is to connect gifted students with intellectual peers and mentors pre-matriculation (e.g., Little, Kearney, & Britner, 2010; Subotnik, Edmiston, Cook, & Ross, 2010) and to continue to do so as they move into college studies (e.g., Hammond, McBee, & Hébert, 2007; Noble, Arndt, Nicholson, Sletten, & Zamora, 1998; Willings, 1985b). This has been seen as especially important for gifted students who also belong to historically disadvantaged societal groups (e.g., Contreras, 2011, Freeman, 1999; Hébert, 2002; Hicks & Ranis, 2001; Reis, 1995).

**Transition support for gifted learners**

Many types of transition support programs and practices have been developed in response to the perceived needs of gifted learners. For the current study, I was most interested in programs and practices initiated by universities and/or situated on university campuses. In the literature, transition support efforts in this vein are most apparent concerning students who follow accelerated pathways into college, with greater emphasis on post-matriculation than pre-matriculation contexts. Post-matriculation, early entrance programs are notable, typically providing participants with advanced academic work, built-in peer networks and opportunities to socialize and develop friendships, individual and group counseling by practitioners trained in gifted education, and connections with faculty mentors (e.g., Boothe, Sethna, Stanley, & Colgate, 1999; Cross & Frazier, 2010; Muratori, Colangelo, & Assouline, 2003; Noble & Childers, 2008). In the Canadian context, Danylchuk (2003) describes such features as integral to the accelerated university entry program based at the University of British Columbia (UBC). University honours programs, which may include some early entrants as well as non-accelerated gifted learners, also incorporate many of the same types of support structures (Christopher, 2003; Hébert & McBee, 2007; Rinn, 2004, 2005). In contrast, new gifted undergraduates who are not affiliated with such programs have received less transition-related attention and support (Ford et al., 1994; Moon et al., 1997; Robinson,
1997), with specific efforts to assist them seeming to arise from college counselors or professors observing a need and attempting to address it on a localized basis (e.g., Friedlander & Watkins, 1984; Willings, 1985a).

Pre-matriculation transition supports and related research show a similar emphasis on students who are accelerating toward college entry. University-affiliated transition support systems for gifted learners include bridge and summer programs through which students do college level academic work, differentiated to provide appropriate intellectual challenge, and participate in social networks with intellectual peers and mentors, often professors. In the US, such programs usually are accessed through a talent search system that streams students into accelerated paths to college (Barnett, Albert, & Brody, 2005; Brody, 1998; Lee et al., 2008); they may not be as accessible to gifted students who are following non-accelerated routes toward college. In Canada, where the talent search model is less extensively implemented, opportunities for pre-matriculated gifted high school students to participate in such university-sponsored programs are relatively limited.

Universities also may participate directly or tangentially in implementing credit-based transition programs for pre-matriculated students. For example, in some concurrent or dual enrollment arrangements, college professors may teach college-level courses to high school students, sometimes on college campuses (Fowler & Luna, 2009; Karp & Hughes, 2008); with AP or IB programs, professors may be involved with setting or administering exams but have little or no actual interaction with students. Although many such programs are accessed by gifted learners (Hertberg-Davis, Callahan, & Kyburg, 2006), none are designed specifically to target gifted students, and in many, the bulk of responsibility for program delivery is taken on by high school, not university, personnel. Individualized forms of transition support for pre-matriculated gifted learners that may include interaction with university people or within university settings – such as campus visits, specialized academic and career advising, and mentoring arrangements – also seem more typically to be initiated by secondary school counselors than by university staff; and, though often recommended in the literature, their impact for students is rarely studied.
The Research Problem

This brief tour of the literature illuminates the central problem that motivated this study: While pre-matriculated gifted learners comprise a sizeable sub-population of college-bound students that is considered desirable to recruit by post-secondary institutions, they appear to be under-serviced by universities in terms of transition support, especially when they are not following accelerated paths to college entry. Given the action research orientation of the current study, elaborated in the next section, I view this problem dialectically, as an issue of both practice and research. In terms of educational practice, this group of gifted learners lacks opportunities to participate actively within university communities in ways that can assist them to begin developing their potential identities as university students. In terms of research, little attention has been paid to such students’ transition-related experiences within university communities. It may be that the available research is scarce because opportunities for students to have these kinds of experiences are limited, or it may be that such experiences do happen but have not generated research interest. Either way, there is a gap (especially noticeable in Canadian contexts) that needs to be addressed. That is why, in the current study, I invited students to participate directly within university communities in order to explore the meaning they made of transition-related experiences in those contexts.

Another aspect of the problem is that pre-matriculated gifted students’ own perspectives on transition-related experiences are rarely heard in the literature. In a very few studies, participants in bridge-type acceleration (e.g., Swiatek, 1993) or summer programs (e.g., Enersen, 1993; and, in Canada, Leroux, 1990) have been surveyed or interviewed, offering insight into their own impressions of these types of experiences. In Canada, Richardson’s (2005) research with accelerated pre-matriculated gifted girls participating in the UBC Transition Program focused on their lived experiences, described in their own voices. However, in comparison to the fairly substantial literature in which matriculated gifted students in early entrance or honours programs have been interviewed about (e.g., Hammond et al., 2007; Muratori et al., 2003; Noble & Drummond, 1992; Noble & Smyth, 1995; Noble, Vaughan, & Chan, 2007) or even co-authored descriptions of (e.g., Noble et al., 1998) their experiences around transition,
pre-matriculated gifted students’ voices are largely absent, especially if they are not accelerating their entry to college.

These problems have implications for students that affect universities, as well. Olenchak and Hébert (2002) express a worry about “students of high academic potential who barely survive the undergraduate university experience” (p. 210), and Albert (2010) includes “academically brilliant students” (p. 5) among those who should be considered at risk of attrition from Canadian institutions. Canadians Côte and Levine (2000) suggest that the brightest students are under-performing at university because they are not being sufficiently challenged by their instructors and coursework, and Tinto (1993) views such students as at strong risk of college departure due to boredom. Gifted students, in such scenarios, may be dealing with discouraging experiences of disillusionment, boredom, alienation, and isolation, leading them to disengage or withdraw altogether from university environments (e.g., Fredricks et al., 2010; Gross, 2004; Olenchak & Hébert, 2002; Willings, 1985a, 1985b). The risk of losing highly capable students after recruiting them (Capétas, Garcia, & Allyne, 2008; Filter, 2010; Moll, 1994; Rinn & Plucker, 2004) should encourage universities themselves to participate actively in ensuring that gifted learners access and benefit from the types of support they would find helpful during transition, not only post-matriculation, but in the pre-matriculation phase as well (Albert, 2010). If institutions are serious about wanting to recruit and retain such students, they should provide opportunities for them to engage with the life and work of university communities while they are still in high school.

Involving gifted learners in campus-based transition-related experiences can assist them to begin developing their identities as university students, to clarify their ideas of what they can do and become within college communities. Engaging these learners in participatory experiences, and seeking to understand their perspectives on them, is an important form of support for students, as it acknowledges transition-related concerns and questions they may have and includes them in working through these (e.g., Peterson, 2000a). It also has potential to benefit the institutions that students eventually attend, if they develop comfort and familiarity with practices of university communities (Enerson, 1993; Leroux & DeFazio, 1990) that might ease their adjustment to college, increase their chances of post-secondary persistence, and equip them to participate productively in intellectual work at the level of which they are capable.
Action Research: “Actual Interaction”

Surveying the literature corroborated practice-based and personal experiences that were the initial catalysts to the current study. I first became interested in the transition-related experiences of non-accelerated gifted students before university enrollment through my teaching practice. The conversations that I had with such students in high schools, and my observations of their apparent frustration in this pre-matriculated phase, convinced me that they needed more and different kinds of transition support than typically were available to them. Going to university is not, of course, the only way for gifted students to experience intellectual stimulation, career advancement, and/or socioemotional satisfaction after high school, but many of them do choose this path, and I wanted to learn what might help students like mine to experience their journeys toward university as less stressful and more enjoyable.

So many of the students I worked with, as the gifted program teacher at a high school (from 1995-2001) and subsequently as the gifted coordinator for the same school district (since 2005), held long-standing expectations that they would go to university. Most did not follow accelerated college-entry paths, as options to do so were limited in our local context; yet, they were ready to learn about ways they could explore their “passionate” interests at university, the “people there” who could help them, and how they could “fit into” college communities (Nico, interview, 2004). They struggled to envision themselves as university students, to develop comprehensive anticipations about what university life could be like for them. While there was a large amount of information available to them, they frequently did not access it, could not determine which of it was relevant to them, or distrusted it as possibly incomplete or misleading. Further, they lacked firsthand experiences with university environments that could help them assess how such information pertained to them personally. Many had never visited a college by the time they were in Grade 11 or 12. Those who had, had done so in very peripheral ways – attending a sports game or driving through a campus – rather than participating in ways that might give them an insider view. They were trying to imagine themselves within settings they had never seen or only briefly glimpsed, and to form impressions based upon written material and hearsay rather than on lived experience.
They often felt stalled or stuck, unable to do anything except wait for “the next stage” (Nico, interview, 2004).

Observing my students, I recalled my own experiences at their age. I had been identified as gifted by ability testing in elementary school, but my mother refused formal designation; due to my love of learning and high achievement, I and others had long assumed I would go to university. Participating in the IB diploma program in high school, I probably had the best academic preparation for university that my school district could offer, but other than that, transition support consisted of some help from counselors with writing scholarship applications. My only exposure to a university campus occurred when I went to a scholarship interview in Grade 12; I visited one room, in one building, and its adjacent parking lot. I chose that university not only because it offered a scholarship, but because that single brief encounter helped me to believe I might feel comfortable there. Still, I waited out the time between that visit and my arrival on campus as an undergraduate wishing I had at least dared to walk across campus during that initial visit, instead of being fearful of getting lost or having university people question my presence. Now, as a teacher, I wished for students like mine – like me – to have pre-matriculation transition-related experiences that included opportunities for more meaningful exploration of university environments than I had had, or they seemed to be having.

Thus, I initiated the current study because I wanted to help gifted high school students to get out of the “waiting room” and get into the action – and interaction – of university communities. I did not want just to explore what such students were thinking about with regard to transition; I wanted to act on what they were telling me, in ways that I thought would benefit those who agreed to participate in the research with me. I designed this study to address not just a gap in research, but also what I perceived to be a gap in practice. I responded to my former students’ impatience with “waiting” to experience university, by arranging for similar students to engage in “actual interaction” within university communities over the course of their Grade 11 year. Together, we explored what they thought was happening for them during that process, in relation to what they thought might happen for them in the future, as university students.

I secured the participation of Faculty of Science professors at Simon Fraser University (SFU) who agreed to partner with gifted students, involve them in research
labs, and help them build understandings of scientific communities and practices. I invited members of the broader campus community – academic advisors, librarians, student leaders, program coordinators, Residence staff, recreation facilitators, orientation leaders, social support workers and health services personnel – to help gifted students understand the ways they could eventually participate in campus life and access campus support systems. I involved the student participants who volunteered – all from my own school district – in opportunities to get to know one another and develop support networks as they negotiated these new communities. All the student and faculty participants engaged, with me, in qualitative interpretive inquiry into what these transition-related experiences meant for them.

Thus, this was an action research endeavour, guided in design and methods by tenets of sociocultural theory of learning and identity. Viewing high schools and universities as constellations of overlapping communities of practice, I attempted to engage the participants – both students and professors – in boundary exchanges, involving the sharing of practices, the participation of newcomers facilitated by more experienced community members, the intersection of various learning trajectories (Wenger, 1998; 2008). I anticipated that this work would involve identity shifts for all the participants, as they negotiated new understandings of who they were or could become within university communities, new relationships with people and with practices. The theory-driven structuring of the experiences offered to the student participants also reflects my belief, supported by a strong literature base, that these particular kinds of experiences would be especially appropriate for gifted learners, in that they involved opportunities for high-level intellectual engagement and access to peers and mentors with similar ability and interests, in addition to helping students to build understandings about academic/intellectual, interpersonal, and personal dimensions of university life.

There is also an underlying assumption, in arranging for these participatory processes to take place on campus, that universities should take more responsibility than they often do, for constructing appropriate transition support systems for non-accelerated, pre-matriculated gifted students. Viewed from a sociocultural perspective, these students’ support networks are broad and varied, given their membership in multiple and diverse communities. Their interactions with many different people – teachers, parents, siblings, friends, counselors, advisors – serve as learning
opportunities during the transition process. However, during this important transition they also, ideally, should be connected deliberately with “boundary spanners” (Wenger, as cited in Wong & Edwards, 2009, p. 134) – individuals who are well equipped to engage learners in participation within the peripheral spaces of communities of practice.

Viewing the purpose of transition processes as being for students to move outward from high school communities and negotiate their membership within university communities, it follows that at least some of the boundary spanners, in this scenario, should be people who can invite students into university communities and engage them in participatory activities. Nico said, “We should get some people … from the university to explain things – people who are excited about what they do, professors or students, who can make a connection between themselves and a high school student,” instead of such interaction being “something you have to search for, ask for” (interview, 2004). The problem is that, although research supports the notion that universities should have a vested interest in reaching out to pre-college gifted students in this specific way, there is little evidence in the literature of their doing so, and consequently little understanding of such students’ experiences of transition processes when given the opportunity to engage in meaningful “actual interaction” with members of university communities.

With this study, I aimed to contribute to building such understanding. As the participants engaged in these experiences of interactive participation on campus, the research focus was to explore: In terms of their developing identities as members of university communities, what sense would the students make of interactions with people at SFU (including faculty partners) and with ability peers (the other student participants)? The literature review and theoretical framework presented in Chapter 2 lead to the specific research questions addressed in the study. Chapter 3 outlines the action research design and the specific methods used to explore these questions. Chapter 4 presents portraits of each of the participants – including me. Chapter 5 contains the story that I, together with these participants, constructed through data generation and interpretive processes, while Chapter 6 offers reflections on the potential importance of this story, as well as its implications for practice, research, and theory and its limitations.
Chapter 2.

Literature Review and Theoretical Framework

Overview

In this chapter, I situate existing literature pertinent to pre-matriculated gifted learners’ transition experiences within the broader terrain of literature that both theorizes high school to college transition and illustrates transition support practices. Much of this literature compartmentalizes transition into two phases – pre-matriculation preparation and post-matriculation adjustment – emphasizing differences among secondary and post-secondary learning environments and trying to anticipate or redress challenges that students may face as they enter college. Although my focus is on pre-matriculated gifted students, it is important to examine post-matriculation literature as well, for three reasons. First, there is a strong post-matriculation emphasis in North American literature, driven by institutional agendas to increase student retention. Thus, much of what has been theorized and investigated about transition has arisen within post-matriculation contexts. It is useful to consider how these understandings have been, or could be, applied to pre-matriculation contexts. Second, theories and practices related to post-matriculation adjustment have shaped the landscape of university communities that pre-matriculated students eventually will enter. Understanding what kinds of transition support (or lack thereof) pre-matriculated students might encounter in the future provides insight into what might constitute helpful proactive support. Third, I view transition as involving students in a process of exploring ways that high school and university educational communities of practice are similar or different and learning what they may do, and who they may become, as university students. Seen this way, pre-matriculated students’ transition-related experiences are contextualized by their potential (post-matriculation), as well as immediate, ways of participating within university communities.
For these reasons, after describing the kinds of challenges students are seen to face as they enter college, I review the post-matriculation transition literature before moving into the pre-matriculation literature. In each of these post- and pre-matriculation sections, I outline key theoretical models, describe institutional or educational practices that illustrate the theoretical concepts (whether or not intentionally designed to enact theory), and discuss applications that are specific to, or relevant for, gifted learners. The literature review concludes with a discussion of the relatively small body of work that conceptualizes transition, as I do, in terms of identity shift as students move outward from familiar educational communities and try to make sense of practices and relationships within new ones they are entering. In the second part of the chapter, I summarize the current study’s sociocultural theoretical framework, which facilitates a purposeful blurring of traditional pre-/post-matriculation distinctions, through its emphases on participation in boundary-spanning activities within overlapping peripheries of communities and on the continual negotiation of individual and communal identities. I finish the chapter with a critical synthesis of the existing literature, as compared with new directions I followed in the current study.

Challenges Associated with Transition

The list of potential challenges that students, generally, have been observed or predicted to experience as they move from high school into university is long. It is important to keep in mind that students deal with many of these types of challenges in high school (and non-school) contexts as well as at college; yet, there has been a trend in the transition literature toward associating such difficulties with the move into college environments. Transition challenges often are attributed to mismatches between students’ pre-matriculation expectations about what college is going to be like and their post-matriculation experiences in college environments, implying major crises as students try to learn what to do and how to belong within post-secondary educational communities that are characterized as very different from secondary settings. Prematriculated students often are suggested to be ill equipped not only to handle, but also even to anticipate, transition challenges. Gifted learners have been seen to experience the challenges attributed to general student populations more intensely or in
differentiated ways, and/or to face additional unique challenges, in relation to the gifted dimension of their identities.

**Academic/intellectual challenges**

Students often are reported to exhibit difficulties adjusting to differences in academic expectations (Conley, 2008; Green, 2008; Jobson, 2005; Leese, 2010) and intellectual cultures (Brady & Allingham, 2007; Sears, 2004) as they enter college. Gifted students, though, may be especially surprised to experience university academic work as unexpectedly difficult if they have been able to rely on their intellectual abilities to perform well previously, without having to work hard or develop good study strategies (Muratori, Colangelo, & Assouline, 2003); this can result in their no longer feeling like a “big fish” in a “little pond” (Marsh & Craven, 2002, p. 1) at college. On the other hand, they may find typical first-year classes to be disappointingly under-challenging if they had been looking forward to more academically rigorous coursework or more intellectually stimulating environments than they experienced in high school (Feldhusen, 1983; Willings, 1985a). This may result in gifted college students expressing boredom (Fredricks, Alfeld, & Eccles, 2010), exhibiting underachievement (Olenchak & Hébert, 2002), or even being at risk of total disengagement or withdrawal (Gross, 2004). Tinto (1993) observed that the brightest students may be most at risk of departure if they perceive “shortcomings of the intellectual life of the institution” (p. 52).

**Relational challenges**

Relational challenges such as separating from old friends and making new ones (Christie & Dinham, 1991; Paul & Brier, 2010; Paul & Kelleher, 1995), or figuring out how to get along with roommates or professors (Rosenberger, 2011) are commonly reported among college freshmen. For gifted students, who may have struggled throughout their lives with finding their social niche (Coleman & Cross, 1988; Cross, Coleman, & Stewart, 1993; Gross, 2009), such issues may be amplified (Muratori et al., 2003), particularly if they are not entering networks of like-ability peers such as those typical of early entrance or honours programs. They also may be leaving behind close connections with high school teachers (Graffam, 2006; Kesner, 2005) and be disappointed if they find
their relationships with university professors to be more distant and less personal, or if they lack appropriate mentors at college (Willings, 1985a).

**Personal challenges**

Personal challenges – defined as emotional or psychological in different contexts – are seen to be intertwined with academic/intellectual and/or relational struggles that students in transition may be facing. Negative changes in students’ self-perceptions may arise from feeling academically or intellectually inadequate (Paul & Brier, 2001). Homesickness – a prevalent concern among freshmen (Stoughton & Wanchick, 1990) – has been related to a decrease in students’ sense of control over their lives (Tognoli, 2003). Chow and Healey’s (2008) participants’ stories of leaving home for college evinced struggles with feeling displaced and difficulty establishing a sense of belonging in new settings. Stress, anxiety, depression, and eating disorders also have been reported among new college students (Collins, 2010). Gifted students who experience emotions with great intensity and/or make perfectionistic demands on themselves (e.g., Neumeister, 2004), often fueled by the expectations of their parents or teachers (e.g., Chen, 2007), may be at higher risk for personal struggles such as these. For example, Rice, Leever, Christopher, and Porter (2006) reported feelings of hopelessness and depression among high achieving honors college students who exhibited maladaptive perfectionism.

**Population-specific challenges**

Historically disadvantaged groups (within school systems and society generally) may face any or all of these types of challenges while also continuing, at college, to deal with socioeconomic barriers to inclusion (e.g., Bergerson, 2007, Christie, 2009; Mussey, 2009); ethnic (e.g., Nora & Cabrera, 1996) or homophobic (e.g., Sanlo, 2004) prejudice or discrimination; and/or sexist attitudes (e.g., Seymour & Hewitt) or sexual harassment (e.g., Frazier & Schauben, 1994; Tremblay et al., 2008). Gifted college students from such groups may be vulnerable on multiple levels, as seen in transition-related literature addressing the intersection of giftedness with such demographic variables as class or first-generation status (e.g., Neumeister & Rinker, 2006), race (e.g., Bonner, 2001; Fries-
Britt, 1999; Hébert, 2002), sexual orientation (e.g., Miller, Falk, & Huang, 2009), or gender (e.g., Grant, Battle, & Heggoy, 2000; Green & Varner, 2005).

**Mismatches between expectation and experience**

Often, academic/intellectual, relational, personal, and/or population-specific transition challenges have been associated with students having inaccurate anticipations of what college is going to be like (e.g., Baker & Schultz, 1992; Brinkworth, McCann, Matthews, & Nordstrom, 2009; Paul & Brier, 2001; Smith & Wertlieb, 2005). These mismatches can be seen in academic areas; for example, in a large-scale Canadian survey, Murray et al. (1990) reported that while freshmen believed they were well prepared for university studies, faculty saw them to have verbal, writing, and time management deficits; academic performance also fell below students’ anticipated achievement. Mismatches between anticipation and lived reality also have been reported in social areas, as with Keup’s (2008) participants who exhibited “expectation disillusionment” (p. 3) with regard to their interpersonal relationships at college. As summarized by Tinto (1993), “Pre-entry expectations generally become the standard against which individuals evaluate their early experiences within the institution. When expectations are ... unrealistic and/or seriously mistaken, subsequent experiences can lead to major disappointments” (p. 54).

Gifted learners may have particularly high expectations of university as a place where they are going to be intellectually challenged and interact with like-ability peers and mentors to a greater extent than they have experienced previously (Christopher, 2003; Hammond, McBee, & Hébert, 2007; Lauridsen, 2004; Robinson, 1997). Gifted students, more than others, may be encouraged to realize the importance of finding a good fit between their unique interests and the cultures of institutions they are applying to; yet, they may not realize that efforts to learn about institutions do not always yield “accurate information as to the informal social and intellectual climates which characterize student life on campus,” even though such information is the “most important for accurate expectations and appropriate choice” (Tinto, 1993, p. 55). In this sense, gifted students may enter university thinking they have a very good idea of what to expect, only to feel once they get there that they have been misled or deceived (e.g., Willings, 1985a).
Students’ transition crises

Given all the purported challenges I have described above, there has been a trend in the literature to characterize transition as involving major crises for students. Later in this chapter I will discuss alternate views, which ascribe agency to students as they engage productively with identity crises – in the sense of turning points – during transition. For now, recognizing the often sensational, alarmist tones in which students’ encounters with unfamiliar aspects of college environments have been described helps to illuminate why there has been so much attention focused on trying to help students survive at college. For example, Chaskes (1996) used the analogy of first year students being like immigrants to a new country, who experience “culture shock” (p. 79) as they try to assimilate. Similarly, Clanchy (1981) suggested that students need “interpreters” to help them navigate “strange customs and unexplained laws” at university (p. 15). Sears (2004) emphasized a cultural “gap” (p. 166) between secondary and post-secondary learning, which causes confusion for students and lack of sympathy from faculty; he described transition as involving “an astonishing act of daring and skill as [students] leap across the great chasm that separates high school from university” (p. 166). Such interpretations reinforce the idea that high schools and universities constitute completely separate worlds.

Institutions’ transition crises

Anxiety about students’ capacity to handle transition is intimately connected with institutions’ deep and abiding concern with determining why so many students depart and designing strategies to improve retention. In this sense, institutions might be seen as projecting their own crises onto students. The Center for the Study of College Student Retention (CSCSR) focuses strongly on the freshman year, when the highest rates of attrition occur – up to 25% on average in both the US (Braxton, Hirschy, & McClendon, 2004; Schrader & Brown, 2008) and Canada (Grayson & Grayson, 2003). Early attrition causes problems of financial stability and public image for institutions (Leviz, Noel, & Richter, 1999; Seidman, 2011). These administrative concerns have given rise to a research agenda aimed at understanding why so many students leave college and what can be done to reverse the trend of precipitous departure. The result is that the existing transition literature is dominated by theory and practices related to post-matriculation
transition processes, with a trickle-down effect on pre-matriculation theory and practices. A brief overview of the former helps to contextualize the latter and to illuminate gaps in understanding about pre-matriculated gifted students’ transition experiences that motivated the current study.

**Theory and Practices Related to Post-Matriculation Transition Processes**

**Background**

Interest in student adjustment within North American higher education environments has increased steadily since the last half of the 20th century. Bonfiglio (2006) explained how the onset of mass post-secondary enrollment in the US after World War II (due to tuition waivers offered to military veterans) eroded the traditional elitism in college participation. A similar impetus toward more inclusive college communities developed in Canada (Gilbert, Chapman, Dietsche, Grayson, & Gardner, 1997), with student loan programs broadening access (Statistics Canada, 1979). Before these developments, colleges typically were seen as static institutions with non-negotiable expectations for student performance, which, if not met, resulted in students being weeded out of college populations. Transition often was described as a rite of passage, not without stress but a milestone which most who were accepted could achieve if they had what it took to “make the grade” (Bonfiglio, 2006, p. 27; e.g., Musgrove, 1969). Those who did not adapt, it was assumed, had not been college material after all, or had been affected by influences beyond institutions’ control. This was an ‘input-output’ model of transition: What students brought to college largely determined whether or not they could assimilate successfully.

Mass enrollment diversified college populations, and when large numbers of students appeared to be having difficulty adapting, evidenced by high departure rates, institutions became increasingly concerned about retention (Bonfiglio, 2006). There was a shift toward interactionalist theories of transition, such as Astin’s (1970, 1993) Input-Environment-Output (I-E-O) model and Tinto’s (1987, 1993) student integration model, which suggest that what happens to students at college may have greater impact than their incoming profiles. Peltier, Laden, and Matranga (1999) and Reason (2009) have
reviewed research that has explored the influence of background variables on students’ ability to adjust, including: age, ethnicity, socioeconomic circumstances, family context, gender and sexual orientation, psychological or personality attributes, pre-college academic performance, intellectual capability or giftedness, and interactions among all these factors. In an interactionalist view, transition involves reconciliation between such student ‘inputs’ and an institution’s desired retention outcomes, moderated by the effects of interventions designed to: remediate academic deficits; mitigate risks posed by disadvantaged cultural, socioeconomic, or family circumstances; bolster psychological resources for coping at college; and/or encourage particular groups (for example, women, minorities, or first-generation college-goers).

**Student integration model**

Tinto’s (1987, 1993) student integration model has significantly influenced retention-oriented transition support efforts at North American post-secondary institutions. Tinto argued that students are more likely to persist when they integrate successfully into both academic and social realms of their college environment. Transition, here, entails acclimatizing to both formal and informal aspects of collegiate life. Academic integration involves learning not just how to register for courses or use the library but also how to participate in academic conversations or access study groups. Social integration involves learning unwritten social mores as well as engaging in organized social events. Academic and social integration also overlap, as participating in peer networks or interacting with faculty, for example, may enhance or deter students’ intellectual engagement, or vice versa. Successful adjustment occurs when students interact within their college in ways that produce a strong sense of institutional affiliation, whereas students’ choices to depart are attributed to a lack of this sense of “belonging” (1993, p. 125).

Tinto emphasized that positive interactions with faculty are particularly important for students to develop a sense of “intellectual congruence” (1993, p. 53) with their college, as shown in extensive research by Pascarella and Terenzini (1977, 1978, 1979, 1980, 1991). More recent research has reinforced the idea that students whose professors engage them intellectually and socially seem more likely to achieve academic goals and persist at college (Anderson, Dey, Gray, & Thomas, 1995; Delaney, 2008;
Seymour & Hewitt, 1997; Stevenson, Buchanan, and Sharpte, 2006; Ullah & Wilson, 2007; Umbach & Wawrzynski, 2005). When students perceive their relationships with faculty as both socially and intellectually meaningful, they seem to develop a deeper sense of belonging within campus communities.

Illustrations of post-matriculation transition support in practice

Tinto’s (1993) argument that it is critical for institutions to ensure that students have integrative experiences within their first year of college has fueled the explosion of First Year Experience courses (FYE’s), or freshman seminars, at American colleges (Skipper, as cited in Lang, 2007, p. 11). FYE’s typically use a cohort model to: facilitate participation in campus life; encourage interaction with faculty; convey information about rules, regulations, and traditions; and introduce campus resources (Barefoot & Fidler, 1996; Upcraft, Gardner, & Barefoot, 2004); and/or connect freshmen with peer advisors who have already completed first year (e.g., Carter & McNeill, 1998; D’Abate, 2009; Green, 2008; Kuba, 2010). Canadian researchers affiliated with the US Center for the Study of the Freshman Experience have developed and evaluated support group models for delivering similar kinds of services (e.g., Birnie-Lefcovitch, 2000; Pratt et al., 2000; Pancer, Pratt, Hunsberger, & Alisat, 2004). Courses or programs designed to enhance students’ post-matriculation adjustment in these ways acknowledge institutions themselves as key participants in transition processes.

Among general college populations, research suggests that first-year interventions do increase students’ success on institutional measures of adjustment such as academic achievement (Hyers & Joslin, 1998; Lang, 2007; Sidle & McReynolds, 1999); first to second year persistence (Belcheir, 1997; Burgette & Magun-Jackson, 2009; Murphy, 2010); and ability to access campus resources (Keenan & Gabovitch, 1995; Keup & Barefoot, 2005; Schwitzer, McGovern, & Robbins, 1991). FYE’s also appear to support students’ development of social networks on campus, both with peers (Domizi, 2008; Donahue, 2004; Pike, 1999; Smith, 2011) and faculty (Maisto & Tammi, 1991; Rice et al., 1991). It appears that institutions can mediate students’ adjustment by implementing FYE support structures.
Increasingly, institutions tailor interventions to sub-populations with specific ‘input’ profiles. Weissman and Magill (2008) proposed a “student typology” to explain how certain “types” (p. 65) of students might benefit from different kinds of support as they enter college. Gifted learners comprise one sub-population that has been targeted for tailored post-matriculation transition support. Most notably, this occurs in early entrance programs, where gifted students begin college ahead of their age peers. Honours colleges also offer some support mechanisms that may assist gifted participants. Despite the stated need for, and perceived benefits of, specialized support for gifted learners that have been established through research related to early entrance and honours, access to similar types of support for non-program-affiliated gifted undergraduates appears to be limited.

**Early entrance programs**

Some prominent early entrance programs evolved from, and/or are fed by, acceleration systems initiated at the Center for Talented Youth (CTY) at Johns Hopkins University (Boothe, Sethna, Stanley, & Colgate, 1999; Sethna, Wickstrom, Boothe, & Stanley, 2001). Another flagship program is the University of Washington’s Early Entrance Program (UW-EEP), with programs modeled after it including BC’s Transition Program at UBC (Danylchuk, 2003). Special attention is given to supporting early entrants during transition, due not just to their youth but also to needs associated with their giftedness (Muratori et al., 2003). Program designs reflect assertions that gifted learners’ socioemotional well-being is connected with access to appropriately challenging intellectual work and like-ability peer groups (Neihart, 2007; Rinn, Plucker, & Stocking, 2010), with radical acceleration often facilitating this (Colangelo, Assouline, & Gross, 2004; Gross & van Vliet, 2005; Olszewski-Kubilius, 1995). Programs respond to documented benefits of university faculty mentoring gifted learners (Arnold & Subotnik, 1995; Grybek, 1997; Schatz, 1999) and acknowledge oft-stated needs for specialized academic advising (Berger, 1998; Wood, 2010), career planning (Higgins & Boone, 2003; Stewart, 1999; Wessel, 1999), and socioemotional support (Moon, Kelly, & Feldhusen, 1997; Yoo & Moon, 2006).

Early entrance program participants usually have similar access to curricular and/or extracurricular activities as do regular freshmen on the host campus (e.g., Sethna
et al., 2001). In addition, most programs: group students in cohorts, often in dedicated residence halls; connect them with older peers; create opportunities for professors to mentor them; and provide specialized counseling (e.g., Jones, 2009; Muratori et al., 2003; Noble & Childers, 2008). These programs are designed purposefully not only to build participants’ knowledge and skills for academic success, but also to assist them with developing strong socioemotional support networks.

It appears that these types of support do help early entrants to make smooth transitions into college. Numerous studies have shown that participants seem to adjust successfully to college academic work, as indicated in a comprehensive review of research by Olszewski-Kubilius (1995). Although students may report some stress and anxiety (Cornell, Callahan, & Loyd, 1991), or deal with typical freshman challenges such as homesickness or roommate issues (Muratori et al., 2003), overall early entrance support systems appear to mediate such concerns and to have further positive effects from participants’ points of view. Interviewees have said they felt happier and less socially isolated than they were in high school (Noble & Drummond, 1992), appreciated being encouraged at a critical educational stage (Noble & Smyth, 1995), felt they had matured significantly (Noble, Arndt, Nicholson, Sletten, & Zamora, 1998), and formed close friendships (Noble & Robinson, 1993). These findings suggest successful integration into university communities when gifted learners have access to suitable academic, intellectual, and socioemotional support systems.

Honours programs or colleges

According to Bohnlein (2009), there are over 1000 honours programs and honours colleges in the US. These terms often are used interchangeably; however, honours programs tend to be academic in focus, grouping students for rigorous courses in their major, whereas honours colleges tend to be more holistic, with strong emphases on student-student and student-faculty social networks. Though not exclusive to gifted students, honours opportunities tend to attract them (Christopher, 2003; Rinn & Plucker, 2004) and are an important venue for gifted undergraduates to connect with like-minded peers and faculty (Draper, Hazelton, McNamara, & Kahn, 1999; Hammond et al., 2007; Hébert & McBee, 2007). Honours affiliation can extend intellectual interaction into extracurricular activities (Nolden & Sedlacek, 1998), facilitate such interaction within
special residence halls (Hansen & Hall, 1997), and increase both contact with faculty (Fischer, 1996) and participation in research activities (Denk, 1998). As well, many honours cohorts draw gifted students from early entrance programs on the same campuses (e.g., Sethna et al., 2001). Although honours programs are available at many Canadian universities (Dunning, 1997), I was unable to locate research concerning gifted student participation.

Only a very few studies have isolated the specific experiences of gifted students within honours programs in the US. Rinn (2007) reported honours participation to increase gifted learners’ academic achievement, self-concept, and aspirations relative to non-honours gifted students’, and she also (Rinn, 2004) observed positive academic and social effects for gifted students living in honours residences. Hébert and McBee’s (2007) gifted honours interviewees valued access to professors who provided mentoring and socioemotional support and peers who shared their intellectual passions. In Christopher’s (2003) study, gifted students described honours as offering intellectual challenge, special advising, and close relationships with peers and professors, contributing to their overall comfort at college. Christopher’s participants complained, though, that their first year seminar (a freshman requirement) was irrelevant and boring, underlining the need for differentiated transition support beyond providing appropriate academic challenge. Gifted students appear to place high value upon being invited into intellectual communities, more than receiving information-transmission types of orientation (e.g., Hébert & McBee, 2007).

Non-program-affiliated gifted undergraduates

Early entrance or honours participants have garnered the most research attention regarding gifted students’ post-matriculation transition experiences. Robinson (1997) noted that gifted students who follow more conventional college-entry paths almost disappear from the literature, perhaps due to assumptions that university systems are inherently well equipped to meet their learning needs. Only a small collection of studies offer insight into the experiences of non-program-affiliated gifted students as they enter university. When gifted college students are not grouped academically with like-ability learners, factors that have seemed helpful in offsetting boredom and disengagement are opportunities to be mentored by faculty members and/or to be
connected with supportive peer groups. This has been asserted in the particular cases of gifted African-American students (Bonner, 2001; Freeman, 1999; Fries-Britt, 1998, 1999; Maton, Hrabowski, & Schmitt, 2000), socioeconomically disadvantaged students (Hicks & Ranis, 2001), and first-generation female students (Neumeister & Rinker, 2006); and for gifted students more generally by Hammond et al. (2007) and Willings (1985a, 1985b).

Summary

As higher education has become accessible to more diverse student populations, institutions have become very motivated to increase retention by enhancing students’ post-matriculation transition experiences. Although ‘inputs’ into the college system (student background variables) are still assumed to influence adjustment, interactional theories such as Astin’s (1993) and Tinto’s (1993) articulated factors within college environments that encourage persistence. Post-matriculation interventions to assist students’ integration have been implemented and studied widely, with growing attention to tailoring support for specific sub-groups – as with early entrance and honours programs, which often are designed for and/or populated by gifted learners. Next, I will explain how theorists and educators interested in preparing students for college have applied understandings of what assists matriculated students to adjust, to developing models and practices related to pre-matriculation transition processes.

Theory and Practices Related to Pre-Matriculation Transition Processes

Adjusting successfully to college academic and social milieus post-matriculation is characterized in the literature as one major phase of transition; correspondingly, pre-matriculation preparation for these milieus is regarded as the other key phase. It is assumed implicitly in much of this literature that college academic and social structures are fairly static, that college-bound students simply need to learn how things ‘are’ at college so they can orient themselves toward fitting in. Theories and practices around pre-matriculation transition experiences thus are embedded contextually within those concerning post-matriculation: Many of the former, especially those pertaining to college
“readiness” (Conley, 2008, p. 24), are derivative of the latter. Attinasi’s (1989) model of transition, in which he outlines pre-matriculation phases (“getting ready”) that lead toward post-matriculation phases (“getting in”), provides a good example. Following an overview of this theory, I survey the literature on pre-matriculation transition support practices and its relevance for gifted college-bound students.

**“Getting in” and “getting ready”**

Attinasi’s (1989) theorizing of transition was based on qualitative research with one group of Mexican-American students; however, his interpretive categories of their “getting in” (post-matriculation) and “getting ready” (pre-matriculation) experiences have framed subsequent studies both with Latino participants (e.g., Hurtado & Carter, 1997) and broader student populations (e.g., Renn & Arnold, 2003). A key difference between this theory and interactionalist theories of transition is that, whereas the latter were driven by institutional data, Attinasi’s work was grounded in student narratives. He viewed students’ pre-college circumstances not as direct ‘inputs’ into college systems, but rather as factors that influence students’ access to “getting ready” experiences that in turn shape their beliefs, goals, and behaviours around college attendance. Thus, Attinasi theorized a pre-matriculation dimension to transition that is largely absent from the interactionalist models.

In developing the construct of “getting in,” Attinasi (1989) used Tinto’s (1987) model as a theoretical starting point; however, he argued that Tinto’s concept of social integration insufficiently explained why students’ interactions with others in the college environment are so important. According to Attinasi (1989), interaction is important not so much to assimilate students to “values and orientations” of the college, but more to help them develop their own “strategies for negotiating the physical, social, and cognitive academic geographies” (p. 277) of the college environment. He termed the process of developing such functional strategies “cognitive mapping” (p. 268).

Attinasi’s (1989) participants described the physical space, social fabric, and academic structures of college as “big”; in response, they devised ways of “getting to know” and “scaling down” the environment (p. 262). “Getting to know” meant increasing familiarity with the college setting, by (a) seeking out “mentoring” interactions with
experienced students who served as “guides or interpreters” and/or (b) engaging in “peer knowledge sharing,” described as “cooperative exploring of the geographies” with “fellow newcomers” (p. 263). “Scaling down” involved students reducing the “geography” they had to get to know, by identifying or creating smaller “circle[s]” to move in, within the larger setting (p. 264). A key “scaling down” activity was declaring an academic major, which “meant that the physical environment was circumscribed, the curriculum was bracketed, an important element of one’s self-identity vis-à-vis the campus community was created, and a cynosure for social activities was realized” (p. 264). It seemed easier for students who knew what they were “majoring in” (p. 268) to engage in activities that helped them form cognitive maps.

Attinasi (1989) constructed five categories of pre-matriculation experiences involved in “getting ready” for college. “Initial expectation engendering” (p. 256) involved early experiences that led to strong self-perceptions as future college students, with parental influence playing a key role. Students who were repeatedly told they would attend college internalized this belief, and then further experiences provided specific “descriptions, prescriptions, and predictions about college-going” (p. 257, emphasis in original). Through “fraternal modeling” (p. 257), students learned about college-going behaviours of siblings or other relatives and formed impressions about what they themselves would – or would not – do as college students. “Mentor modeling” (p. 258) occurred with high school teachers, who talked about their own college experiences and informed students about college systems and structures. Teachers were also catalysts to “indirect simulation” (p. 258) experiences, whether formal – such as students taking college-prep classes – or informal, such as teachers offering advice about how to survive at college.

The final category, “direct simulation,” referred to “actual participation” (Attinasi, 1989, p. 259) on college campuses, which varied in nature and intensity. In “incidental visiting” (p. 260), such as going to sports games, students used campus resources in ways not related to their own college-going. “Related visiting” included “tourist” activities with some connection to the student’s own college plans, such as taking a campus tour, or “visitor” activities such as staying overnight in a residence hall (p. 260). “Attending” (p. 260) activities were those where students participated in on-campus activities over longer time periods, such as going to summer camps or taking college courses.
Activities at the far end of this continuum evoked a sense of “blurring the boundary between simulation and the true experience” (pp. 260-261) of college-going.

A critical distinction between direct simulation and the other getting ready activities is that it generated “internally prompted” expectations about college – formed through students’ own experiences rather than being “externally prompted” by parents, siblings, or teachers (Attinasi, 1989, p. 261). Still, students’ evaluations of direct simulations built on their experiences of engendering expectations, fraternal or mentor modeling, and indirect simulation. Students’ positive valuations of such experiences made it more likely that they would participate in direct simulation activities, whereas “negative exampling” (p. 258) in earlier encounters with people about college-going could cause them to opt out of the getting ready process by this point.

This theory offers insight into the cumulative nature of students’ pre-matriculation experiences. Students’ personal circumstances affect their access to getting ready activities, by determining exposure to influential “significant others” (Haller & Woelfel, as cited in Attinasi, 1989, p. 266) and to “anticipatory socialization” processes of identifying with an “aspired to group” of college graduates (p. 266, emphasis in original). Societally disadvantaged youth might never be encouraged to attend college; even if they are, they might lack fraternal or mentor models, or encounter barriers of access to indirect or direct simulation experiences, or feel torn between taking such opportunities and remaining loyal to non-academic communities. These difficulties may arise despite a student’s high academic ability (Contreras, 2011; Ford, Baytops, & Harmon, 1997; Gándara, 2006). Similarly, students who exhibit learning difficulties may be screened out of college-prep programs, while high achievers or gifted students may be counseled into college-bound paths from a young age (Parsons, as cited in Attinasi, 1989, p. 266) and have high expectations placed upon them by parents and teachers.

**Illustrations of pre-matriculation transition support in practice**

Attinasi’s (1989) way of theorizing transition assumed that students’ getting in strategies build upon their getting ready experiences. Especially in the late pre-collegiate phase, he suggested, students’ college-related experiences strongly influence their preparedness to negotiate physical, social, academic, and intellectual aspects of college
settings. Many practices designed to enhance college readiness reflect similar assumptions. Two broad categories encompass most of the organized programs that intervene in students’ pre-collegiate experiences with the ultimate goal of enhancing post-matriculation adjustment: credit-based transition programs and bridge programs. In addition, some types of pre-matriculation support are less formally organized and more individually tailored, such as campus visits, academic and career advising, and mentoring arrangements. I will discuss the relevance of each type of support to gifted learners following its general overview.

Credit-based transition programs

Credit-based transition programs include any college preparation models in which students earn college credits concurrently with completing high school courses (Karp & Hughes, 2008; Plucker, Chien, & Zaman, 2006); key examples are Advanced Placement, International Baccalaureate, and Concurrent or Dual Enrollment Programs. The growing accessibility of such programs in North America reflects a push in the US toward a K-16 education model that aims to streamline transitions from primary to secondary to college systems (Kirst & Venezia, 2004; Venezia, 2003). Although credit-based transition programs were not designed specifically for gifted learners, many participate due to the accelerated and/or enriched curricula they often offer.

Advanced Placement

Advanced Placement (AP) courses aim to enhance college readiness by exposing students to college-level curricula, foundational knowledge, and study strategies (College Board, 2012). A large body of research – most of it produced by the College Board itself, however – suggests that AP students adjust better academically at college than non-AP peers, on institutional measures such as college GPA, timely graduation, completion of double majors, and graduate school acceptance (Keng & Dodd, 2008; Mattern, Shaw, & Xiong, 2009; Scott, Tolson, & Li, 2010). Many gifted learners likely are subsumed in these samples, and research also has linked AP participation to college success for gifted students specifically (Barnett, Albert, & Brody, 2005; Benbow & Lubinski, 1994; Lee et al., 2008; Zimmerman & Brody, 1986).
AP involves indirect simulation and possibly mentor modeling, but not direct simulation, since students do not participate in campus communities. Several studies (Bleske-Rechek, Lubinski, & Benbow, 2004; Hertberg-Davis & Callahan, 2008; Hertberg-Davis, Callahan, & Kyburg, 2006; Vanderbrook, 2005) have suggested that gifted learners regard challenging and fast-paced AP classes as good practice for college work, though doubts have been raised about AP’s providing the differentiated levels of challenge that gifted learners need (Gallagher, 2009). High stress levels observed among gifted AP students (Foust, Hertberg-Davis, & Callahan, 2009; Smith, 2009) could be seen as simulating academic stress they might experience at college.

**International Baccalaureate**

The two-year International Baccalaureate (IB) diploma program includes core coursework, an epistemology seminar, a supervised research essay, and a social service component (International Baccalaureate Organization [IBO], 2012). Depending on their IB scores, diploma holders may enter university with a full year of credit granted. IB participation has been linked to smooth academic transitions into university (Culcross & Tarver, 2011), observed in higher college GPA’s than non-IB students (Panich, 2001), strong college persistence (Duevel, 1999), and students describing IB as having positively influenced their post-secondary paths (Coco et al., 2012; Sacko, 1998; Smith, 2009). Sjogren and Vermey (1986) observed IB graduates at university to show confidence with advanced work, ability to engage intellectually with upper-level peers, and sophisticated understanding of how to learn.

Gifted IB students have reported feeling well prepared for university (Foust et al., 2009; Hertberg-Davis et al., 2006; Hertberg-Davis & Callahan, 2008; Taylor & Porath, 2006; Vanderbrook, 2005). IB’s emphasis on independent research, challenging debate, social contributions (Harper, 2003), and intellectual culture (Poelzer & Feldhusen, 1997; Tookey, 1999), and its cohort model (Foust et al., 2009; Kyburg, Hertberg-Davis, & Callahan, 2007), have been seen as ideal for gifted students who thrive in intellectually-based social networks. Such networks, and supportive teachers, can assist gifted students to cope with stress arising from IB’s academic rigour (Shaunessy & Suldo, 2010; Suldo, Shaunessy, Michalowski, & Shaffer, 2008; Wilkinson & Hayden, 2010). As
indirect simulation, IB may approximate academic, intellectual, and social milieus that
gifted students could experience in specialized programs at college, such as honours.

**Concurrent or Dual Enrollment Programs**

Typically, Concurrent Enrollment Programs (CEP’s) involve taking high school
and college courses at the same time, whereas Dual Enrollment (DE) means earning
high school and college credit for the same coursework, though these terms often are
conflated. Participants may be in high school classrooms with secondary teachers, or on
college campuses with college instructors (Wright & Bogotch, 2006). Examples include
Syracuse University’s Project Advance (“Syracuse University Project Advance [SUPA],”
2006), and Washington State’s Running Start and City University of New York’s College
Now programs (as described by Contreras, 2011). Research concerning the impact of
DE or CEP participation on transition is limited (Bailey & Karp, 2003); however, it
appears that CEP participants may perform slightly better academically at college
(Spurling & Gabriner, 2002) and be more likely to graduate on time (Bailey, Hughes, &
Karp, 2002) than non-CEP peers, and DE students have been found more likely than
comparison groups to persist to degree completion (Delicath, 1999).

I found no studies that investigated transition-related experiences of gifted
students in CEP’s or DE’s. However, it has been suggested anecdotally that while such
programs may assist gifted students in planning for future study (Cox & Daniel, 1985),
they do not address the concern that gifted learners may find introductory college
courses under-challenging (Feldhusen, 1983). CEP’s and DE’s could be seen as
providing indirect simulation of what gifted students’ experiences might be like in general
first year college programs, rather than specialized early entrance or honours programs.

**Bridge programs**

Bridge programs try to mitigate gaps between students’ pre-matriculation levels
of college readiness and the actual skills and knowledge they are anticipated to need for
post-matriculation success. A common model has students participating in on-campus
activities, often staying in residence, during the summer between high school and
college. Content may include information about college services; skills development
such as library use, study techniques, or college writing; and/or previews of freshman
courses (e.g., Walpole et al., 2008; Wathington et al., 2011). Social networking with peers and university staff, students, and faculty are emphasized, especially when programs target particular socioeconomic or cultural groups (e.g., Beer, LeBlanc, & Miller, 2008; Santa Rita & Bacote, 1996; Strayhorn, 2011). Studies have reported that summer bridge participants show more positive anticipations of college (Hicks, 2005); greater capacity for college academic and social integration (Shere, 1993; Simmons, 1994); and stronger college persistence (measured post-matriculation) compared to non-participants from similar backgrounds (Ackermann, 1991; Walpole et al., 2008).

Some bridge programs intervene earlier in students’ high school careers, often connecting societally disadvantaged students with supportive peer networks and mentors; Contreras (2011) reviewed research on American programs in this vein, describing positive effects on participants’ college adjustment and persistence. Longer-term bridge programs have been reported to improve students’ understanding of academic, social, economic, and environmental aspects of transition (Farrell & Farrell, 2000) and to have positive effects on college GPA, persistence, and overall adjustment (Buchanan, 1993). In Attinasi’s (1989) terms, bridge programs promote anticipatory socialization and involve direct simulation; students do things that college students do, and encounter people that college students interact with, within actual college settings.

**Gifted learners in bridge programs**

Bridge programs specifically designed for gifted learners often are accessed through talent searches in the US (Lee et al., 2008). Common features include gifted adolescents convening on campus to do university coursework or explore advanced topics, often at an accelerated pace, guided by professors and sometimes college student leaders (Stocking, 1998; e.g., University of Connecticut, 1998). Many programs are residential, which can provide deeper immersion in campus life, more sustained contact with college people, and stronger social relationships with peers. Programs might take place during summer or be incorporated into the school year. In Canada, examples include summer programs at the Universities of Calgary and Toronto (“Talent Search,” 2008), as well as the Shad Valley Experience, hosted by a different university each year (Martin & Close, 1999), and the Mini-Course Enrichment Program, initiated jointly by the University of Ottawa and Carleton University (Leroux & DeFazio, 1990).
Positive college readiness indicators associated with gifted learners’ participation in bridge programs have been well-documented (Brody & Mills, 2005; Lee et al., 2008; Olszewski-Kubilius, 1998). Participants have reported increased sense of control over their futures, appreciation for pursuing academic passions with like-ability peers (Leroux & DeFazio, 1990) with whom they often stay connected through their university years (Martin & Close, 1999), and enjoyment of interactions with professors (Little, Kearney, & Britner, 2010). Being intellectually, socially, and physically immersed in campus culture seems to improve gifted students’ academic (Little et al., 2010), social (Rinn, 2006) and/or emotional (Cunningham & Rinn, 2007) self-concepts related to college-going and to establish positive, long-lasting attachments to university communities (Enersen, 1993).

Direct simulation experiences such as these serve a dual purpose. First, they support gifted students to experience academic and social success in college settings, through engaging in appropriately challenging university-level intellectual work and developing stimulating relationships with high ability peers and professors. Second, they have “public relations” potential to “attract future university clients. By enhancing the knowledge and ability levels of younger students prior to undergraduate years, both professors and students can benefit when participants begin their full-time university work” (Leroux, 1990, p. 168). Such programs reflect positively on host institutions and help participants feel comfortable on college campuses.

**Individualized supports**

If students are not involved in organized college readiness programs, they still may experience more informal pre-matriculation interventions, often arising from individualized counseling or in response to stated or observed needs of small groups of students. Common forms of individualized support for pre-matriculated students that are often discussed in transition literature are campus visits, academic and career advising, and mentoring arrangements.

**Campus visits**

One widespread practice is to help students arrange visits to several campuses to determine which offer good “institutional fit” (Tinto, 1993, p. 50). Campus visits may
represent students’ first encounter with the physical space of a college and first interaction with staff and faculty. They constitute related visiting, in Attinasi’s (1989) terms, as they assist students with making decisions regarding their own college-going plans. Ideally, during a visit, students envision their potential roles as members of college communities and meet people who can guide their entry and progress; and afterwards, they evaluate what they have learned and determine how closely the college’s offerings seem to match with their own needs and aspirations for college study.

Campus visits may be more important to pre-matriculation decision-making than other types of information-gathering experiences, such as college advisors coming to high schools to talk with prospective students (e.g., Mochnaz, 1996), or recruiters mailing them promotional materials. Reporting on the Carnegie Foundation’s *Survey of the Transition from High School to College* (1985), Boyer (1987) stated that 40 percent of 1000 American high school seniors surveyed thought that college brochures do not “tell you what is really important about college” and even “doubted the accuracy of the publications” (p. 15). Over half of the respondents felt they did not have “enough facts to make an informed decision about where to apply for admission,” and over two thirds wanted “more information about academic programs, student activities, faculty strengths and weaknesses, and living accommodations” (p. 20). Reynolds and Cain (2006) noted that this survey continues to be cited widely to emphasize the importance of campus visits, which Boyer (1987) advocated as a key strategy to help students gain more comprehensive impressions of campuses’ physical, academic, and social character.

Campus visits can be especially critical for gifted students, if they need specialized programs, must decide among many institutions trying to recruit them, or experience pressure from others as to post-secondary plans (Emmett & Minor, 1993; Greene, 2006). High achievers, who often are interviewed for competitive programs or scholarships during campus visits, need help to develop clear articulations of their goals and strengths and to craft effective questions for ascertaining student-university fit (Berger, 1998; Greene, 2003). As well, these students can benefit from individually tailored tours, since typical group tours may under-emphasize aspects of intellectual community in favour of showing students the fun they will have at college (Boyer, 1987). Filter (2010) found that for academically talented students, a positive campus visit experience was the single greatest predictor of enrollment in their first-choice college.
**Academic and career advising**

Individualized academic and career advising often illustrate what Attinasi (1989) called mentor modeling. Counselors or teachers may share their own college-going stories and offer advice, helping students to shape ideas of what to expect at college and how to cope with potential challenges (Alexitch, Kobussen, & Stookey, 2004; Zuker, 1997). Counselors can also facilitate group workshops that address students’ questions or concerns about college (e.g., Collins, 2010). Long-term career planning also should be part of students’ college preparation, to help determine which courses and programs they should take (Bortolussi, 2006).

Counseling to help students map out college studies through to eventual career plans often needs to be differentiated for gifted students (Maxwell, 2007; Moon et al., 1997; Yoo & Moon, 2006). They may need early advising interventions to ensure they take the right prerequisites for specialized college course sequences and to help them build strong scholarship portfolios (Chaika, 1989). They may need assistance deciding among multiple talent areas (Hellerman, 1994; Higgins & Boone, 2003; Rysiew, Shore, & Leeb, 1999); Reilly (2009) explains how these decisions may involve more than students deciding which subjects they like better, but rather choosing among competing options of pursuing talents, addressing societal needs, and/or achieving goals. Gifted students may have esoteric interests that do not match conventional university programs or career paths; academic communities where they might fit in well may be so eclectic that they are not immediately discovered in typical post-secondary planning exercises (Berger, 1998). Gifted students are purported to need help to develop purposeful yet flexible long-term perspectives, which incorporate strengths and mitigate stressors as much as possible (Wood & Gavin, 2009). Unfortunately, though, Wood (2010) stated that pre-matriculated gifted students often do not receive the kinds of counseling support that are advocated as best practices.

**Mentoring arrangements**

Especially for students from at-risk groups, mentoring can be a powerful form of pre-matriculation transition support, helping them to develop educational aspirations and envision themselves in college settings (e.g., Subotnik, Edmiston, Cook, & Ross, 2010; Wai-Ling Packard & Nguyen, 2003). Mowrer-Popiel (1993) recommended engaging
successful college students to be mentors on topics such as career options, university procedures, student life, college support services, library orientation, study skills, time management, and common freshman challenges. Mentoring arrangements also can raise awareness of, and/or simulate, similar types of supportive relationships that students might access post-matriculation, given institutions’ increasing interest in mentoring’s potential to improve college success and adjustment (Crisp & Cruz, 2009; Jacobi, 1991; Johnson, 2006; e.g., Mangold, Bean, Adams, Schwab, & Lynch, 2003).

For gifted students, mentoring by college professors can provide access to university intellectual networks and help students narrow down the range of post-secondary academic possibilities. Percy (1990) and Marshall (2005) described participants’ enthusiasm for university-level research in a University of Toronto initiative that matched them with professors. Grybek (1997) noted that gifted students developed sustained attachments to mentors and their academic fields during campus-based mentoring experiences. Special attention has been paid to mentoring talented students from disadvantaged backgrounds (e.g., Contreras, 2011; Hicks & Ranis, 2001; Houston, 2000) and also to connecting gifted girls with intellectual role models (e.g., Reilly & Welch, 1994; Reis & Graham, 2005) who can help them overcome societal barriers to fulfilling their academic potential (Jensen & Hovey, 1982; Reis, 1995, 1999, 2001).

Peterson (2000a) initiated informal mentoring of pre-matriculated gifted students by post-matriculated gifted peers, by inviting university students to discuss transition with secondary students in small-group settings. The university students reflected on how they were handling challenges in transition to college, which encouraged the high school students to explore their own expectations and anxieties. Both groups welcomed the chance to discuss openly the social and emotional, as well as academic, concerns they faced. Peterson saw this experience as having potential to reduce “culture shock” (p. 38) for the secondary students once they matriculated.

Summary

Working backward from models and practices that explain and illustrate post-matriculation transition experiences, researchers and educators also have explored students’ pre-matriculation experiences and designed interventions to enhance their college readiness. Attinasi’s (1989) conceptualization of getting ready for, before getting
in to, college provides a theoretical perspective; credit-based transition programs, bridge programs, and individualized supports such as campus visits, academic and career advising, or mentoring arrangements provide practice-based illustrations. In all these types of practices, specific attention has been paid to gifted learners. Thus, many forms of support are available to pre-matriculated students, including gifted learners, to assist them with getting ready to be college-goers. However, there is an underlying narrative in the literature that implies that despite these supportive efforts, many students are going to college inadequately prepared for what will happen there, and that serious problems may await them as a result. In the next section, I explore an emerging alternative, more student-empowering, view of student ‘crises’ of transition.

**Blurring the Pre-/Post-Matriculation Divide**

The emphasis in transition support models on ways that university and high school environments differ, and attendant challenges, may itself contribute to students anticipating university with anxiety (e.g., Gibney, Moore, Murphy, & O’Sullivan, 2011). Nearly half of Peterson, Duncan, and Canady’s (2009) 48 gifted high school participants, for example, reported college-related decisions and application processes as among the most stressful life events of their school years. Bonfiglio (2006) expressed concern that anxiety is “prevalent in the messages communicated to … students as they embark on their collegiate career” and suggested that “institutions must guard against perpetuating the notion that the collegiate experience is ridden with anxiety” (p. 27). A small but growing literature counterpoints this notion by focusing on students’ agency during transition, as they identify not just what is new or daunting about university but also where there are commonalities with high school – places where newcomers can gain footholds and enact strategies to manage changes in practice and shifts in self-perceptions. Most of the literature in this vein pertains to matriculated students, but still it provides a window into alternate views of transition, to counterbalance deficit models that emphasize students’ difficulties rather than their productive capacities. As well, these studies invite consideration of ways to encourage the agency of pre-matriculated students as a means of supporting them during transition.
For example, Palmer, O’Kane, and Owens (2009) found a feeling of “not belonging” (p. 37) to be common in students’ reports of early college experiences; however, rather than presenting this feeling negatively, they characterized it as a productive “betwixt space” in which students engaged with “continuities” as well as “discontinuities” among familiar and unfamiliar environments, through a series of “turning point” experiences (p. 37). Here, ‘crises’ were interpreted as positive opportunities to “make meaningful connections with university life” (p. 37) rather than as paralyzing problems. Smith, Carmack, and Titsworth (2006) emphasized first year participants’ desire to strive independently toward “(re)defining their sense of self” (p. 83), which balanced their need for support from others as they “navigate[d] issues of identity, uncertainty, and change” (p. 83) during transition. These participants recognized, and embraced, the need to work hard to develop their identities as college students. Gourlay (2009) described how engaging freshmen in “threshold practices” – helping them refine their practice of familiar academic activities, like writing, in the context of university scholarship – enabled a “reinforced sense of identity as a student” (p. 181; see also Krause, 2001). Such approaches emphasize that new students are capable, already knowing how to do many things that facilitate participation within university communities, and that they can experience identity change as a definitive, and ultimately positive, even exciting, element of transition.

Other researchers have taken similar approaches with participants from specific student populations. O’Shea’s (2011) mature female first-generation university participants engaged in analyses of their own “identity work” (p. 61) as freshmen; these women dealt with their difference from other freshmen by identifying with a diaspora of students similar to themselves in other universities in order to establish their legitimacy as learners. Orbe (2004), similarly, focused not on first-generation students’ extra difficulties in transition, but on their extraordinary skills in negotiating multiple identity dimensions simultaneously. Olenchak and Hébert (2002) and Neumeister and Rinker (2006) have explored the layered identity work enacted by first-generation students who are also identified as gifted. More indirectly, research with gifted early entrants showed that their transitions into university involved beginning to let go of high school identities and see themselves as university students (Noble et al., 1998, Noble & Drummond, 1992; Noble, Vaughan, & Chan, 2007).
There is little to indicate empirical exploration of pre-matriculated students’ agency in their own transition processes. Some studies that have focused on first year college students, do, however, have implied relevance for pre-matriculated students. Pancer, Hunsberger, Pratt, and Alisat (2000) observed that Canadian freshmen who held more complex expectations about university (defined as more integrative ways of conceptualizing academic and social aspects of college life) seemed to handle stressful circumstances at college more easily than students with simplistic expectations. This suggests that pre-matriculated students can synthesize information they receive and seek about university in ways that help them to experience transition positively. Wintre et al. (2008), also in Canada, reported greater consistency between pre-college expectations and college experiences when students perceived a stronger “student-university match” (p. 745). This implies that students can act strategically to locate, or even construct, overlaps among their own skills and interests and the practices that define university communities they choose to enter. When Keup (2008) focused not on college grades as a measure of academic adjustment, but instead on exposure to new people and ideas, pursuit of relevant coursework, and progress toward individual goals, her freshmen interviewees all felt that their pre-college expectations had been met or exceeded. It could be extrapolated from these results that shifting the emphasis in pre-matriculation support – from preparing students to achieve high grades in college to helping them decide what they want to happen for them at college – could increase their agency in constructing positive transition experiences. Clark (2005) also described how her participants “devised strategies” (p. 296) to deal with a range of challenges they encountered as freshmen; Collins (2010) has advocated for helping high school students to develop such self-support strategies proactively.

Analyses such as these position students in transition as empowered, thoughtful, intentional participants in a process of learning and change, even if they may not always ‘succeed’ at university, according to typical quantitative measures of adjustment such as college GPA. In this view, students can – and do – influence transition processes through how they choose to engage with them, similar to the way Attinasi (1989) interpreted his participants as active strategists during their “getting in” to college. As Crafter and Maunder (2012) have suggested, “Learners need to be given the chance to actively participate in their transition experience, and make their own meaning” (p. 17).
Research that positions pre-matriculated students as active participants in transition, however, is scarce. Karp, Holmstrom, and Gray’s (1998) study provides a unique example. They described a period of “liminality” (p. 253) as their high school participants anticipated college, during which they observed these students to work through deciding which aspects of their current identities they wished to affirm at college, imagining new dimensions to their identities, and considering whether they might experience identity shifts at college that they could not yet anticipate.

In relation to gifted college-bound high school students, research in this vein is virtually non-existent. There have been some investigations of factors that influence highly able students’ decisions about which college to attend (e.g., Douglas & Powers, 1985; Kerr & Colangelo, 1988; Wilson & Adelson, 2012), and Peterson (2000a) engaged gifted secondary students in expressing some of the hopes and concerns they felt about going to college. However, no studies to my knowledge have invited gifted high school students to participate in activities that involve exploring their identities in relation to transition into university and/or solicited their own reflections on such experiences. Yet, such opportunities have potential to address the problem noted by Scanlon, Rowling, and Weber (2007), that students’ ability to recover from changes to their previous sense of self during transition can be hampered if they enter university with “only naive ‘knowledge about,’” rather than contextualised ‘knowledge of,’ the new learning context” (p. 223) and, I would add, of their own possible identities within the new context. In the next section, I explain the current study’s sociocultural theoretical framework, which I chose because it opens up a conceptual space in which boundaries between pre- and post-matriculation experiences can be blurred deliberately, in order to facilitate opportunities to view students as doing identity work related to transition, within actual university communities.

**Theoretical Framework of the Current Study**

In the current study, I involved high school students within campus communities in ways that are more usually available to matriculated students, so they could participate directly in activities and relationships that would help them to experience, in immediate ways, what they could do and become as university students. Attinasi’s
(1989) description of transition-related activities that “blurred the boundary between simulation and … true experience” (p. 260) hinted at productive spaces in which processes of preparing for college and actually doing college overlap. Sociocultural theories of learning and identity offer a useful framework for interpretively exploring students’ transition-related identity shifts within such spaces. Following an overview of this theoretical view, I will explain its relevance for the current study.

Contemporary sociocultural theory posits that learning occurs through participatory engagement within communities of practice. Participation is a complex phenomenon that “involves the whole person acting and knowing, doing and theorizing” (Tsui, Lopez-Real, & Edwards, 2009, p. 36) in relation with others, such that individuals and communities are engaged in continual processes of identity development and change. Rogoff (1995; 2003) and Wenger (1998; 2003; 2008) are community of practice theorists whose conceptual groundwork influenced this study; Holland, Lachicotte, Skinner, and Cain (1998) also informed my sociocultural understanding of identity. Specific applications of sociocultural theory to educational transitions specifically (e.g., Hasrati, 2005; Kasworm, 2010; Northedge, 2002; Tobbell, O’Donnell, & Zammit, 2010; Tsui, Edwards, & Lopez-Real, 2009) and/or to adolescents’ identity change during transitional periods (e.g., Hall, 2008; Karp et al., 1998) also contributed to my conceptual perspective. The following are the main elements of sociocultural understanding of learning and identity as articulated and practiced by these authors.

**Communities of practice**

A community of practice is a social group whose shared “values, understanding, history, and practices” (Rogoff, 2003, p. 80) constitute its culture. Communities of practice have three defining features, according to Wenger (1998): (1) interactive collaboration among members; (2) joint enterprises or purposes for practice; and (3) recognizable repertoires of “routines, words, tools, ways of doing things, stories, gestures, symbols, genres, actions or concepts” (p. 83). Communities of practice thus develop around the shared activities of a group of people who work in close contact (though not necessarily close physical proximity) to accomplish mutually agreed upon goals.
Early theorizing of the community of practice concept (Lave & Wenger, 1991) focused on work-related apprenticeship; however, Wenger’s later writing (1998, 2003, 2008) articulated more broadly the ways that people learn in relation to their simultaneous participation in multiple communities, some more practice-oriented than others. Rogoff (1995, 2003) explored the idea of communities of practice in terms of the ways children learn to do things and relate to others within the contexts of particular cultural groups. In education, community of practice theory has been used as a framework for exploring ways that students gain access to, participate within, and move between communities that are focused on goals and practices to do with academic learning but also constitute social worlds (Crafter & Maunder, 2012). In this sense, a student entering university, for example, is introduced to “specialist discourse communities” (Northedge, 2002, p. 252) of scholarly practice and also to modes of doing and being that characterize social communities such as first year students, or students who live in Residence, or students who join particular clubs or share extracurricular interests. Both are embedded within the larger community of a university itself, which is defined by broadly academic enterprises and practices.

**Participation**

Community membership is defined by participation – in activities but also in relationships, especially among less and more experienced persons. Rogoff (1995) delineated three mutually constituting planes of participation: personal (apprenticeship); interpersonal (guided participation); and community (participatory appropriation). Apprenticeship emphasizes novices’ individual experimentation with new skills. In guided participation, newcomers engage in “culturally valued activities” (p. 142) together with mentors; it includes “deliberate attempts to instruct as well as comments or actions that are overheard or seen as well as involvement with particular materials and experiences that are available” (p. 147). In scholarly communities of practice, faculty-student supervisory relationships exemplify this process, as students learn, through working closely with professors, to do research, engage intellectually, and build connections within both local environments and broader discourse communities in their fields (e.g., Hasrati, 2005). Participatory appropriation describes the ongoing collaborative work of the whole community, as it continually revises its enterprises and ways of working toward its goals. As newcomers observe and question a community’s goals and
activities, experienced members evaluate and transform their practices in response; developing learners thus contribute to a community’s evolving identity. In the example of academic supervision, a field’s growth depends not on transmission of information and skills from professors to students but on dynamic interchange, as together they refine practices and expand resources.

**Boundary exchanges**

People participate simultaneously in multiple communities, and thus there is always potential for the practices and relationships that define membership in one community to come into contact or overlap with those of other communities. Within overlapping boundary areas of communities, members of each can share resources and engage in activities and relationships in exploratory ways. Such inter-community encounters range along a continuum in terms of duration and intensity. Less intense exchanges include one-time interactions or short-term exposure to practices or resources, such as a high school student meeting a university professor or attending a lecture series on a college campus. Deeper connections develop when members of different communities enact “boundary practices” (Wong & Edwards, 2009, p. 133), which are means of sharing tools and resources developed through sustained collaborations. For example, high school students work with professors in a university science lab on a regular basis, and together they develop strategies for connecting the student’s prior science knowledge with activities in the professor’s lab.

Boundary practices adopt “boundary objects” as focal points, defined as “artifacts, discourses and processes around which interconnections between communities … can be organized” (Tsui, Lopez-Real, & Edwards, 2009, p. 38). Ideally, “boundary brokers,” or “spanners” – people who have insider access to each of the communities involved, facilitate the collaborative use of boundary objects by “obtaining and distributing information strategically, seeing problems in new ways, crafting solutions and developing and supporting the skills of others”; desirable attributes of effective brokers or spanners include “diplomacy, tact, tolerance, approachability, reliability, commitment, openness, sincerity and honesty” (Wong & Edwards, 2009, pp. 134-135). Participatory interaction within overlapping boundary areas of communities is the means
by which newcomers gain authentic access to practices and relationships, and it is also the source for the growth of communities themselves.

**Legitimacy and legitimation**

Lave and Wenger (1991) coined the term “legitimate peripheral participation” (p. 29) to describe how newcomers to a community are granted access to resources, permitted to perform tasks, and included in conversations at a novice level, with their actual and potential contributions seen as useful and valued by community members. Wenger (1998) later developed this concept into the idea of “generational encounter[s]” (p. 101) in order to emphasize that interactions among newcomers and experts are catalysts to the growth of communities as well as individuals. Tsui, Edwards, and Lopez-Real (2009) interpreted the idea of legitimacy to illustrate a difference between peripherality and marginality. Peripherality is inclusive; it implies that full membership in the community can follow if the newcomer so desires, that community members legitimize the presence of the new entrant and are prepared to support and guide her toward full participation. Marginality is exclusionary, inhibiting eventual full participation regardless of the wishes or intentions of the newcomer. Further, Tsui (2009) suggested that the “other-oriented” concept of legitimacy is intertwined with the idea of “legitimation of access to practice … which is self-oriented” (p. 153, emphases in original). Dialectically, newcomers require legitimacy granted by established members of a community in order to gain access to authentic opportunities to engage in practice, and in turn, through authentic participatory experiences, they may be motivated to legitimate their capacity for continued participation.

**Learning**

For sociocultural theorists, participation not merely facilitates, but actually constitutes learning. Learning thus varies in intensity and purpose relative to participation in community practices, as illustrated by Wenger’s (1998) five types of “learning trajectories”:

- **Peripheral trajectories** provide access with the possibility of, but no demand for, eventual full participation.
- **Inbound trajectories** place newcomers on paths to becoming full participants.
• **Insider trajectories** allow established members to refine and expand practices.
• **Outbound trajectories** lead members outward and toward other communities.
• **Boundary trajectories** enable individuals to span boundaries and link communities of practice.

(as summarized in Edwards & Tsui, 2009, p. 50)

Individuals are on multiple learning trajectories at any given time. During transition into university, for example, students are on insider trajectories within familiar learning communities and outbound paths toward unfamiliar ones, and possibly on peripheral, boundary, or inbound trajectories as well. Communities’ growth depends upon the intersection of learning trajectories among expert and new members; the most dynamic, healthy communities, according to Wenger (2003), have a strong core of expertise but also encourage activity at the boundaries, where new resources are encountered and new members are invited to contribute.

As I will discuss further below, Wenger (2008) alluded to the power dynamics at work in the definition and interplay of individuals’ learning trajectories. Clearly, for example, insider and boundary trajectories imply a level of flexibility and mobility in the practices and relationships of established community members that may not be equally available to newcomers on peripheral or inbound trajectories. Individual agency is also open to question, here; for instance, established members may perceive and/or treat newcomers as being on peripheral trajectories and not yet committed to the community, while the same newcomers may view themselves as being on inbound trajectories and/or having contributions to make based on their prior experiences in other communities. The way one defines one’s own learning path relative to various communities may not align with the way others define it.

Tsui, Lopez-Real, and Edwards emphasize the importance of “reification” (2009, p. 37) in learning processes; according to these authors, reification entails reflecting on routines, tools, and resources one has been exposed to; integrating these with one’s prior repertoires; and refining one’s participation accordingly. Reification implies metacognitive awareness about ways one’s understandings have changed through a learning process, but with a specifically relational criterion: In addition to “some artifacts … [being] in place … the right kind of people need to be at the right place and in the right kind of relationship to make something happen” (Wong & Edwards, 2009, p. 146).
Learning involves gaining competence with artifacts – tools, methods, discourses, texts, and unwritten codes of practice – through engaging in relationships with others. Thus, learning is a relational, mutually constitutive process of participation. Individuals and communities are engaged in reciprocal processes of continual change.

**Identity**

As learning processes unfold, participants’ identities shift; “learning means becoming a different person” (Tsui, Lopez-Real, & Edwards, 2009, p. 40). How experienced a person is within a community (including novice or non-participation), the community’s connection (or lack thereof) to other communities to which she also belongs, her goals in participating, her relationships with its members – all contribute to who she can be there, offering many possible “ways of being a person in that context” (Wenger, 2008, p. 105). As these experience levels, goals, and relationships change over time, so too identity shifts and evolves, through the “constant work of negotiating the self” (Wenger, 1998, p. 151). At the same time, individuals’ learning alters community identities. The process of reconciling self- and other-constructed ideas about who one is, while making sense of one’s lived experience within multiple overlapping communities, often is conceptualized, by sociocultural theorists, as “identity work” (Crafter & Maunder, 2012, p. 16).

Holland et al. (1998), working within a sociocultural perspective, particularly emphasized the agency of individuals in choosing, modifying, or creating various identity positions relative to community practices, relationships, and activities. They viewed identity as being fluid and not bound by (although certainly influenced by) cultural imperatives of a person’s community contexts. They described how people enact ingenuity and flexibility in managing culturally available identity positions but also fashioning their own ways of being within particular social situations or moments. They observed that “identities are improvised … from the cultural resources at hand” (p. 4); that is, individuals assess the kinds of activities, forms of self-presentations, and modes of interaction that are available and encouraged within their community contexts, both general and specific, and act creatively to devise what they can do and who they can be in various situations.
The tension between cultural contexts and individual agency provides the medium for identity work, for Holland et al. (1998). On the one hand, people’s sense of who they are and/or could be is circumscribed by “figured worlds” (p. 49) – conceptual “cultural realms” (p. 51) that are collectively understood to include certain types of “characters” (p. 51) and operate according to particular rules and practices. “Academia” (p. 49) is one example of a figured world, which creates expectations about what kinds of people belong to academic communities such as universities or scholarly networks, and about how these people act and interact. On the other hand, individuals are not constrained to occupy “figurative identities” (p. 128) suggested by these cultural constructs; they have “capabilities … to direct their own behaviour in these [figured] worlds” (p. 60). Though people may not enact such capabilities consciously or deliberately, they can and do continually shift their own “positional identities” (p. 128) through the changing ways they choose to engage in activities and relationships.

**Power**

For sociocultural theorists, identity is intimately connected with the flow of power in social relations. Hall (2008) observed that there are a myriad of “relations of power, prestige, entitlement, influence, affiliation, and status” operating within any given social interaction, such that “day-to-day, moment-by-moment encounters are the stuff of identity formation” (p. 89). At the same time, such interactions occur in the context of community participation; as Wenger (2008) explained, individuals define themselves, and others define them, depending on the level of comfort they feel with community practices, the legitimacy they have been granted relative to other members, and/or the degree of commitment they have made to the community. Newcomers can experience these processes of shifting identity and power quite intensely, Wenger noted, because, when entering an unfamiliar community, “We do not quite know how to engage with others. We do not understand the subtleties of the enterprise as the community has defined it. We lack the shared references that participants use … we know who we are not” (p. 108). This realization of lack of competence may produce discomfort or anxiety, which may persist if newcomers do not gain access to the modes of involvement and participation that lead to acceptance by established community members, whether through their own decisions about how they will act or through others’ decisions about whether and how they will be permitted to enter the flow of community activity. On the
other hand, identity crises for individuals as they enter new communities may be
experienced positively, as moments of possibility, in which temporary disempowerment
can lead to a turning point and reconstruction of identity within the new community.

Though not specific to education, Hall’s (2008) research with adolescents who
were leaving middle childhood and becoming teenagers provides a good example of this
idea that identity work can intensify when entering new realms of practice and social
relations causes individuals’ sense of empowerment to be disrupted. Her participants
experienced stress that she interpreted to be connected with shifts in “view of oneself in
relation to others in a given situation, how one can enter a conversation, what one can
say, what emotions one can express” (p. 89). Yet, this stress was productive, in that the
participants developed strategies to manage these changes and regain confidence in
their sense of who they were in relation to this new life phase.

**Belonging**

Experiencing identity change as productive, positive, and empowering creates
the conditions for developing a sense of belonging, as people enter new communities.
Integral to this process is newcomers’ observation of “paradigmatic trajectories” supplied
by expert community members; in seeing the paths others have followed, newcomers
access “a field of possible trajectories and thus the proposal of an identity” within a
community (Wenger, 2008, p. 110). Paradigmatic trajectories allow novices to envision
the kinds of paths they themselves might take toward full membership and may (though
not always) exemplify empowered identities of belonging. Belonging entails being
positioned so as to: fully engage with the community’s practices; imagine possibilities for
the community by viewing it as an outsider might; and align one’s local work with
broader structures and enterprises (Wenger, as summarized in Edwards & Tsui, 2009, p.
50, emphases in original). On each of these measures of belonging, community
members who exhibit “connectedness” (having relationships of some depth and
endurance), “expansiveness” (being open to a wide range of experiences), and
“effectiveness” (enabling the legitimate participation of others) can be seen to have
Community members who exhibit healthy identities have strong potential to exercise social power judiciously, to enhance community activities and relationships and empower others to deepen their belonging and contribute to community growth. In so doing, these community members may come into conflict with, and need to work against, those who have less healthy identities – who are, for example, less inclined to consider or care about how others view the community, less interested in developing and sustaining relationships with others in the community and/or other communities, or less open-minded in terms of entertaining new ideas or welcoming new members. New community members’ likelihood of developing a sense of belonging stands to be enhanced when they are supported by established members who themselves have healthy identities of belonging.

**Transition**

Sociocultural theory is helpful for understanding the phenomenon of educational transition, Crafter and Maunder (2012) have asserted, because it acknowledges “the role of communities (where we belong), practices (what we do), meanings (how we make sense of what we do) and identities (how belonging affects who we are)” in learning (p. 14). It allows for an expanded view of moving between academic communities of practice that goes beyond the idea of functional change – for example, developing new skills, making new friends, or getting to know a new setting – to encompass learners’ shifts in identity during transition, their “search for meaning and … reconstruction of sense of self” (p. 16) Sociocultural theorists emphasize this meaning-making as a process, not an event; they view transition “not as a moment of change but as the experience of changing” (Gorgorió, Planas & Vilella, as cited in Crafter & Maunder, 2012, p. 11). Transition comes to be seen as something that students do, rather than something that happens to them, and as progressive rather than incidental.

In education contexts, sociocultural conceptualizations of identity as community-oriented, fluid, and relational have been applied to theorizing what happens during students’ transitions into new learning environments. Moving into unfamiliar academic communities, where participation requires shifts in practice or modes of relating, is seen to intensify processes of identity development. For example, Tobbell et al. (2010) described how their participants’ sense of their own identities as ‘students’ changed as
they negotiated shifts in scholarly practice involved in becoming graduate students, particularly the expectation in the graduate school community that they would rely more on their own independent study than on teacher-directed instruction to accomplish learning. In Kasworm’s (2010) research with new adult undergraduates, participants assessed and reconstructed their positional identities relative to others in their university communities, revising their ideas about what it meant to be a ‘student’ as they compared themselves to traditional age freshmen and engaged in various types of interactions with faculty members. Karp et al.’s (1998) participants’ processes of reconstructing their identities in anticipation of leaving home for college illustrated a future-oriented dimension of identity work, as these students engaged imaginatively with who they could become within university communities they expected to enter.

**Summary**

Contemporary sociocultural theory strongly emphasizes that the *process* of participating in practices and relationships within communities is what constitutes learning. Individuals move along various trajectories that define their membership status and goals relative to their involvement in multiple communities. The peripheral areas where boundaries of communities overlap are important conceptual spaces in which trans-community relationships develop, as new and expert participants exchange and develop resources and practices, evolve their competence and expertise, and legitimate their participation. One’s sense of self is always in process, always changing through the ways one engages with practices and within relationships; identity evolves in concert with a person’s various learning trajectories and her changing positionalities relative to other community members, which contribute to power dynamics and people’s capacity for belonging within communities. Thus, identity is always a work in progress not only for individuals but also for communities. In these ways, sociocultural theory provides an ideal conceptual framework for exploring the idea of educational transition as involving identity work that students engage in as they begin to interact with others in the boundary areas of learning-oriented communities they are entering.
Positioning the Current Study

As shown in the earlier part of this chapter, there is a vast literature concerning the transition of students from high school into university. Supporting post-matriculated students to adjust successfully at college has been one of the most persistent interests of higher education institutions since the advent of mass post-secondary enrollment. Correspondingly, support programs intended to enhance post-matriculated students’ transition experiences have been implemented widely. Working from the theoretical premise that students’ capability to adjust at college can be built up over the years prior to college entry, programs and activities also have been developed to help pre-matriculated students get ready for college environments. In both of these ‘before’ and ‘after’ arenas, transition support options also have been designed to target particular sub-populations of college-bound students, including gifted learners. In planning the current study, I drew upon insights into transition processes offered within this literature that may be relevant to non-accelerated, pre-matriculated gifted learners’ transition-related experiences. However, I also aimed to extend the theoretical ways of articulating, and research contexts for exploring, such experiences, by involving participants in activities with potential to facilitate their entry into university communities and by engaging them in reflective, interpretive processes.

A critical synthesis of the literature landscape

The existing literature on high school to college transition does offer some valuable insights into ways of supporting students that seem to improve their chances of adjusting to and persisting within university environments. The large body of research on FYE’s and bridge-type programs establishes a fairly compelling argument that students, generally, benefit from in-depth and sustained orientation activities that bring to life informal as well as formal, and social as well as academic, aspects of institutional culture. Post-matriculated students seem to benefit from concerted efforts to build their capacity for academic and social integration at college. Pre-matriculated students’ educational aspirations, familiarity with college contexts, and positive anticipations about going to college appear to be enhanced when they gain direct access to university campuses and people before they enroll as undergraduates. These trends suggest that there is no harm, and perhaps much good, in engaging students in holistic (academic-
intellectual-social) campus-based transition-related experiences before they finish high school rather than waiting until they arrive at college. Yet, the predominant model of college preparation is still credit-based transition programs that emphasize academic dimensions of transition and tend to serve students primarily in high school settings.

For gifted learners specifically, the literature supports the view that a sense of intellectual affinity and access to academically based social networks of like-minded peers and mentors, including chances to develop strong relationships with professors, are especially important to students’ feelings of comfort and belonging as they move into university communities. The strong research base on early entrance programs and, to a lesser extent, honours programs is convincing: Gifted learners, like most students, need to get to know the academic and social mores of university contexts, but more than that, they need to connect with people who draw them into the practices and relationships of intellectual communities, understand their socioemotional complexities, and can inspire, advise, and support them according to their unique abilities, interests, and needs. While under-researched, gifted students’ perceptions of bridge-type programs and other less formal types of transition support speak to the importance of providing such opportunities to build connections and relationships within university communities well before they enroll as undergraduates. A consistent theme in this research has to do with the value that pre-matriculated gifted students attach to being mentored, with interactions with professors on university campuses seeming to be especially appreciated and influential.

At the same time, transition-related literature evidences a number of biases. First, most of the available North American theoretical and practical analyses of transition derive from, and/or are situated within, American educational contexts, especially post-secondary settings. American college culture is distinctive in its strong emphasis on institutional affiliation; as Wood (2011) explained, “College campuses, particularly in the United States, have a very unique [sic] campus culture … shared rituals, stories, and artifacts … provide for a shared collegiate experience that often transcends generations” (p. 29). The long histories and traditions of many American colleges often are taught explicitly to new students with the expectation that they will internalize and express institutional allegiance. The strongly entrenched cultures of Ivy League academics, honours colleges, collegiate athletics, fraternity/sorority systems,
and ‘froshing’ rituals – and more recently, FYE’s – are examples of vehicles for assimilating students into campus life, mirroring the ‘melting pot’ analogy for integrating immigrants into American culture. This emphasis on assimilation is evident in Tinto’s (1993) theory, which focuses on integration and belonging as the key features of successful college adjustment, and which has been hugely influential in the design of transition support programs in the US. In Canada, in keeping with the national emphasis on ethnic pluralism, there has been less focus on students developing institutional affiliation and more on institutions responding to students’ cultural diversity (e.g., Guo & Jamal, 2007). As well, transition support programs in Canada – whether for general or gifted student populations – have developed less expansively than, and in the shadow of, their American counterparts. There is a comparative dearth of empirical research about Canadian campus communities and Canadian students’ transition experiences.

Second, the available theoretical analyses of transition and associated transition support programs are concerned predominantly with post-matriculation adjustment to college. Given the emphasis on students’ assimilating into college campus cultures in the US, transition support structures for pre-matriculated students tend to be derivative of those designed for post-matriculated students, with the primary goal being to help high school students prepare to adapt to college culture (Corwin & Tierney, 2007). At the same time, pre- and post-matriculation transition experiences and support mechanisms tend to be compartmentalized, with relatively little empirical study of students’ experiences in “betwixt” spaces (Palmer et al., 2009, p. 37) where the ‘before’ and ‘after’ of college entry overlap. These emphases are evident in the gifted education literature, as well, where the majority of research on gifted learners in transition has focused on post-matriculated early entrance or honours program participants.

Third, although many studies have investigated effects of students participating in various post- and pre-matriculation transition support options, these are much more often driven by institutional agendas than focused on student perspectives. Institutions implement initiatives that they hope will increase student adjustment and retention, which are then measured according to institutional criteria such as college academic performance and persistence/withdrawal statistics. There is a notable lack in the literature of student voices – of students themselves reflecting on their transition experiences – and where such perspectives are available, they usually are presented
retrospectively rather than while students are engaging in transition processes. Student perspectives are more prevalent in analyses of transition focusing on gifted populations than in the general transition literature, but again, such studies (most associated with early entrance or honours programs) typically offer retrospective views of post-matriculation experiences.

Fourth, these three biases combine to convey an underlying positivist assumption, in much of the transition literature, that both institutional and individual student identities are essentially static. The compartmentalized treatment of transition, as a sequence of preparatory and adjustment activities, implies a conception of universities as places with fixed structures and systems to which students must adapt. The focus – frequently expressed in sensational, alarmist tones – is often on differences between university and high school communities that will create difficulties for students, rather than on similarities that may provide accessible spaces for student agency in transition processes. Becoming a university student often is associated more with acquiring skills than with negotiating changes in identity. Students’ identity dimensions, including giftedness, often are assumed to be fixed traits, portable across learning environments, and students rarely are positioned as working actively to develop their college-going identities or engaged in reflecting on and interpreting their experiences while so doing. This gap is particularly evident concerning gifted high school students.

**New directions in the current study**

The current study diverges from the existing literature in important ways. It adds to the relatively small body of research on students’ transitions within Canadian educational contexts, and it focuses on the under-represented sub-population of pre-matriculated gifted high school students, especially those who are not accelerating toward college entry. The study’s action research design and methods emphasize exploring students’ own perspectives on transition-related experiences as they were engaged in these, not retrospectively. Further, adopting a sociocultural framework establishes conceptual foundations for this work that differ from the theoretical (or atheoretical) underpinnings of much of the existing literature on transitions into university communities and the kinds of support intended to facilitate such transitions.
First, sociocultural concepts of multiple membership and intersecting learning trajectories allow for the possibility of seeing students as participating in university communities in meaningful ways before leaving their high school communities, engaging actively in the identity negotiation that transition entails rather than waiting for transition to happen to them. Sociocultural theory offers a rationale for bringing high school students and university people together to do boundary work, suggesting that such work can both promote the strength of university communities and encourage incoming students’ legitimation – their desire to engage in these communities with increasing intensity and purpose. The current study offered pre-matriculated students the opportunity (fairly rare, the literature suggests) to participate in transition-related experiences, in relationship with university community members, on a university campus, while still in high school.

Second, transition in a sociocultural view involves active, mutual engagement among participants; seen through this lens, more experienced people, as well as newcomers, contribute to the growth of university communities through their relationships. In this sense, sociocultural theory works against the assumption that post-secondary institutions are comprised of essentially static structures and systems to which students must assimilate, instead ascribing the possibility of agency to incoming students and asserting that they might participate in constructing institutional identity as much as institutional influences operate in constructing theirs. Beyond acquiring pragmatic tools to facilitate post-secondary study, transition could be seen as a process of gaining increasingly sophisticated engagement with all kinds of practices and relationships that define university communities, not just for new students but for established university community members as well. Not only the student participants in the current study, but also the faculty participants, their academic departments, and the broader campus community, were seen as having potential to experience change and growth through their various interactions.

Third, sociocultural theory supports a view of giftedness not as a fixed trait but as one aspect of identity that is in a constant state of flux relative to cultural perceptions, community practices, and one’s own sense of intellectual efficacy and legitimacy as a learner. The interplay of all these influences, I suggest, positions pre-matriculated gifted students as uniquely well suited to engage in boundary work with members of university
communities during transition. Their identification as gifted may have occasioned particularly strong expectation engendering toward becoming a university student or access to indirect and direct simulation activities (Attinasi, 1989) to the extent where they may have “used up” (Subotnik et al., 2010, p. 714) typical pre-matriculation transition support options sooner than their peers. They may be accustomed to, or wish for, opportunities to move forward in their learning processes more quickly than their age peers; starting to participate in university communities while still in high school could represent an opportunity to initiate “getting in” (Attinasi, 1989) sooner than would usually occur. Given repeated assertions about gifted students’ appreciation of intellectual peers and mentors, they may particularly value chances to build relationships with university professors who can connect them to intellectual networks, and this may be especially important if they will not be entering college with organized cohorts of like-ability peers (as with early entrance or honours programs).

The current study investigated the sense that pre-matriculated gifted learners made of transition-related experiences, given opportunities to participate directly in practices and relationships with university community members, on campus. The etic research questions – those I brought to the study – were as follows. In terms of their developing identities as members of university communities, what sense would the student participants make of:

• interactions with university staff and students to learn about structures, systems, resources, and practices typically accessed by university students?
• relationships with faculty partners?; and
• relationships with ability peers (the other student participants) who were engaged in similar transition-related experiences?

These questions reflect my assumption, grounded in sociocultural theory, that the students would experience transition as a process of identity shift occurring as they participated within university communities of practice, developing relationships with experienced community members and other newcomers. Chapter 3 outlines the design and methods I used to explore these etic questions and also emic issues that emerged during the research process, such as my deepening interest in the faculty participants’ own experiences of partnering with the students and the ways my own participation influenced the other participants’ transition-related experiences.
Chapter 3.

Design and Methods

Overview

I designed this study within a broad framework of interpretive qualitative inquiry, in that I sought to “understand a phenomenon, a process, the perspectives and worldviews of the people involved, or a combination of these” (Merriam, 2002, p. 7). I wanted to explore the sense that gifted high school students would make of participating in transition-related experiences on a university campus. Given the scarcity of pre-matriculated gifted students’ own perspectives on transition in the literature, it was important that the design and methods not only facilitate exploration of the etic questions stated at the end of Chapter 2, but also encourage emic questions to emerge. I anticipated that emic issues might arise, for example, from students’ perceptions of the relevance for them of the transition-related activities or the appropriateness of the research methods I had chosen to explore their experiences (e.g., Richardson, 2005). As Auerbach and Silverstein (2003) advocated, I expected the participants to bring perspectives that did not fit neatly with my etic questions and/or theoretical orientation, and I wanted their viewpoints to “take central stage” (p. 33).

Reflecting these goals, the study’s design and methods borrow from the traditions of action research and ethnography. Although I used methods that were ethnographic in orientation, I did not set out to be only an observer, or even participant observer, of people, activities or phenomena. Rather, I acted as an interventionist, deliberately introducing changes into what I perceived to be the usual situation of pre-matriculated university-bound gifted students and intending to adapt these if more effective ways to support the students’ transition processes were noticed by me or
suggested by others. In this sense, the overall design aligns more closely with a general rubric of action research.

I begin with a discussion of principles of action research that informed the study’s design, then move on to details of the research process. I explain the research settings I chose, describe the participant groups and recruitment processes, and outline the set of activities I initially constructed for the students, as well as explaining how these experiences were modified as I engaged in them with the participants. Following this, I discuss ethical concerns and research relationships, data sources and data generation methods, and data analysis and interpretive processes, concluding the chapter by discussing how I strove to ensure trustworthiness and credibility throughout this process.

Design: Action Research

Reason and Bradbury (2001b) described action research inclusively, as any “approaches to inquiry which are participative, grounded in experience, and action-oriented” (p. xxiv), implying a “worldview” (p. xxv) wherein distinctions among traditional categories of researcher, practitioner, and participant are blurred with positive intent. If research occurs “in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and their communities” (Reason & Bradbury, 2001a, p. 1), then it is action research. My desire to invite students to engage actively in university communities, reflecting with them about their experiences and making practical adjustments to maximize the benefits they perceived, are all features that place this study within an action research paradigm. With its sociocultural orientation, the study represents what Noffke and Somekh (2009) have described as “a process of interaction between theories about social practice and theories emerging from inquiry into social practices” (p. 26, emphases in original). What follows is a brief overview of the defining features of action research, particularly as applicable to educational research, and their implications for this study.

Participatory orientation

Pure participatory action research (PAR) embodies grassroots collaboration to enact community change, often with a social justice imperative (Wimpenny, 2010);
McIntyre (2008) and, in a Canadian educational context, Lind (2008) provide recent exemplars. The current study differs from PAR, in that I formulated the research problems without consulting the participants, and although I encouraged their contributions to adapting activities and involved them in interpretive processes, I retained responsibility for structuring, managing, and reporting this research. Nevertheless, Toohey (personal communication, October 12, 2010) observed a participatory orientation in the history of my teaching practice with gifted students. In her view, my conversations about transition with hundreds of students could be seen as a collaborative problem-posing process, although at the time I did not know that this casual information-gathering would lead to a formal research project. Participants in a focus group I initiated (Lauridsen, 2004) also shaped my perceptions about what kinds of transition support would benefit similar students, which in turn influenced this study’s design. Toohey’s own collaborative work (Denos, Toohey, Neilson, & Waterstone, 2009) provides an illustration of how participatory orientation has been enacted in educational research specifically.

**Impetus toward changing practice**

McNiff (2002) articulated action research projects in education as “identifying a problematic issue, imagining a possible solution, trying it out, evaluating it (did it work?), and changing practice in the light of the evaluation” (para. 6). Kemmis (2009) and Noffke (2009) saw action researchers as motivated to bring about changes that will benefit all members of communities focused on learning, while Wells (2009) asserted that helping the actual participants should “be built into the overall design” (p. 51). Elliot (2009) suggested that “changing a situation to make it more educationally worthwhile” represents “ethically committed action” (p. 28). In this study, I aimed to try out, with the participants, possible solutions to challenges I had seen many gifted learners struggle with during transition. Believing that there were ways to initiate positive change in the participants’ own transition experiences, I could not merely observe some students as they moved along usual transition paths and extrapolate recommendations for other students; rather, I felt moved to introduce changes in response to stated and observed needs of these participants and others in similar situations.
Relational epistemology

In the relational epistemology that underlies action research designs, knowledge is not a fixed entity but “resides in the acts of relating to others … sharing, engaging in activities together, experiencing common events and telling stories” (Lind, 2008, p. 222). The ways that people participate in these kinds of social relations also are mediated by their (also unfixed) values, biases, motivations, and perspectives. Elliot (2009) asserted that action researchers must acknowledge their own biases, yet expect, even desire, these to change during the research process. The researcher may begin with a theoretically-derived vision of where the research may take the participants (herself included) and what ‘knowledge’ they may gain, but she cannot expect the process to lead neatly to those ends. Not only must action researchers be open to novel experiences and interpretations, they also must consciously question and/or dismantle established ways of looking at things, creating what Cook (2009) called the “messy area” (p. 281) of deconstructed practices and beliefs that allows for new sense-making to take place. While I set out to introduce what I thought would be “better” (Noffke, 2009, p. 8) transition experiences, I had to be open to constructing different versions of “better” as I engaged with the participants.

Dynamic identities and positionalities

In action research paradigms, as in sociocultural theory, identity is seen as unstable, relational, and continually in progress. Identities are not fixed but are always re-forming in interactions among individuals and groups. A person can occupy multiple “positional or relational identities” (Holland et al., 1998, p. 127), depending upon which communities she is participating in, which sets of practices she is engaging in, which individuals she is speaking to or with; there are limitless permutations of these factors. Action researchers must remember that “identities are always in flux, and … we do not have a single way in which we present ourselves to others” (Cousin, 2010, p. 17). Identities are continually being revised through the research process itself, and to be truly reflexive as an action researcher means embracing this instability. I expected each participant in this study to occupy multiple overlapping stances and positions during the research process, such that we would see each other, and ourselves, differently at different stages. Our identities would be ever in progress, and as the researcher, I would
need to be guided by this understanding in our interactions and in interpretive processes.

**Attentiveness to power relationships**

Action researchers view power dynamics as unstable and easily disrupted (Cook, 2009; Cousin, 2010; Kemmis, 2009; McTaggart, 1997; Noffke, 2009; Wells, 2009). They ask “reflexive questions” such as, “What is my power relationship with the people I am researching? … Am I researching with or on people?” (Cousin, 2010, p. 11, emphases in original) They must consider the potential effects of their own actions and words within research relationships; the flow of power among individuals or groups can change course in an instant. With the student participants especially, I aimed to disrupt ways they might be used to experiencing power relations with adults generally and teachers specifically. Lind (2008) noted how adolescents’ viewpoints may be devalued, or ignored, perhaps not even recognized as knowledge, by mainstream society. One strategy that I employed to encourage the students to value their own perceptions was to state explicitly, and repeatedly, in both group and one-to-one conversations, that a key goal of the research was to support them in ways that were helpful to them; thus, their honest assessments of activities and their ideas about what could be done differently were critical to enacting changes in practice around transition support.

**Researchers as ethical insiders**

Not simply avoiding doing harm to participants, but rather trying to make things better for them, invites particular ethical considerations in action research, such as the near impossibility of anonymity when participants are described effectively (Zeni, 2009). I knew this would be the case with the faculty participants in this study, who worked in close physical and collegial proximity, and probably with the student participants too. As well, the action researcher often is an “insider” in that she practices professionally within the research setting or with the participants, and “untangling these roles can present knotty challenges” (Zeni, 2009, pp. 255-256); I anticipated tension between my ‘researcher’ and ‘teacher’ identities. Yet, Zeni suggested, “the power and interpersonal complexity of the ‘insider’ role do not necessarily create an ethical threat,” but rather can promote “bonds of caring, responsibility, and social commitment” among researcher and
participants (p. 257). Meyer, Ashburner, and Holman (2006) have proposed caring as an ethical standard in action research. Lind (2008), similarly, advocated “caring practices, such as listening, understanding and assurance of worth” (p. 224) as critical design elements in research with adolescent participants. In this sense, the most ethical research decisions I could make would be those that reflected my care for the participants and the responsibility I felt to help them have positive experiences.

**Summary**

These guiding principles of action research – participatory orientation, impetus toward changing practice, relational epistemology, dynamic view of identity, attentiveness to power, and researchers as ethical insiders – formed the overarching methodological framework for this study. In recruiting and interacting with participants, in proposing activities for them to engage in, in choosing methods of data generation and analysis, in working through interpretive processes, and in making decisions throughout the research process, I aimed to animate these principles with integrity and credibility. I now turn to a more detail-oriented description of what happened – where and when, with whom, by which methods and with what kinds of intention – during this research.

**Research Settings**

Deciding to situate the participants’ transition-related experiences at SFU’s Burnaby campus was largely pragmatic. The campus is accessible to the school district where I work, and from which the student participants would be recruited. Having been a student at SFU for several years, I had access to structures, systems, and resources within the campus community. I had an insider view of student culture. I had developed working relationships with professors in various Faculties through inter-departmental committee work and conferences. As well, I had a key contact in the Faculty of Science. He volunteered to connect me with several professors who supported the idea of bringing gifted high school students to campus and who were willing to help them gain access to science and research lab communities. Thus, the SFU campus and Faculty of Science communities were convenient choices; however, they also provided suitable
research settings in that they were both open to, and interested in, engaging and supporting gifted learners who might potentially become SFU students.

**SFU Burnaby campus community**

SFU’s Burnaby campus, located atop Burnaby Mountain on the outskirts of Vancouver, BC, is one of three SFU campuses that serve approximately 26,000 undergraduate and 4,000 graduate students (“SFU Facts,” 2012). Among its extensive outreach efforts to attract new students, the university hosts an annual open house to showcase the campus and its facilities, departments, and programs. In terms of supporting incoming students through transition, SFU offers a major orientation event at the start of each academic year, with first-year students placed in cohort groups and led by senior undergraduates through a series of activities, including meeting professors who teach first-year courses. With regard to gifted learners specifically, some individual Faculties arrange specific events and programs to recruit and support highly able students. I perceived the SFU Burnaby community as one in which there was an institutional interest in enhancing the integration of first year students into campus life, generally, and a stated interest in attracting bright students, specifically (Stevenson, 2004); yet, this campus did not have any broadly organized program or plan for providing transition-related support to gifted learners. Thus, I thought SFU Burnaby would provide a suitable location in which to involve some gifted learners who might attend SFU in the future, in transition-related experiences on campus.

**The Faculty of Science community**

My contact in the Faculty of Science was enthusiastic about providing gifted high school students access to science professors, and their research labs, as a means of sparking their interest in studying science at SFU. His perspective was shared by many of his colleagues, as well as senior administrators in the Faculty. Before recruiting participants, I requested a meeting with the Dean of Science, who expressed great interest in the project and accepted my invitation to welcome the students to campus and to the Faculty at our opening session in September 2007. Within the various science departments represented in the study – Molecular Biology and Biochemistry (MBB), Earth Sciences, Physics, and Biological Sciences – some programs existed to attract
and support incoming students generally, and high academic achievers specifically. The MBB department had a High School Liaison Committee. The Earth Sciences department offered “introductory talks to incoming science students and high school students” (“Outreach,” 2010). The Physics department arranged numerous outreach activities for high school students (“Community Outreach,” 2010), as well as an enriched honours cohort for high-achieving first-year students. In addition to such discipline-specific ventures, the Dean of Science had started a mentoring program whereby all new students in the Faculty were matched with professors who were expected to initiate contact with them on two or three occasions during their first year. Many of the faculty members who volunteered for the study had developed and/or participated in these and other outreach ventures.

Thus, this Faculty provided fertile ground for exploring the meaning, for gifted learners, of participating in transition-related experiences. Not only were the faculty participants interested in developing effective ways to attract exceptional students to science and their own disciplines, but they also were well supported in this desire by their departments and their Faculty. The professors were open to the possibilities for their own learning that the study provided, and they committed to trying out my suggestions for building relationships with students that could promote a sense of connection to both the Faculty of Science and the broader SFU community.

Participants

All nineteen of the participants continued with me through all stages of data generation, and I still have informal contact with many of them. In general, I perceived them as a highly committed group of participants, who were very conscientious in fulfilling my requests and demonstrated a genuine and continuing interest in the research process, its goals and outcomes. Table 1 illustrates the basic composition of the participant group, with each row including a student participant and his/her faculty partner(s); the pairs are listed in order of the students’ responses to the invitation to participate. In this chapter, I describe selection criteria, recruitment processes, and group composition; Chapter 4 contains individual portraits of each participant.
Table 1. Participant Group Composition

<table>
<thead>
<tr>
<th>Student Participant</th>
<th>Gender</th>
<th>Faculty Participant</th>
<th>Gender</th>
<th>Science Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robert</td>
<td>M</td>
<td>Dr. B</td>
<td>M</td>
<td>Physics</td>
</tr>
<tr>
<td>Krystine</td>
<td>F</td>
<td>Dr. C</td>
<td>F</td>
<td>Biological Sciences</td>
</tr>
<tr>
<td>Katarina</td>
<td>F</td>
<td>Dr. F</td>
<td>F</td>
<td>MBB</td>
</tr>
<tr>
<td>Andrea</td>
<td>F</td>
<td>Dr. E</td>
<td>F</td>
<td>MBB</td>
</tr>
<tr>
<td>Frank</td>
<td>M</td>
<td>Dr. H</td>
<td>F</td>
<td>Earth Sciences</td>
</tr>
<tr>
<td>Gordon</td>
<td>M</td>
<td>Dr. D</td>
<td>M</td>
<td>Earth Sciences</td>
</tr>
<tr>
<td>Nate</td>
<td>M</td>
<td>Dr. A</td>
<td>M</td>
<td>Physics</td>
</tr>
<tr>
<td>Buck</td>
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<td>Dr. I</td>
<td>M</td>
<td>MBB</td>
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<tr>
<td></td>
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<td>Dr. J</td>
<td>M</td>
<td>MBB</td>
</tr>
<tr>
<td>George</td>
<td>M</td>
<td>Dr. G</td>
<td>M</td>
<td>MBB</td>
</tr>
</tbody>
</table>

Faculty participants

The only criteria for selection of faculty participants were that they be tenure-track professors in the Faculty of Science and that they be willing to volunteer. I secured faculty commitments before inviting students to participate. My contact, a senior Faculty member, assisted me by making the initial approach to colleagues whom he thought might be interested. I then emailed 11 professors who had expressed tentative willingness to him. Of these, six gave solid commitments when I provided detailed information about the study (see Appendix A); three agreed to participate when three students wanted to join the study beyond the original intended maximum group size of six; and two declined (one felt that her lab set-up and schedule could not accommodate student visitors, and one thought the project was too small-scale to have an impact in terms of attracting students to her department). One requested to have his post-doctoral fellow partner with him, to cover times when he foresaw scheduling conflicts. This made a total of ten faculty participants (four female and six male). They represented several departments within the Faculty of Science, and they ranged in tenure and experience, from recently hired assistant professors to full professors, with two holding Canada Research Chairs. They had varying teaching, research, and travel schedules, but with careful planning we were able to organize a schedule such that they would all be available to host students on the on-campus days (see Appendix B).
**Student participants**

Qualitative researchers who seek to understand the ways in which a particular concept or process is experienced or interpreted – in this case, transition – typically select participants from whom it seems possible to learn the most about the phenomenon or issue of interest (Stake, 1995, 2005; Yin, 2003). I hoped to recruit student participants who had similar intellectual ability and academic goals that identified them with communities of gifted learners, but who also exhibited some diversity in terms of gender, family contexts, school histories, and plans and expectations around going to university. I anticipated that such factors might contribute to variations in students’ perceptions of transition-related experiences, thus increasing the likelihood of discrepant interpretations, as advised by Merriam (2002). I also wished to avoid excluding students who were under-achieving in school or whose family schedules made transportation to the SFU campus difficult for them.

**Giftedness**

I recruited all the student participants from the school district where I worked as a gifted program coordinator, since this ensured that they all were identified as gifted learners according to similar criteria. They all had a BC Ministry of Education “P” (gifted) code, arrived at via a screening and testing process that is used consistently across our district. Although the first step involves teachers and/or parents observing and evaluating patterns of “Brilliant Behaviours” (Kanevsky, 1999, pp. 30-40), the students thus referred for further assessment must score at or above the 95th percentile on either or both of a verbal and a non-verbal ability test. Tests commonly used to assess these participants included the Peabody Picture Vocabulary Test third edition (PPVT-III) (Dunn & Dunn, 1997), the Test of Non-Verbal Intelligence fourth edition (TONI-IV) (Brown, Sherbenou, & Johnsen, 1997), and/or the Canadian Cognitive Abilities Test (CCAT) (Thorndike & Hagen, 1989). All the student participants had been quantitatively assessed, at some point between school entry and March 2007 (their Grade 10 year) as outperforming 95% of their age peers on the reasoning tasks contained in one or more of these norm-referenced, standardized tests.

These criteria comprise the practice-derived definition of giftedness, for this study. From a sociocultural perspective, however, I view the quantitative indices
critically, since designing, administering, and evaluating performance on ability tests are historically and culturally derived practices. As a member of these students’ educational networks, I also must explicate my own understanding of giftedness and engagement with the practices used to name these students as gifted. Among the data gathered to support students’ identification as gifted in our district, the perceptions of teachers, parents, and students themselves on the “Brilliant Behaviour” checklists (Kanevsky, 1999, pp. 30-40) are most important to me. In deciding whether I consider students to be gifted, I rely much more on observations of exceptional memory, intuition, creativity, verbal facility, humour, and/or passion for learning than on test scores. As well, I associate giftedness with observed extraordinary intensity in students’ self- and other-relationships – for example, unusual strength of emotions, deep attachment to moral or ethical concerns, tenacious investigation of topics of interest, uncommon sensitivity to sensory and/or emotional stimuli, and/or heavy investment in interpersonal interactions. I did not know the student participants well enough, when they volunteered, to have applied these criteria in the recruitment process; however, they comprise my own ‘mental checklist’ for giftedness.

Pragmatic considerations

In addition to gifted identification, pragmatic considerations also informed the student selection criteria. Seeking participants within my own district facilitated my obtaining consent from students and their parents, as well as securing cooperation from teachers who would be asked to release the students from class to participate. The students had to be willing to commit to the study without earning marks or credit, as the trustworthiness of data could be threatened if they felt restricted in behaviour or speech because of a sense of being ‘graded.’ The intended small size of the student group would also allow for considerable depth in data generation and analyses, as suggested by Merriam (2002); and it also meant that all the students could carpool to campus in two or three vehicles, if necessary.

The target pool included all Grade 10 students in my district who had been identified as gifted before March 2007 and were entering Grade 11 in September 2007. I thought that Grade 11 would be the most appropriate year to offer transition-related experiences to the students, as they could be expected to have begun thinking about
their university options but would still have time to draw upon anything helpful they learned during the study when they started college application processes the following year; as well, earlier focus group data (Lauridsen, 2004) indicated that by Grade 12, students might be unwilling to miss senior classes to participate. Since the faculty participants would all be from the Faculty of Science, a further practical consideration was that students ideally should be interested in learning about scientific topics.

**Recruitment process**

In March 2007, I mailed a letter of invitation (see Appendix C) and Study Information Form (see Appendix A) to all 18 of the Grade 10 gifted students (nine girls and nine boys) and their parents. The letter requested a response from interested students by June 5, 2007. I then contacted students who responded (either by phone or email) and requested further details about their specific science interests, so as to match them to faculty partners with compatible research areas. Through this correspondence, I also encouraged respondents to ask any questions they had about participating in the study. I also telephoned their parents to ensure they were aware their children had contacted me; this allowed me to respond to any questions they had, as well. In some cases, parents contacted me to ask questions before their children responded, and then their children replied to my letter by email.

The first six students to accept the invitation, three girls and three boys, satisfied my desired number of participants and also comprised a coincidental, but hoped-for, gender balance. I told three more male students who responded later (but still before the requested response date) that they could participate only if I could find appropriate faculty partners for them. Fortunately, I was able to recruit three more professors from within the initial group of 11 referred to me by my contact in the Faculty of Science, so all students who wished to participate were included. Because I had now recruited more student participants than I had initially sought and included all the faculty members who had expressed willingness to participate, I did not initiate further contact with the nine students who did not respond to the letter of invitation.
Group composition

The final student group consisted of three girls and six boys; this represented 50% participation by gifted Grade 10 students in the district, with equivalent participation by girls (three out of six) and boys (six out of twelve). Thus, though the group did not have equal numbers of boys and girls, it was proportionally representative of the gender distribution in the target pool. Five of the six high schools in the district were represented in the group, as well. The volunteers also exhibited sufficient diversity across other dimensions that I did not find it necessary to continue recruiting. As I will show in greater detail in Chapter 4, there were variations in ethnicity; family background; and academic histories and university plans. The students also had experienced varying exposure to university settings and/or connection with university-educated people. I valued this diversity not so as to attribute students’ perspectives to particular aspects of their personal histories, but to increase the chances that readers could recognize similarities between these students, and those they know or work with.

Matching the student and faculty participants

Once the faculty participant group and the scheduling were finalized, and the student participants were secured, I began matching students to faculty partners. My primary goal was to ensure, as far as possible, that each student’s specific science interests would have some connection with her/his faculty partner’s current research. Where more than one student seemed to be a good match for a professor, I prioritized the student who had responded earlier to the invitation to participate. I also aimed to match female students with female professors, since during the correspondence I had with participants during the recruitment processes, all three girls had indicated that they would like to be matched with a female mentor, and all the female professors had mentioned that a key reason for their interest in volunteering was the opportunity to inspire and promote girls’ interest in science.

One male student was matched with a female professor; all the other students had same-gender faculty partners. These arrangements were fortunate in that they accommodated, or at least did not contradict, the requests of every student participant and almost every faculty participant (with one exception), at the same time providing a notable discrepant case for analysis. The one female professor who had desired a
female student partner and instead was matched with a male, agreed with my suggestion that it could be equally important, in terms of promoting women’s profile in science, to have a male student observe and learn from a woman who held a prominent leadership position in her traditionally male-dominated field.

**Description of the Transition-Related Experiences**

Sociocultural theory informed the transition-related experiences I planned for the students. I intended for them to participate within university communities through three types of experience: (a) opportunities to interact with SFU staff and students in various campus locations, in ways specific to those individuals’ roles within the university’s communities; (b) opportunities to interact one-on-one with Faculty of Science professors in scholarly and/or lab environments; and (c) opportunities to interact with the other student participants so as to share their experiences as newcomers within SFU communities. Through interactions with university staff and students, I expected that students would experience aspects of campus community membership in a fairly broad sense. With their faculty partners, who were members of scientific communities with discipline-specific practices, I anticipated that the students would engage in boundary practices, negotiating the similarities and differences between high school and university science learning and experiencing guided participation in research-oriented activities. With each other, I hoped that the students could experience support from peers as fellow newcomers.

The student participants spent one full day on campus each month from September 2007 – May 2008, with the mornings spent in sessions with various university staff and students, and the afternoons spent one-on-one with their faculty partners. Opportunities to interact with the other student participants occurred in more structured settings during the morning sessions and in an online discussion forum, and also informally during lunch hours, during morning and end-of-day check-ins/check-outs at a campus café, and for some students during the commute to or from campus and/or when they saw each other at their home schools.
Interactions with university staff and students

For each of the on-campus mornings, the students and I participated in group activities together. I planned interactive sessions with representatives from several campus groups and/or facilities, with the goal of fostering a broad overview of campus life. I wanted the students to learn about how university students function on a day-to-day basis and to be exposed to facilities and services that university students regularly use. Although I had an outline of activities in mind at the outset, I did not finalize details until just before each on-campus date. I shared the tentative schedule with the students at a start-up gathering before we went to campus in September 2007, telling them it was open to change and they could suggest session ideas at any time. Then, each time we met, I repeated this message.

In general, the students approved of the proposed activities, with particular enthusiasm for meeting scholarship winners, visiting the student housing complex, and touring recreational facilities. There were specific requests to see a typical Residence room, to learn about the costs of Residence living, and to attend a varsity team game. I explicitly encouraged these types of requests, as they helped me to ensure that the sessions addressed the students’ own perceived needs. I anticipated that it might be difficult for the students to think of things that would be helpful for them to experience, before they began to be exposed to these things through the shared activities. Conversations among the participants and me, in which we debriefed sessions and brainstormed suggestions for upcoming sessions, supported peer relationship development as well, as the participants shared and reflected together on their experiences within SFU communities.

When recruiting SFU staff and students to lead the sessions that the students and I agreed would be worthwhile, I described the study and made specific requests as to the content and presentation style the leaders would use. I based these requests on the students’ informal input as to what they hoped to learn or do during each session. In general, I asked the leaders to: get the students actively involved in experiencing some aspect of university life; address students’ questions and be flexible enough to accommodate changes in direction; and avoid simple transmission of information in favour of discussion and, where possible, movement around the campus. Of course,
they could design the sessions as they wished, but most did attend to these requests. Over eight days on campus, the morning sessions included the following activities.

September 25, 2007

I met the students at a popular campus café that would be our regular start-of-day meeting place. It is close to a visitors’ parking lot and the main bus loop; this facilitated parents dropping students off, and students arriving by bus only had to cross the street to join the group. I also asked the students to ‘check out’ by meeting me at the café between 3:00 – 3:15 p.m. each day, for reasons of safety important to me and their parents, and reasons of comfort I thought might be important to the students – knowing that someone was looking out for them in an unfamiliar environment. The students seemed to appreciate this and often used the opportunity to chat with one another over a cup of coffee – which I hoped would contribute to camaraderie. On this first morning, we went to the Centre for Educational Technology (CET) in the Faculty of Education and divided our time between some simple ice-breaker activities (such as a game where we each told ‘two truths and a lie’ about ourselves and tried to guess which statements were untrue), and a hands-on orientation to a university computer lab and to the FirstClass online discussion forum.

October 16, 2007

At the Simon Fraser Student Society (SFSS) headquarters in the centrally located student services building, SFU’s Student Life Coordinator spoke with us about the university’s plan for assisting new students to adjust to campus life, including an overview of campus services and Orientation Week programs. This was followed by an information session with undergraduates representing various campus clubs and groups, including the SFSS president, producers from SFU’s radio station, editors from the student newspaper, and a member of the French Cohort Program. They spoke about what belonging in these groups entailed, how they had become involved, how new students could get involved, and how to start a new club.

November 13, 2007

In a conference room in the Science complex, an Awards and Financial Aid officer spoke with us about general entrance requirements and scholarship application
processes. She described the SFU website’s awards database and explained the selection process for entrance awards. We also met two current scholarship holders from the Faculty of Science, who talked about what a successful application ‘looks like,’ as well as their current experiences as scholarship students, and responded to participants’ questions.

**December 4, 2007**

The focus on this day was studying – how, where, and with what resources undergraduates prepare for their courses; we visited the campus library and bookstore. Our library tour guide pointed out the Student Learning Commons (an academic help centre), walked us through the various collections, and engaged us in a ‘scavenger hunt’ activity searching for texts in the stacks. At the bookstore, the manager explained how to find course texts and use the book buy-back system and gave each participant a ‘grab-bag’ gift of novelty items.

**January 9, 2008**

We went to the student housing complex, where the Manager and the Assistant Director explained application processes, costs, meal plans, and social support systems for residents. We toured a typical first-year Residence hall and rooms and learned about the roles of Residence Advisors and how to become one. We then went to the Health and Counseling Centre, where staff described services that support the physical, social, and emotional well-being of SFU students. These include medical and physiotherapy clinics; workshops on issues such as stress, substance abuse, time management; and mental health assessment and psychological support.

**February 6, 2008**

We visited the Athletics Department, where three varsity football players showed us a promotional video and spoke about the varsity scouting process, the range of SFU varsity sports, typical practice schedules and balancing sports with academics, and their own experiences of being varsity athletes. We then went to the Recreation Complex, where a staff member gave us an extensive tour, talked about intramural sports leagues and recreation programs, and explained how to access these facilities and programs. He also gave each student a free pass to try out the facilities at their leisure.
March 5, 2008

In the CET in the Faculty of Education, we watched a multimedia presentation by a staff member from SFU International. A former SFU student herself, she shared her personal experience with international academic exchanges and introduced us to the range of study abroad opportunities available, whereby students can complete degree requirements at foreign universities.

April 2, 2008

Guided by a coordinator from the Faculty of Applied Sciences’ Cooperative Education Program, we toured several research labs in the Applied Sciences Building, ranging from marine biology to robotics, and learned how students can combine study and paid work during their undergraduate degrees. This session provided an opportunity to see technological applications of some of the science concepts the students were exploring with their faculty partners and also introduced them to an alternative path to degree completion.

May 7, 2008

The last day was devoted to final interviews; the students preferred this to interviewing outside of on-campus time, as they were experiencing end-of-year pressure at school. Together we set a schedule for when students would meet with me individually in a Faculty of Education conference room and generated ideas about what they could do when not involved in an interview. Options included trying out the recreation facilities, revisiting favourite campus spots, or dropping into ‘open labs’ offered by a couple of the faculty participants at my request. As well, I invited the students to join me for a celebration lunch at the Diamond Alumni Centre.

Interactions with faculty partners

On each on-campus day, following a one-hour unstructured lunch break, each student spent two hours in the afternoon with her/his faculty partner. The September 25 afternoon was devoted to an orientation session with all the faculty and student participants, beginning with welcomes from my contact in the Faculty and from the Dean of Science. Then, during a catered lunch, each professor gave a three-minute
presentation which explained the background and current status of her/his current research work. I asked the professors to be attentive to the youth and inexperience of their audience, by explaining their work in layperson’s language and if possible by using analogies or metaphors to illustrate concepts, which they readily attempted to do.

I arranged seating carefully; I placed tables in a U-shaped configuration so that all participants could clearly see and hear one another, and I seated each student between her/his faculty partner and another student, so as to encourage student-professor conversation but also provide each person with a familiar peer or colleague on one side. During the last half-hour, I asked the professors to guide the students to the locations where they would meet on the October 16 afternoon, and from those places to the daily check-out location. In this way, each pair had a low-risk task to accomplish together: orienting the student to the layout of the Science buildings and to where the professor’s office or lab was situated relative to the student’s last destination for each on-campus day. At the same time, the pairs could chat informally and begin getting to know each other.

During the on-campus afternoons from October through March, the activities and opportunities the students experienced with their faculty partners varied quite widely, as Chapter 5 will illustrate. However, all the pairs entered these sessions with some common expectations and guidelines that were outlined in the Study Information Form (Appendix A) and also discussed at the outset of the first interviews with each participant. I provided the professors with some suggestions as to what kinds of activities they could do with the students (see Appendix D). I also explained, to both faculty and student participants, that the April 2 afternoon would comprise a mini-conference, with each student giving a five-minute ‘poster presentation’ (or the equivalent, using media of their choice) to the whole group. The students were expected to explain what they had learned about their faculty partner’s research, ways they had participated in scholarly or lab activities, and/or what else they had learned. The professors were expected to ensure that the students had opportunities to learn about their research work, to support them in preparing a scholarly presentation, and to be silent partners during the presentation, assisting to explain concepts or respond to questions only at the student’s request. I expected the students to take the initiative to learn, synthesize, and present information about their experiences, and the professors to provide opportunity, guidance
and support in this process. I intended the mini-conference as a culminating event to provide closure to the experience and encourage the student-professor pairs to reflect on their partnerships.

In addition to this research-specific focus for the partnerships, I also invited (but did not direct) each professor to spend some time engaging the student in conversation about broader issues that might interest new members to their scholarly communities, such as connections with national and international research networks in their fields, or the academic paths that had brought them to their current positions. I encouraged the students to maintain regular email correspondence with the professors between visits if they had questions about the research, preparing the presentations, or other aspects of their on-campus experiences. I asked the professors to respond to students who did choose to email them in a timely fashion, but not to initiate email contact themselves, thus leaving the degree of contact between campus visits to the students' discretion.

**Opportunities to develop peer relationships**

I assumed that opportunities for the student participants to develop relationships and share ongoing reflections about their on campus experiences could be important, given sociocultural theory’s emphasis on interactions not just among newcomers and more expert community members, but also among newcomers themselves. Thus, in addition to initiating informal group conversations during the on-campus days, I created some structured activities intended to encourage peer interaction.

First, I invited the students (and their parents) to a welcome meeting early in September 2007. This was not a scripted interaction with a formal agenda; however, I did share some information that I thought would anticipate and respond to concerns the students and their parents might have about the upcoming first day on campus. I distributed campus maps and pointed out destinations for the first day, described the proposed morning activities, outlined things they might do with the professors during the afternoon sessions, and gave them the names and website addresses of their faculty partners so they could learn a bit about the professors and their research in advance. I not only provided the students with practical information, but also reinforced that they would be participating in a set of shared experiences. I explicitly stated, for example, that
they likely were not alone if they felt nervous about going to a large, unfamiliar campus or talking with a university professor; these were probably new experiences for them, but ones which the group would navigate together, with my support. I also facilitated carpooling arrangements so students would not have to travel to campus alone.

Second, I scheduled morning and end-of-day check-ins/check-outs at a campus café, so the students had at least 30 minutes during each on-campus day for casual conversation. I intended these informal meetings to book-end the on-campus days, providing a forum for students to ask any questions they had arising from the day’s activities, to chat with one another about what they had experienced individually with their faculty partners, and simply to debrief and relax with a peer group. I consciously avoided directing conversations in this setting; however, I did try to help students to connect with others from different high schools.

Third, I deliberately left the lunch hour completely unstructured on all except the first and last days. I wanted the students to feel free to explore the campus during this time, and I hoped they might spend the time in pairs, small groups, or even all together. I wanted them to have chances to interact without me there – to say things they might have felt inhibited to say with the ‘researcher’ or ‘teacher’ around, to do things we had not included in the day’s schedule, to wander and get lost and find their way back.

Fourth, the students became part of a FirstClass online discussion forum with me, to which I asked them to contribute weekly, either by responding to a question I posed online or by commenting on their campus experiences, or both. The students perceived this initiative as by far the least helpful of the opportunities I tried to create for them to develop peer relationships. I explore the possible reasons for this in Chapter 5; in brief, however, the online forum was simply too artificial a venue for authentic, meaningful peer interaction. The students used it only intermittently during the first half of the study, and hardly at all after December 2007.

**Summary**

The goal of organizing the kinds of experiences I have described was to offer the students opportunities to develop personal relationships within SFU communities, both with expert community members (the professors, the morning session leaders) and with
other newcomers (their student peers). Previously, gifted high school students had identified such relationships as encouraging positive anticipation and reducing anxiety as they began their transitions into university (Lauridsen, 2004). I hoped that the experiences would provide the students with a degree of immersion into the cultures of SFU Burnaby generally and the Faculty of Science and its departments specifically, whereby they could participate at least peripherally in the practices of those communities. Where it became apparent that the activities as originally designed were not fulfilling that broad purpose, we made minor adjustments so as to improve students’ sense of the appropriateness of what we were doing to their needs. For the most part, the transition-related experiences followed my original proposal to the participants.

**Ethical Concerns and Research Relationships**

I received approval from SFU’s Department of Research Ethics and also requested, and was granted, school district permission to conduct research with district students (see Appendix E). In addition to obtaining informed consent from the student and faculty participants, I obtained parental permission for the students because they were under the legal age of consent, including specific permission for being audiotaped or videotaped and for participating in carpooling arrangements. Since the professors would be working with the students during school hours, the Study Information Form (Appendix A) indicated that they would be approved by the school district before contact with the students; the district did not request criminal record checks or other approval processes from the professors. Appendices F (parents), G (student participants), and H (faculty participants) show the consent documents signed by members of these respective groups. Overall, I did not expect participation to pose any significant physical, emotional, or psychological risks. The participants chose (students) or were assigned (faculty) pseudonyms; I promised to maintain confidentiality as far as possible (barring situations, for example, where I might perceive participants to be in danger of harming themselves or others, or of being harmed), but I also informed them that total anonymity would be difficult to assure within such a small participant group.

Research relationships were especially important, given this study’s sociocultural framework and action research design. My research questions focused on the meaning
of key relationships for the student participants – with university staff and students, with their faculty partners, and with their peer group. As we explored these questions together, my sense of an ethical relationship with the participants was grounded in the idea of caring as an ethical obligation (Lind, 2008; Meyer et al., 2006; Zeni, 2009). I was explicit in letting the participants know that I was committed to protecting their physical and emotional safety; that I appreciated their time and valued their ideas and opinions; and that I was prepared to earn their trust. I had to be ever conscious of, and conscientious about, my own developing relationships with all the participants, as these were inseparable from the research process.

**The student participants and me**

Attending to my researcher and teacher identities vis-à-vis the students was critical. Reinhartz (1997) has stated, “Unless the researcher (and subsequent reader) knows what the researcher’s attributes mean to the [participants], the researcher (and reader) cannot understand the phenomenon being studied” (p. 4). I had not taught any of the students directly (although I had met two of them previously while working at their high school); still, I anticipated that my ‘teacher’ identity would influence our relationships. Students are well used to being observed and evaluated by teachers, and this could lead the participants to be cautious around me and/or to manifest ‘teacher-pleasing’ behavior. I also had to consider how my perceptions might be affected if students did not seem to be attempting to please me, or if I developed strong affinities with one or more of them. My previous focus group research had reminded me how complex and subtle the flow of power in teacher-student relationships can be (Lauridsen, 2004). I explicitly invited candour and discrepant opinions from the student participants, realizing that they still might hesitate to be forthright. These issues compounded the usual complexities of researcher-participant relationships and underlined the need for me to reflect continually on my shifting positionalities as observer, participant, listener, speaker, and interpreter (among many other identities) in the research process (Hertz, 1997). At the same time, in my interactions with students I was motivated and guided by a desire to help them have positive transition-related experiences. Thus, the students had access, through our developing relationships, to an attentive listener who genuinely wanted to hear what they had to say about their experiences on campus.
The faculty participants and me

With the professors, as well, I needed to establish trusting relationships. My initial positionalities vis-à-vis the professors turned those with the student participants upside down: I was now in the position of a student, seeking acceptance and approval from university teachers. As a novice researcher, I was aware of feeling nervous when first meeting with the professors. Would I, and my research questions, seem credible to them? Would they be willing to accept and try my suggestions about building relationships with the students? I found the professors, without exception, to be warm and welcoming to me and my research in our first meetings, and I also learned that they too needed to feel safe and valued in the research process. They were eager to share their perspectives about transition into university, wanted to relate their own stories of transition to me, and hoped I could support them in finding effective ways to relate to the student participants.

The student-faculty pairs and me

In supporting the student-faculty pairs, I needed, minimally, to ensure students felt safe and comfortable with their faculty partners, and ideally to help them feel encouraged, inspired, and able to take intellectual risks. As well, it was important to minimize the chance that students would feel pressured to apply to or attend SFU and/or the Faculty of Science. I anticipated (based on my own undergraduate experiences and on many professors’ comments in their first interviews) that the hierarchical tendency of professor-student relationships could be intimidating for high school students, and that the students might benefit from some coaching as to what they could expect from their faculty partners and what they themselves could contribute to building positive relationships. I discussed these issues informally with both student and faculty participants during our first interviews; as well, I made considerable efforts to facilitate the pairs’ comfort with one another before they started working together and to check in with each participant informally following each on-campus day and assist with resolving any concerns they expressed. In short, I engaged in a continual process of boundary brokering (Wenger, 1998, 2008; Tsui, Edwards, & Lopez-Real, 2009), working to draw the participants into authentic partnership by sharing my insider understandings of practices of their respective communities.
The student peer group and me

Since the student participants came from several different schools, whereas I was familiar with all their school communities, I also tried to broker opportunities for them to get to know one another and spend unstructured social time together. In my teaching practice, supporting such peer relationships includes leaving student groups alone occasionally, provided that respectful interaction has been established among group members. After spending several hours with the students during the welcome meeting and the first on-campus morning, I felt confident that each student felt comfortable enough with at least two others that they might appreciate unstructured social time during the morning/afternoon check-ins/check-outs and lunch hours. I also discussed online etiquette with the students during the first morning session, in reference to the interactions they might be having through the online forum.

The “reflexive turn”

It is important to articulate as conscientiously as possible my own positionalities and assumptions – a process Cousin (2010) termed the “reflexive turn” (p. 9). In a qualitative methodology course I took, the professor made a pithy comment about reflexivity that has remained with me throughout this research. She remarked that whenever people asked what our research was about, the only honest answer would be to say, “It’s all about me” (S. de Castell, personal communication, 2004). There is no such thing as objective research, and research always reflects the researcher: the topics she has decided to explore; what she already believes concerning those topics and which new possibilities she is prepared to entertain; the way her every thought and action does not merely influence, but actually constructs, the research process and the identities of participants. This occurs despite the researcher’s best intentions to be self-aware. Though the statement might seem to express a delusion of grandeur, in fact it is a call to humility, to which I have tried to be accountable as a researcher.

I have already referred to experiences, beliefs, and orientations that have contributed to my evolving identities and practices as a learner, teacher, and a researcher. In addition, the ‘me’ that infuses this research is also a graduate student, a spouse, a parent, and a daughter. In Chapter 4, I will explain the interplay among these self-identity dimensions in more depth. For now, I can summarize by saying that I
consciously drew on my own experiences of identity change, during this research process, to sensitize me to the range of emotions and self-interpretations that the participants might be feeling, which I hoped would have a balancing effect on the power inherent in my positionalities as teacher and researcher. I kept in mind that I, like all the participants, would be in a continual state of becoming as we worked together, and that this meant I would be living – rather than conducting – the research.

**Data Sources and Data Generation Methods**

There were five main sources of data: (a) interviews with student and faculty participants; (b) personal reflection pieces created by students; (c) observations of student-professor partnerships; (d) online discussion forum transcripts; and (e) written and audiotaped research notes. Using multiple sources and data generation methods was intended to enhance what Richardson (2000) has termed crystallization – a metaphor for the many possible refracting and/or converging perspectives and interpretations of phenomena and experiences, which go beyond earlier qualitative conceptions of data triangulation.

**Interviews and personal reflection pieces**

There were three main interviews with student participants, with students bringing personal reflection pieces to the final interview, and two main interviews with faculty participants. After each main interview, I did a telephone follow-up within 48 hours to conduct member checks (see Appendix I). I audiotaped all the interviews and member checks, not for full transcription but as a reference source for quoting participants or clarifying my research notes; following Stake’s (1995) advice, my key interviewing tasks were to focus on the meaning being constructed during the conversation and later to share my interpretations with the participants as a member check strategy. Audiotaping also allowed me to listen without being too absorbed in writing detailed notes; I considered this important because, as Eder and Fingerson (2003) have stated, providing respectful and interested attention is an especially important form of reciprocity when interviewing adolescents. Indeed, I found it to be
important in my conversations with the faculty participants as well; focusing on listening rather than writing was a way for me to demonstrate an ethical stance of caring.

**Student participants**

The first two interviews with student participants (conducted in June-July 2007 and during January 2008, respectively) took place at the students’ choice of location – usually at their homes or schools, with one or two finding it more convenient to come to my office. The interviews (approximately 30 minutes long) were semi-structured, starting from conversation guides (see Appendix J) based on my etic questions but flexible enough to allow us to explore emerging emic issues either immediately or in future interviews, as suggested by Freebody (2003), Hatch (2002), and Rubin and Rubin (1995). Because of my concern about a lack of student perspectives in the transition literature, I attempted to maintain “conspicuous self-consciousness” as to the potential “asymmetry” of interview situations where the researcher’s agenda can tend to dominate (Holstein & Gubrium, 2003, p. 4).

The first interview was more structured than the second and third, because its purpose was to gather information as to the students’ initial ideas about what the transition from high school into university would involve for them. I considered it important to ask, also, what the students were looking forward to about participating in the study and what concerns or worries they might have; through hearing their responses to these questions, I hoped to attune myself to what they saw as important areas for learning and/or areas where they might need assistance. The second interview was much more open-ended, starting with a general prompt – “Tell me about how this experience is going for you” – intended to elicit what the students themselves considered significant to discuss at the study’s midpoint. I used the other prompts I had prepared (see Appendix J) only when students made statements that seemed to relate to those topics. Another method I used to ground interviews in the students’ perspectives was to ask them to create, and bring to the third interview (in May 2008), a personal reflection piece that responded to this same prompt. Students could reflect in any format they chose, whether writing, visual representation, or some other mode of expression, and I asked them to begin the interview by explaining the piece. This strategy was inspired by Porath and Lupart’s (2009) description of a technique they used in a study of gifted
students’ perceptions of their learner identities. I followed Holstein and Gubrium’s (2003) recommendation, that interviewers should be open to the possibility that “plain words can’t [always] convey what [interviewees] mean” (p. 20).

**Faculty participants**

I interviewed each faculty participant twice – before they met the students (during July and August 2007), and after the April 2 mini-conference (between April and June 2008), with telephone member checks following each of these within 48 hours (see Appendix I). Again, these were semi-structured interviews of about 30 minutes. Appendix K contains the faculty interview guides. The primary purpose of the first interview was to elicit professors’ understandings of scholarly and research practices within their specific disciplinary communities, to establish a source of comparison for later conversations with students about their learning within the partnerships. At this time, we also discussed the professors’ responsibilities in the student-faculty partnerships and talked about kinds of things they might do with the students during the afternoon sessions (see Appendix D). I intended the second interview with faculty participants to enhance data crystallization (Richardson, 2000), to illuminate the student-professor relationships from their perspectives after they had spent several afternoons with the students.

I did not interview the faculty participants at the study’s midpoint for two main reasons. First, I intended faculty participant interview data to support crystallization rather than being a primary data source. Spanning the midpoint, I allocated my own time to observing the student-professor partnerships. I made this choice to balance the weight given to my own observations, as compared with the professors’. As well, since the professors spent less time with the students than I did, I reasoned they would have had less interaction time, by then, in which to form impressions. And, since the students spent twice as much time as the professors participating in activities related to the study (they spent the mornings at various group sessions, in addition to spending afternoons with the professors), I prioritized the students’ midpoint interviews to accommodate the volume of information and experiences they had to process and reflect upon.

A second reason for not interviewing faculty participants at the midpoint was their indication when they initially volunteered, that securing the time commitment to do so
would be challenging. In December, many were busy administering exams, wrapping up courses, or taking vacations, while January saw them starting up new courses, orienting new students, and in many cases meeting deadlines for research grant applications. Many of the professors had noted that they would be travelling to conferences or research sites during these months. While this was a busy time of year for the professors, the winter break at the high schools provided some down time for the students, allowing us more easily to schedule interviews.

Because of the time elapsed between the first and last faculty interviews, it was especially important at the final interview to pose emic questions that had arisen during the first interview and over the course of my observations of the student-professor partnerships (see Appendix L). Integrating these questions was a useful way of helping the professors to recall salient points from our initial conversations several months previous. As well, it provided the professors with a thematic overview of the collective content of those initial interviews and allowed them to situate their own perspectives within a contextual framework of their colleagues’ reflections.

**Observations**

Time permitted only one observation (60 minutes long) of each student-professor partnership. The observation schedule is shown in Table 2.

**Table 2. Schedule for Observations of Student-Faculty Pairs**

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<th>Date and Time</th>
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<td>November 13, 2007, 1:00 – 2:00 p.m.</td>
<td>Buck and Dr. I/Dr. J</td>
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<td>November 13, 2007, 2:00 – 3:00 p.m.</td>
<td>Andrea and Dr. E</td>
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<td>December 4, 2007, 1:00 – 2:00 p.m.</td>
<td>Krystine and Dr. C</td>
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<td>December 4, 2007, 2:00 – 3:00 p.m.</td>
<td>George and Dr. G</td>
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<td>January 9, 2008, 1:00 – 2:00 p.m.</td>
<td>Frank and Dr. H</td>
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<td>January 9, 2008, 2:00 – 3:00 p.m.</td>
<td>Gordon and Dr. D</td>
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<td>February 6, 2008, 1:00 – 2:00 p.m.</td>
<td>Robert and Dr. B</td>
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<td>February 6, 2008, 2:00 – 3:00 p.m.</td>
<td>Katarina and Dr. F</td>
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<td>March 5, 2008, 1:00 – 2:00 p.m.</td>
<td>Nate and Dr. A</td>
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Still, the observations provided a rich complement to the interview and personal reflection data, allowing me to see what the pairs did together and watch their interactions rather than only hearing their accounts of this collaboration. While the observations were theory-driven in that I was attending to processes that indicated identity work and boundary practices relevant to the scientific discipline, I was also interested in emic dynamics of the partnerships.

At the risk of some self-consciousness for the participants, I audiotaped these sessions with their permission, so that I could focus on directly observing subtleties of interaction, expression, and behaviour, while still having a record of verbal exchanges to refer to later. Initially, I had planned to videotape the observations; however, participants’ feedback when I described this during the consent process led to a change in method. Many participants expressed unease with being videotaped, and some professors indicated concern that it would be impossible to avoid videotaping other individuals who might be working in their labs at the time of observation; thus, we mutually decided upon audiotaping as a more comfortable, less complicating, option. My aim was to be as unobtrusive as possible and cause minimal interruption to the flow of the partners’ work together, while recognizing that an observer’s presence inevitably alters the situation being observed.

**Online discussion forum transcripts**

I encouraged the student participants to contribute to a FirstClass online discussion forum at least once per week, intending this as a means for the students to communicate with one another and with me in between campus visits. I invited them to use the forum to discuss their partner work with the professors, to offer feedback and impressions on the morning sessions, or to raise any successes, difficulties, or concerns they might be experiencing related to the study. I informed them that the online forum was also a venue for me to conduct informal interviews, which Freebody (2003) defines as “places where researchers and participants co-construct understandings of what is happening in the research context” (p. 93). To this end, I downloaded transcripts of online conversations and saved them in a text file, for use as a crystallizing source (Richardson, 2000) during data analysis.
The online forum was a data generation method that I de-emphasized in response to feedback from the student participants. From the start, the students did not contribute to it in the ways I had hoped. Some had trouble accessing the forum from their home computers (despite my attempts to help them troubleshoot); others chose not to respond to the questions I posted or responded only very briefly; and in general the kind of interactive conversation I initially envisioned never seemed to develop. By the study’s midpoint (January 2008), most of the students had stopped contributing to the FirstClass forum in any way that could constitute a trustworthy source of data collection.

**Researcher notes**

My documentation of and reflection upon my observations, interpretations, and affective responses during the research process comprised a very important data source. These data included not only notes I made during interviews and observations, but also my contributions to the online forum and my written and audiotaped research journal, which contained ongoing reflections about data generation and analysis, relationships among participants, and personal responses within research situations. I added to this journal at the end of each day I spent on campus with the participants and in between campus days as I worked with data. It represented the continual shifting of my positional and relational identities and illustrated the patterns of my changing interpretations and understandings.

I was inspired by Freebody (2003) to consider how I might draw upon my own experiences, including being a novice researcher, as one way to develop shared insights, with the participants, into transition processes as understood from a sociocultural perspective. As a researcher, I was living the experience of the research process in overlapping layers, constantly traversing the boundaries of multiple communities, observing and engaging in their various practices simultaneously, and I saw this “mess” (Cook, 2009, p. 277) as productive and ultimately enjoyable, despite moments of feeling overwhelmed and unenlightened. As Cousin (2010) has observed,

Our knowledge of the world is always mediated and interpreted from a particular stance and an available language, and … we should own up to this in explicit ways. The self is not some kind of virus which contaminates the research. On the contrary, the self is the research tool, and thus intimately connected to the methods we deploy.  

(p. 10)
In this sense, my researcher notes and journal comprised arguably the most important data source, as they articulated my engagement with all of the others.

Data Analyses and Interpretive Processes

As Maxwell (1996) noted, the researcher’s ongoing reflective process is a foundational aspect of data analysis that begins at the outset of a qualitative study and continues throughout. I began interpretive processes with the data concurrently with its generation. Following Dyson and Genishi’s (2005) analytic process, which they termed “constructing assertions” (p. 79), one approach I used was to anticipate categories of relevant information based on the etic framework – my sociocultural understanding of transition as a process of identity shift occurring through participatory engagement within university communities. I looked for illustrations of important concepts, such as students engaging in community practices with professors or university staff or students, or perceiving similarities among their own and their peers’ experiences as newcomers. I maintained this focus as I listened to participants during interviews, observed the student-faculty partnerships, and engaged in informal interactions with the students or professors. I kept in mind sociocultural ideas about identity as fluid, as constituted and changeable through social relations, as I continually reviewed the interpretive notes I made while listening to audiotapes of interviews, member check conversations, and formal observations, replayed and reread my audiotaped and handwritten research journal, and read students’ posts to the online discussion forum. I created computer files for each individual participant, containing data from all of my interactions with that person; from these, I copied data that seemed relevant to particular etic categories (e.g., guided participation, boundary practices, identity change) into thematic computer files.

At the same time, I worked inductively with the data, aiming “to understand how the phenomenon matters from the perspectives of participants” (Dyson & Genishi, 2005, p. 81). It was through this process that emic categories emerged and prompted new questions to bring to analyzing patterns and/or discrepancies across the data. Working primarily with the individual participants’ data files, I used Auerbach and Silverstein’s (2003) coding process of locating repeating ideas in the data, then merging these ideas into themes, which then became the bases for inductively derived theoretical constructs,
leading to a broader theoretical narrative. I then took these emic perspectives on the data (some of which were compatible with sociocultural theory, while others challenged me to reconsider, or reframe, my etic anticipations), and applied them as a lens for reviewing data in my research journal; this meant asking myself, ‘In what ways do situations or interactions look different if I view them from this different or unexpected perspective?’ As well, I added these emic ideas to the conceptual frame with which I approached new data as it was generated.

I involved both student and faculty participants in opportunities to look at the interpretations I was developing through these processes of sifting data into both etic and emic thematic categories and to discuss with me how closely (or not) these seemed to correspond with their own understandings of their experiences. Member check conversations were the main vehicle for engaging participants in interpretive processes, especially with the professors, since once the study was underway I only interacted with them in person during the time they were working with their student partners. On the other hand, the time I spent with the students during the on-campus mornings allowed me to invite them, as I often did, to reflect with me informally about my interpretations of data. Frequently, in individual or group conversations, I stated my thoughts in progress about something I had observed and directly asked students whether they thought I was on to something, or whether they saw the situation quite differently. These informal prompts encouraged rich discussion and multiple viewpoints to emerge, sending me back to the data with fresh perspectives.

The overall aim of these interpretive processes was to locate places of convergence among theoretically derived categories and participants’ perspectives, in order to “develop assertions about ‘what’s happening here’ relative to the phenomenon of interest” (Dyson & Genishi, 2005, p. 110, my emphasis) – to build propositions about pre-matriculated gifted students’ experiences of transition processes, through trying to understand the experiences of these particular participants during the study. I applied Auerbach and Silverstein’s (2003) concept of “justifiability” in assessing my own engagement with and presentation of the data; they called upon the researcher to “use his [sic] subjectivity in analyzing and interpreting data … [but] not … to impose his own subjectivity in an arbitrary manner, that is, in a way that is not grounded in the data” (pp. 82-83, emphases in original). I was guided by my interest in evaluating how far
sociocultural theory could support my understanding of transition-related experiences, yet I always had to be seeking discrepant possibilities in the words, actions, and interactions expressed and observed within the participant group.

**Trustworthiness and Credibility**

Generalization clearly is not possible, nor even desirable, given my methodological orientation; rather, as Stake (1995) suggested, “The quality and utility of the research is not based on its reproducibility but on whether or not the meanings generated, by the researcher or the reader, are valued” (p. 135). I add to this description: meanings generated by the participants. My aim was to formulate “propositional generalizations” or “assertions” (p. 86) about the participants’ transition-related experiences that would seem credible to them, to me, and to a wider audience of readers, based on the data generated and the approaches employed in analyzing and interpreting them. The goal was to establish trustworthiness through multiple data generation methods that gave participants authentic opportunities to share their thoughts through a variety of expressive modes (speaking, working collaboratively with others, writing, and alternative ways of responding that they chose). I explicitly invited discrepant or competing opinions from participants and offered these, along with my own interpretations, for consideration by the participants, through member checks. I considered these strategies to have special importance with regard to the student participants, given the potential power imbalances within teacher-student relationships and the need for student voices to be encouraged and valued (Lind, 2008), particularly within the literature on gifted learners in transition.

Where data and their analyses seem credible, “reader or user generalizability” becomes possible, in terms of “what can be learned” from participants’ experiences and how it can be “transferred to another situation” (Merriam, 2002, p. 28). The goal was not to make conclusive statements about gifted students’ transition experiences, generally, but to offer insights into these participants’ understandings of transition-related experiences that would seem relevant to readers and provoke questions to consider in analyzing similar situations. As Cousin (2010) observed:
Perhaps the key thing to remember about writing research reports is that whatever our chosen genre, it is always going to be adrift from the actual experience about which we write. We are always *re-presenting* experiences through text or other media. In this sense all research is fiction … The challenge for researchers is to write plausible, useful ‘fiction’ as well as to display a reflexive engagement with how we gather and analyse our evidence.

(p. 10, emphasis in original)

Having outlined the design and methods I employed in constructing this ‘fiction,’ I will now, in Chapter 4, describe its characters: the participants.
Chapter 4.

Portraits of the Participants

Introduction

Central to any story constructed from data are its characters: the participants, including the researcher herself. For “reader generalizability” (Merriam, 2002, p. 28) to be possible, readers must feel able to envision the participants and access their identities on some level. To facilitate this, in this chapter I sketch a brief portrait of each participant, presented not as ‘who they are’ (since there is no such thing) but as ‘who I interpreted them to be’ as we engaged in the research process together. Since a relational worldview – of learning, of identity, of epistemology, of methodology – guided this research, it seems important to introduce the participants in relation with one another. In fact, it would be impossible to do otherwise. My guiding principle in creating these portraits was that “relational knowledge in research arises from knowing others as persons” (Lind, 2008, p. 222); I wanted to know the persons involved in this research as deeply as I could and to invite readers into our community of participants.

The nine student participants are central to this study. The goal of every activity we engaged in, and the intention behind every interpretive process, was to build understanding of these students’ meaning-making as they participated in transition-related experiences. I wanted to understand identity dimensions they were bringing to these experiences – personalities, family and cultural contexts, intellectual and academic capabilities, school histories, learning attitudes, perspectives on transition and post-secondary education, and anything else they chose to share with me.

I originally hoped that interviews and conversations with faculty participants would provide crystallizing data and open possibilities for alternate perspectives on the students’ learning and participation in SFU communities, and they did serve this
purpose. However, the professors also brought personal histories, goals, interests, and worldviews, which were inextricable from the ways they engaged with the research process, with the students, and with me. I became increasingly interested in knowing the faculty participants on a deeper level than I had thought would be necessary; I had to adjust my bias toward connecting with the students as the professors’ own evolving identities, quite simply put, engaged and intrigued me.

Relationships among the students and their faculty partners figured centrally in all the participants’ interpretations of the transition experiences; thus, I introduce the participants in these pairs, presented in chronological order of the students’ responses to the letter inviting them to participate. I describe each student and professor individually and then briefly explain my rationale for matching them. I also note relationships among participants that pre-dated the study; relationships that developed over the course of the study are discussed in Chapter 5. These portraits represent interpretations derived through my own interactions with and perceptions of each individual participant, the student-professor pairs, and the participant group as a whole. Thus, I conclude the chapter with a self-portrait of the researcher, including relationships that developed among me and the student and faculty participants.

The Student-Faculty Pairs

Robert and Dr. B

Robert, one of the first students to volunteer, appeared to me to be calm, thoughtful, and mild-mannered. His humble self-presentation belied a quick, inquiring mind and desire for intellectual challenge. He excelled academically across subject areas and said that he experienced stress from attempting to be at the top of his classes. He was sometimes frustrated by the slow pace in some classes and the repetitive nature of some assignments and stated that he really enjoyedhonours classes, where students were highly motivated. In addition to his school work, Robert liked to take on creative extracurricular projects; for example, he had volunteered many hours to create a promotional video for a local kayaking team. He planned to study applied sciences or engineering at university and had considered SFU as an option.
Robert’s parents were both educators (his mother a teacher and his father a school administrator), and both of his brothers – one younger and one older – were also identified as gifted. Robert mentioned that his older brother, in Grade 12, was jealous of Robert’s visiting SFU and spending time with a professor. The family had a strong academic focus, which Robert seemed to accept willingly, but not unquestioningly – he sometimes debated the value of certain school activities and assignments but still chose to do them so as to maintain his grades. His parents were encouraging him to attend SFU so he could live at home, which they thought would be a good financial decision since they expected him to pay his own way through university. Robert, however, felt he would prefer to live on his own, close to campus if not in Residence, and he wished to consider his girlfriend’s choice of post-secondary school when making his own decision, so he could be close to her. At the study’s outset, Robert knew only two of the other student participants: Krystine, who attended his high school, and Frank, with whom he had played community soccer (both described below).

Dr. B, a Physics professor, specialized in semi-conductor physics. He agreed to participate despite feeling very pressured in terms of time. A father of three, he felt a responsibility to contribute to youths’ science education and had been involved in various projects aimed at improving science curriculum content and delivery, borrowing time from his own research to do so. I had the sense he was unwilling to say no to any outreach project, despite feeling over-committed. Yet, he exhibited a quiet pride in this work, saying “It’s a continuation of my life. Even when I was in school I was always trying to show other kids stuff about science. It’s a form of showing off, like ‘this is cool’.” He seemed dedicated to mentoring young people, even at personal cost. I perceived him as quietly intense.

I connected Robert with Dr. B because, since he was the first student to respond to the invitation to participate, I prioritized his preference to work with a professor in either Chemistry or Physics. There were no Chemistry professors who volunteered, and of the two Physics professors, I thought Dr. B’s involvement in developing new technologies would be a good match for Robert’s interest in applied science. Drawing on the importance attributed to matching gifted learners with mentors who have similar “intellectual styles” (Shaughnessy & Neely, 1991, p. 129), I also matched Robert and Dr. B due to similarities that I saw in their academic intensity and task commitment.
**Krystine and Dr. C**

Krystine presented as a vibrant young woman who exuded a passion for learning. She had consistently been at the top of her classes, achieving exceptionally well in a wide range of subjects, and said she had always known she was “different” from her peers in that she learned faster and wanted to think “harder” and “deeper” than others her age. She stated that when she took her first honours class in Grade 9, “it just felt right” to be with peers who enjoyed learning as much as she did; she had always wanted to “stand out” as a top student and thus felt a bit intimidated by the prospect of not being the smartest person in university, but ultimately she thought that finding an intellectual peer group was more important than being the highest achiever. Krystine said that she couldn’t imagine life without learning, that her love of learning defined her as a person. Her career interests included microbiology and/or computing science.

Krystine, a student of aboriginal heritage, was planning to be the first member of her extended family to attend university, and her father, who had been a single parent before a recent remarriage, was particularly proud of her achievements. Although her parents and stepmother had not attended university themselves, they had prepared her from an early age to believe she could pursue post-secondary education, and Krystine perceived them all as strongly supportive. Krystine seemed deeply attached to her family, including her younger brother, yet independent enough that she was looking forward to living away from them and being less “sheltered” after high school. At the study’s outset, Krystine knew only Robert, who attended the same high school, and she recognized that she might find it difficult to connect with the other students since, she said, “I feel sometimes I’m awkward with new people … maybe that’s just me.” Still, she approached the SFU experiences with excitement and enthusiasm.

Dr. C, a Biology professor, had a specific interest in the environmental impact of human activity on pollinator insects – mostly bees – and their habitats. Clearly passionate about her chosen field, she spent a good part of each year in the field; her office walls were adorned with photographs of bee habitats such as the Garry Oak ecosystem on Vancouver Island. She worked with a consortium of academics to educate the public about the endangerment of pollinators and effects for human populations. I could imagine a wide range of people feeling drawn in by Dr. C’s enthusiasm. Warm,
vivacious, and welcoming, she agreed to participate without hesitation and expressed a genuine enjoyment of encouraging young people, particularly girls, in science. A former high school science teacher, she said she quickly formed personal attachments to students. She saw herself as not only sharing academic advice or intellectual insights, but also connecting individuals within communities of learners. She described herself as “student-centred” and spoke out strongly against a tendency she saw in academic communities to view graduate students as “second-class citizens” and undergraduates as even lower; her own goal was not simply to mentor but to mentor “properly,” with students’ learning as the primary focus. Dr. C emphasized that students in her research lab made contributions equal to her own.

I matched Krystine with Dr. C because I believed they would be compatible based on the passionate enthusiasm for learning that they both conveyed. Dr. C had expressed a strong interest in mentoring a female student, and Krystine was open to being inspired and challenged to extend herself intellectually. Krystine easily became deeply absorbed in learning and was prepared to be matched with any professor, saying that no matter the situation she would find something new to enjoy learning about.

**Katarina and Dr. F**

Katarina presented as a soft-spoken, yet assertive, young woman. In addition to being quite athletic (she played volleyball, soccer, and field hockey), she had a history of strong academic performance and was conscientious about her studies, although she expressed some uncertainty as to why her teachers thought she was gifted (her school records indicated that she was identified based on her mathematical reasoning ability, and she was accelerating in math). Katarina was one of the first students to volunteer; she told me that despite feeling some initial trepidation, she believed the opportunity to spend some time on a university campus, learning “how things work” there, was important to pursue since she was focused on attending college.

Neither of Katarina’s parents had attended university. Katarina had visited university campuses to watch athletic events and had cousins and other extended family members who had gone to university, but she stated that she knew very little about university coming into the study. Nonetheless, her parents supported her plan to attend
university, with SFU being one of her options due to its proximity to home. She hoped to study elementary education, having been inspired by her own teachers and seeing their jobs as rewarding ways to help children. Katarina was close friends with Andrea, and she also knew George (both introduced below); who both attended the same high school as Katarina.

Dr. F was a professor in the Molecular Biology and Biochemistry (MBB) Department, whose research focused on mapping the genetic structure and cell division processes of microscopic worms, in relation to understanding human disease. Dr. F seemed boisterously energetic and verbally effusive, with a keen sense of humour. She emphasized that she enjoyed the “cool and fun” aspects of research and valued sharing her enthusiasm for science with others. She considered mentoring young girls to be extremely important and served on the executive committee of the Society for Canadian Women in Science and Technology (SCWIST), the umbrella organization for mentorship programs for girls interested in science. She spoke of her need to do this volunteer work as rooted in her own experiences of being mentored (or not) in particular areas as a young girl. Mother of a young son and expecting a new baby, Dr. F was living the experience of balancing academic work with family life and felt it was important to help young women in science see that managing both together is possible.

I matched Katarina with Dr. F because I sensed timidity in Katarina at our first meeting – she seemed not entirely confident in her intellectual abilities and expressed nervousness about meeting a professor, which she thought would be eased if she were matched with a female partner. I felt certain that Dr. F, with her warm personality and outreach experience, would quickly put Katarina at ease and create opportunities for her to take intellectual risks. As well, Katarina wanted to become a teacher, and Dr. F gave the impression of being a master teacher as well as a researcher, so I hoped the partnership would allow Katarina to observe good teaching in practice. Dr. F also had been very interested in working with a female student.

**Andrea and Dr. E**

Andrea seemed to be an articulate, assertive young woman and a conscientious student who excelled in many academic areas as well as athletics. She was not
identified as a gifted learner until Grade 10; however, she had early memories of learning very quickly in school. She was very comfortable with her identity as a “smart kid” in her school; she said she had accepted long ago that she might not be popular or “cool” by conventional definitions, but she had good friendships with peers who shared her academic focus and post-secondary ambitions. One of her closest friends was Katarina; however, Andrea made her own decision to participate in the study, not knowing that Katarina had already volunteered. This seemed to reflect Andrea’s independent spirit and the lack of importance she gave to peers’ opinions when forming and pursuing her educational goals.

Andrea’s family, including her father, mother, and younger brother, had immigrated to Canada from Romania when she was a preschooler. An important influence on Andrea’s desire to achieve a university education was her mother, who had always dreamed of going to university but never had the opportunity. Andrea expressed a sense not so much of duty, but rather of honour and pride, about being able to fulfill the dream her mother could not; she planned to study kinesiology and eventually become a pediatrician. Her commitment to this path was evident in her, and her family members’, dedication to her participating in the study; the family even rescheduled an overseas vacation so that Andrea could attend the first day on campus.

Dr. E was a professor in the MBB Department whose work focused on bacterial pathogens. Her research involved exploring the structure and functions of Type IV pili, which are hair-like filaments on the surfaces of bacteria, and their implications for developing “vaccines and therapeutics.” Dr. E’s demeanour seemed intensely academic; she appeared to be driven by a strong work ethic, but at the same time she was very approachable. She said she felt obligated to act as a mentor and role model for young girls, pointing out the particular challenges that women face on the path to an academic career in sciences and wanting to help girls see that it is possible to succeed through self-confidence and task persistence. She set high standards both for herself and those who worked with her and described being disappointed when those in whom she invested time and energy did not seem to work toward their full potential. She expressed a dislike of being “bored” and a desire to be challenged and to excel in her work.
I thought that Andrea and Dr. E would be well matched because Dr. E’s research interest in improving therapeutic treatments and preventative vaccines were topics that should be engaging for a student who wanted to become a doctor. I also perceived similar levels of ambition and academic motivation in Andrea and Dr. E, and I thought that Dr. E would appreciate working with a student like Andrea, whose first interview suggested to me that she was prepared to work hard and approach new challenges with enthusiasm.

**Frank and Dr. H**

I perceived Frank as a bright, inquisitive young man who had shown a pattern of underachievement in school. By his own account, he preferred hands-on learning and became bored easily. Even in his high school’s self-paced learning system, he said he was uninspired by the pre-packaged learning guides and often procrastinated about completing them. He was frustrated by content that seemed to lack real world relevance or simply repeated what he saw as common knowledge. Frank had a low opinion of his own intellect, since he didn’t regard it as particularly intelligent to grasp what he viewed as easy concepts. As well, he said others had been surprised by his announcement that he would be participating in a study for gifted students: “My dad doesn’t understand and my friends don’t believe me … they think I’m lying.” Given these reactions, agreeing to participate was probably somewhat risky for Frank. He had not seriously considered applying to university, despite having attended SFU’s summer mini-university camps as an elementary student, and he had no specific career goals in mind. He had demonstrated tenacity and commitment in athletics, though, as a national level kayaker.

Frank’s maternal grandmother, who shared custody with his parents, had served as an important caregiver for him. She contacted me about the invitation to participate on Frank’s behalf when he seemed reluctant to do so. Frank’s grandmother was a university graduate, although his parents were not, and she expressed a strong wish that he would have the opportunity to try university, as she believed he could flourish there. Frank appeared to me as a student who had lacked school-related motivation in the past, but had not lost the potential to be inspired. He was the only student from his high school to participate, and Robert, with whom he had played community soccer, was the only student in the group that he knew at the study’s outset.
Dr. H held a Canada Research Chair in the Earth Science Department, with her work focusing on glaciology. She was researching watershed hydrology and the impact of climate change on glaciers in the Yukon and Iceland. Vibrant and energetic, she impressed me as strongly driven and highly motivated, having achieved prestigious honours within her field relatively early in her career. She was passionate about her research and spoke with great enthusiasm about her field work, which involved travel to remote glaciers and rugged outdoor adventures. She clearly looked forward to these expeditions and embraced the problem-solving opportunities they presented.

Dr. H was intensely interested in mentoring girls in science and had hoped to be paired with a female student; however, the timing of her own and Frank’s entry into the study meant that the three female students already had been matched with professors. As well, I hoped that Frank and Dr. H’s shared interest in outdoor pursuits and his early and enduring interest in earth science (his grandmother told me that the first book he chose for himself, at age three, was about rocks and minerals) would provide points of connection for this pair. Dr. H agreed with me that it could also be a positive mentoring experience to match a male student with a very intelligent woman who had earned high regard within a traditionally male-dominated discipline.

Gordon and Dr. D

Gordon, who appeared to me to be a confidently relaxed young man, was the only student from his high school to volunteer. Identified as gifted early in elementary school, Gordon had participated in pull-out challenge programs involving small groups of gifted students in his school working on critical thinking projects under the guidance of a support teacher; he had become friends with Nate and Buck (both introduced below) through these experiences. Since entering high school, though, Gordon stated that he had not received any special programming as a result of being gifted. Although comfortable with not being singled out, he expressed that he felt under-challenged in high school. Nonetheless, Gordon seemed to cultivate an appearance of not being too concerned about academic pursuits and stated jokingly that he’d volunteered for the study because “it’s always good to miss a day of school.” Yet, despite this ‘cool’ persona, Gordon was serious about school and focused on his post-secondary goals. He intended to pursue a career in geological sciences, as both his father and older
brother had done, and said, “I’ve had my eyes on what I want to do since I was really little.” Gordon’s mother, also a university graduate, encouraged him to volunteer because she herself had valued the opportunity, as a Grade 12 student, to take part in several campus visits.

Dr. D was an assistant professor in the Department of Earth Science; his work in the field of volcanology involved traveling to global research sites such as Nicaragua and Costa Rica. Welcoming and energetic, he described having an “open-door policy” where students, including undergraduates (which he explicitly emphasized), could drop by any time to discuss ideas or ask questions. He expressed strong beliefs in the importance of students taking responsibility for their own development as learners and asserted firmly that lazy habits of mind or study should not be accepted by those entrusted with teaching responsibilities. He conveyed the impression that students working with him would be challenged to think critically and to aim for their highest potential. Dr. D was raised in an academic family, where it was assumed that he would attend university, despite being diagnosed with dyslexia (he said that he “could barely read until [he was] about twelve years old”). Far from viewing this as a hindrance, he expressed gratitude to the teachers who had recognized his difficulty and helped him cope with it. He described a nurturing and inspiring home environment where the family would “sit around the dinner table and talk about everything under the sun.” He saw this upbringing as the foundation for his view of mentoring as a holistic, integrative process of learning from others and sharing knowledge and skills with the next generation of students/scientists.

There was a clear match between Gordon and Dr. D in terms of their interests in geology, and they also seemed to have similar family backgrounds, so I paired them on these bases. I also hoped that Dr. D’s infectious enthusiasm for scholarly pursuits might encourage Gordon to drop his ‘cool’ persona and show his intelligence more openly.

**Nate and Dr. A**

Nate presented as a quiet, fairly reserved young man who was focused on academic achievement but also quite involved in athletics, particularly football. He had already thought a great deal about his future plans, which included a degree in engineering and possibly further study in architecture. He had been identified as gifted in
elementary school and participated in the same challenge programs as Gordon and Buck (introduced below), which he enjoyed because of the opportunities for “deeper thinking.” Since starting high school, however, Nate said that “nobody [had] even mentioned” his being gifted. Nate admitted to being able to outperform most of his school peers academically without having to study especially hard.

Nate felt that going to university had always “seemed like a natural thing to do.” His parents, both university graduates (his mother was working on a graduate degree), expressed strong support for his post-secondary goals and were very keen – perhaps more so than Nate himself (it seemed to me) – to have him participate in the study. Nate was certain that he would not attend SFU, as he already had his sights set on the engineering program at UBC, a decision that had been partly influenced by two cousins and an uncle who were professional engineers.

Dr. A was a young Physics professor who had recently been awarded the BC Innovation Council’s Young Innovator Award for detecting “the single top quark” with his research team. His work in particle physics involved a lot of travel to work with an international consortium of researchers at a particle accelerator in Switzerland. He was friendly and unprepossessing in manner, with a subtle but quick sense of humour and a willingness to spend time in conversation despite an obviously busy schedule. He found it deeply rewarding to work with “keeners” – individuals who were strongly motivated by a desire to learn and discover – and placed importance on students' taking initiative to grow as learners. The success and international regard he had earned at such a young age suggested that he himself was highly self-motivated.

Dr. A’s area of expertise relied on using mathematical modeling and high-level theoretical thinking to design and test complicated machines, which overlapped with Nate’s stated interest in “the idea of manipulating mathematical formulas to apply to real-life situations.” Nate was a later volunteer for the study, and it was fortunate that Dr. A was recruited to become his partner, since their interests did match so closely.

Buck and Dr. I/Dr. J

Buck came across as affable and easygoing; however, he said that he “stressed out quite easily.” Identified as gifted in elementary school, he had participated in pull-out
challenge programs with Gordon and Nate and had appreciated the chance to stretch himself intellectually. He said he had found elementary school to be quite easy but was finding high school more challenging. He seemed confident yet humble, knowing the limits of his abilities but willing to take on new challenges; he believed in his ability to problem-solve. Buck was talented in a wide range of areas but felt he was not exceptionally strong in any one of them. He was what one might call a ‘well-rounded’ gifted student, appearing to be both academically capable and socially well-adjusted.

To Buck, university seemed a logical next step, since he was good at “the kinds of academic things that require university to turn them into a career.” He indicated a wide range of interests – including sciences, liberal arts, history, journalism, and film-making – but hadn’t yet made any post-secondary decisions, though recently he had begun to consider studying education. Both of Buck’s parents, as well as many extended family members, had attended university and pursued professional careers; his father had studied law and his mother economics. His parents had taken him to their alma mater universities during family vacations and strongly encouraged his participation in the study. Still, Buck only volunteered once he learned that his friend Nate shared his “curiosity mixed with apprehension” about the study.

Dr. I was a longstanding senior member of the MBB Department. A Canada Research Chair holder in Genomics, he had studied under David Suzuki and Nobel laureate Sydney Brenner before coming to SFU in the 1970s. His research interest was cellular genetics, especially as they relate to evolution. He headed a genomics project wittily named “Worms in Space” and travelled frequently in this capacity, which was why he asked that Dr. J (his post-doctoral fellow) stand in for him if necessary during the study. Dr. I came across as quirky and somewhat eccentric; with his excitement about all things molecular, his proclivity for joking and quizzing his audience, and his tendency to digress into anecdotes, he had something of the stereotypical ‘mad scientist’ about him. I had the impression that it might be challenging to keep up with his quick mind, and that his brusque, no-nonsense manner could be intimidating to some. He had a wealth of experience working with students at all levels and spoke frankly – sometimes even cynically – about their strengths and demerits. He felt that some students had “ulterior motives” for entering some fields (such as those who used MBB as a stepping stone to medical school) or participating in opportunities such as this study. He said that such
students “drive [him] nuts,” and he chose to invest more in students who shared his love of pure science and joy in learning; he felt most comfortable with students who “think about things in a real way instead of just giving answers they think I want to hear.”

In contrast to Dr. I, Dr. J seemed a man of few words, a quiet observer. He had changed careers, from being a lawyer to entering doctoral studies in science. His demeanour was one of understated intelligence, quite different from Dr. I’s extroverted presence. Dr. J’s involvement with Buck turned out to be minimal; he covered on a couple of occasions when Dr. I was out of town, but on those days Buck mostly worked in the lab with Dr. I’s graduate students.

I paired Buck with Dr. I because he had stated that he would like to work with a biological sciences professor and that he was particularly interested in genetics. Thus, Dr. I seemed a perfect match for Buck in terms of their scientific interests. As well, they struck me as having similar personalities; Buck, like Dr. I, presented as witty and gregarious, very bright yet self-deprecatory, and highly intelligent but also seeming to possess (and value) common sense.

**George and Dr. G**

George came across as a studious young man who often appeared to be lost in thought. He consistently achieved high marks and honours in school and exuded an easy confidence about his academic ability. Since being identified as gifted in Grade 10 as a follow-up to some earlier testing in Grade 7, he had been offered opportunities for adapted assignments in several areas but had usually declined; he felt that he really only required additional challenge in mathematics. He did appreciate honours courses because “everyone is really good at the subjects and participates more” and he did not have to “wait for other people to learn things more slowly.” He appeared to assess his own abilities and make practical decisions, accordingly, to invest his intellectual energies in the areas where he had the greatest strengths.

George had been thinking about attending university “for a long time,” as far back as early elementary school. All of George’s immediate family – his parents (both dentists) and two older brothers – as well as most members of his extended family, had attended university, and George seemed assured of his own eventual success there. He
had visited several university campuses and stayed in Residence with one of his brothers on occasion, so he was more familiar with campus life than most of the student participants. He intended to pursue post-secondary studies in mathematics and eventually enter a career in engineering or architecture. Initially, George knew only Andrea and Katarina, since they all attended the same school.

Dr. G was a professor in the MBB Department, whose primary research area was “the biological role of cholesterol … its impact on cell growth and thereby on human health,” particularly in relation to metastasizing cancers. Tall and physically fit, with a bicycle stored in the corner of his office, Dr. G gave an impression of tremendous energy. He saw himself as engaged in an ongoing journey of learning and imaginative enterprise. He was very interested not just in the science of his discipline but in helping students to develop tools for pure inquiry; he was a trustee for the Education Advancement Foundation, which aimed to promote an inquiry-based learning method. He appeared to set high standards for himself in terms of thinking critically and to hold students accountable to similarly high standards.

George was the last student to volunteer; he did contact me before the response date I had requested in the letter of invitation, but he told me that he had not replied sooner because he had been taking time to think it over and decide whether he could balance participation with his course-load at school. At my request, Dr. F helped me to include George by enlisting Dr. G to join the study as his faculty partner. This helpful circumstance was the only rationale for matching George and Dr. G. Although their scientific interests did not match as closely as some of the other pairs’, however, I thought they were similar in the high standards they set for their own learning. They both seemed to be intense and driven to achieve.

The Researcher as Participant

I found myself in the interesting position of sharing aspects of my personal and professional identities with both groups of participants. On the one hand I, like the students, was a student myself. As a novice researcher, I was travelling along an increasingly intense learning trajectory, which in turn profoundly affected my beliefs and
practices as a teacher. As well, I was learning alongside the students as we participated in the transition-related experiences, both in the broader university community and in the science labs with their faculty partners. Although I too had once been in transition between high school and university, no one had engaged me in activities designed to support me in that process, as was now happening for the student participants. I found myself recognizing many things that I had never realized when I was in the stage the students were now going through. And, since I didn’t study science at university, almost everything I learned in the science labs was new to me, as it was to the students. Like the students, I often was impressed by the professors’ intelligence and wealth of knowledge and experienced moments of confusion when I simply lacked the background to understand concepts they were explaining to us.

On the other hand, like the professors, I had years of experience within post-secondary communities that the students did not have. Like them, I had negotiated university academic systems and worked my way through increasingly sophisticated participatory roles. Also like them, I was a teacher as well as a researcher, and this caused me to respond to both groups in particular ways. With the professors, I felt an impulse to share insights about the students’ learning, as in my daily practice with teaching colleagues. With the students, I felt protective as I always do with students under my care, wishing to inspire and encourage them to get the most out of this learning opportunity and concerned if they seemed to exhibit disinterest or dissatisfaction. I experienced the occasional desire to admonish student participants when they seemed disengaged or inattentive, which was probably exacerbated by the fact of their being students in my own school district, so I felt that their behaviour on campus in some way reflected on me.

A further layering of my identities in relation to the participants occurred due to transitional experiences in my own life during this research process. Most significant of these were dealing with the death of my father and illness of my mother, and becoming a parent to two children. Not only did these events represent interruptions to my research activities, but they also changed my perspective in important ways. For the first time, I realized that there would not always be a parent on whom I could ultimately depend if I needed something, which in turn increased my sense of responsibility toward my children. Shifts in my priorities occurred – research tasks became less important to me
than family obligations, while at the same time I felt even more committed to the student participants since I now saw in their needs the potential future needs of my own children. I came to view this research more comprehensively – less as my own pet project and more as part of a larger community enterprise to assist others in their growing up processes. Being a spouse and becoming a parent illuminated for me, in very practical ways, how identities are continually re-formed as people engage dynamically in relationship with others. I reached a new level of rapport with the professors who had children, especially the women; I now could relate personally with some of the challenges they faced in balancing motherhood with academic careers. Though I had never doubted it existed, I saw a very human side to all the participants emerging as they learned about events in my own life; they expressed sympathy about my parents and showed interest in my children, sharing their own stories of loss, parenthood, and personal experiences which were not ‘data,’ but certainly influenced my perceptions of the ‘real data’ in the study.

Straddling these multiple roles, attempting to have them work together, was very challenging. In no way could I claim to be an objective or dispassionate observer. I needed constantly to remind myself what I was learning about transition into university along with the students, versus what I had already known. As a new researcher, I experienced emotions ranging from exhilaration at grasping a new concept or technique, to helplessness and frustration when I felt acutely my status as a novice within communities of experts. Ethical obligations such as my commitment to the participants’ confidentiality meant I could not share certain information about the students with their faculty partners or vice versa, even when I felt sure it would improve their relationships. The students viewed me first as a teacher, and this meant they were likely to withhold some information from me, no matter how safe I was able to help them feel. I often was distracted from observing the students by a teacher’s impulse to prod or encourage if they seemed inattentive or disengaged, yet to give in to such impulses would have compromised those efforts to establish safety. Sometimes I was distracted from observing because a topic was being discussed about which I knew nothing, and so I went into ‘learner mode’ to focus on the new information. My mind often wandered to my family at home while I was engaging in research tasks. Above all, I was heavily invested in the activities I engaged the students in: I wanted them to have positive transition-
related experiences, and it was gratifying to me to hear them say that was the case, so I had to be especially attentive to discrepant data, to voices of dissent or dissatisfaction.

I considered myself to be as much a participant in this study as any of the students or professors. In addition, though, my role encompassed all of theirs, since as the researcher I was the only participant to be directly connected with each of them and to observe all of the student-faculty pairs. This positioning allowed me the privilege of getting to know each individual in the group, to participate vicariously in their relationships, to attempt to see situations as they saw them, to seek patterns and discrepancies in their interpretations of experiences. I remained cognizant of this privilege throughout the process of constructing my version of the participants’ collective story, which I share in Chapter 5.
Chapter 5.

Interpretations

Introduction

In this chapter, I discuss the thematic categories I constructed in relation to the etic questions I brought to the study, as well as emic issues that I saw to arise during the research process. Given the sociocultural theoretical framework, the students’ learning – their ways of negotiating changes in identity as they participated within university communities – was central to etic interpretations. I had set out to involve the students in three types of transition-related experiences: interactions, in group settings, with university staff and students within the broader SFU community; one-to-one interactions with professors within Faculty of Science communities; and interactions with one another as gifted-identified peers who were participating in similar experiences. Further, an important emic question arose around the meaning students (and professors) might attach to a fourth kind of experience: They also were interacting with me – a person whose attention was focused on exploring the ways they responded to and thought about what was happening for them as they engaged in transition-related activities and developed relationships with others. The participants’ interactions with me were implied within my etic research questions, as I was facilitating the students’ connections with university staff and students, with their faculty partners, and with each other. However, in this chapter I address the possible meanings, for participants, of my boundary spanning role as a separate interpretive category.

This and other emic issues were prompted by data that did not fit neatly into my etic interpretive framework, that surprised me, or that seemed to mean different things to participants than I had anticipated. Notably, I became more interested than I had anticipated in the faculty participants’ understandings of the student-professor
partnerships; their reflections indicated to me that the important shifts in their own identities that were occurring through their work with the students deserved attention in their own right, not merely as crystallizing perspectives for the students’ experiences within these relationships. And, the students viewed the meaning of interactions with the other student participants differently than I had expected, prompting me to see their developing social identities in a new way. I incorporate emic concerns throughout this chapter, highlighting places where discrepant data encouraged alternate perspectives on, or modifications to, theoretically driven analyses.

I have tried to strike a balance, as well, between presenting thematic patterns I observed in the data and allowing the participants to ‘speak’ their own perceptions, to allow readers to access the sense-making I have enacted with these data, while preserving direct access to participants’ own understandings as much as possible. My aim is to share interpretations in a way that invites readers into one possible story about the participants’ experiences of identity change during transition-related processes within university communities. This story is framed by a particular theory of learning and identity and woven according to my own sense of where the threads belong. These same threads could be – and often were, along the way – rearranged to form slightly different pictures. However, given the multiple data sources, the iterative analytical methods, and the participants’ involvement in interpretive processes, I feel confident that the particular story I present here is a credible one. I have worked conscientiously to develop a trustworthy narrative that readers can relate to similar situations in their own experience or practice with university-bound gifted learners.

In what follows, I first discuss themes in the students’ initial self-perceptions, particularly understandings of themselves as gifted learners and as potential members of university communities as they were just beginning the journey of participation in this research, before they came to campus for the first time. This is an important starting place, given that my interpretive focus was to explore how the students’ identities would evolve once they began to move outward from their familiar communities and participate in transition-related activities and relationships within university communities. Next, I describe the themes that I constructed to organize my and the participants’ (both students’ and professors’) interpretations of the sense they made of each type of experience on campus, with a focus on the idea of transition as involving shifts in
identity, on both individual and community levels. These thematic categories include the ways students negotiated the peripheries of the campus community through interactions with staff and students in the morning sessions; the ways students and professors worked together to deepen their belonging within science communities of practice; the ways students thought about peer relationships both current and future; and ways participants responded to my own supporting role as a boundary spanner. Taken together, these experiences contributed to the broad thematic idea of ‘doing transition,’ which concludes the chapter.

**Beginning the Journey: Identifying Within Overlapping Communities**

At the study’s outset, the student participants already were immersed within multiple communities, some developed around social connections and others focused specifically on academic learning. They belonged to various combinations of: circles of family members and friends; networks formed through clubs, activities, or sports teams; online communities; and high school communities. In addition, they each belonged to the group identified as gifted learners within their BC school district and broader North American educational systems. All of these memberships had contributed to their understanding of themselves as learners, in both their present high schools and future post-secondary educational settings. As the students entered the micro-community of study participants, they embarked upon outbound trajectories from communities where they were familiar with practices and relationships and, at the same time, upon trajectories of participation within relatively new-to-them university communities. In our first interviews, I wanted to explore their self-perceptions at this boundary-crossing moment, as they voluntarily stepped beyond familiar communities and into the peripheries of less familiar ones. I wanted to understand what they anticipated that they, and their experiences, would be like in university, particularly in relation to the gifted dimension of their identities. Because, in my experience, it sometimes seems uncomfortable for students to describe themselves as gifted, I began the first interviews more neutrally, asking them what had contributed to their self-identification as university-bound students.
“Always”:
Family communities and university-going identities

The students’ families, especially parents, had played a key role in their attitudes and decision-making about university. The five students with college educated parents said they had “always” (Buck, Robert, Nate) known they would attend university and had been thinking about it “for a long time” (George); Gordon stated, “That’s why we’re going to school, so we can go to university.” These students were steeped in family cultures of continuing education; Nate and Buck had even observed their parents working on graduate degrees. Even when students’ parents had not attended university, they still, students said, always had encouraged them toward higher education. Andrea, Krystine, and Katarina all planned to be the first in their immediate families to go to college and viewed their families’ support as an “inspiration” (Andrea). These students seemed to have engendered expectations (Attinasi, 1989) that they would become university students one day. These students’ experiences resonate with a research base that has established parental expectations and support as among the most important influences on aspirations for higher education (Hossler & Stage, 1992; Kim & Schneider, 2005), particularly for first-generation college students (e.g., Hudley et al., 2009). Theoretically, they suggest the students’ enduring engagement with the “figured world” of “academia” (Holland, Lachicotte, Skinner, & Cain, 1998, p. 49).

In families with college-educated parents, older siblings reinforced students’ belief that going to university was integral to the family culture. For instance, George had observed his two older brothers’ post-secondary experiences and spoken with them often about these. Older cousins played a similar role; Katarina’s cousins had “always talked with her” about university, and Nate’s were “always talking about it at family gatherings,” Andrea saw going to university as an opportunity to inspire younger family members: “I’m really excited. I’ll be able to share these experiences with my little brother and my younger cousins.” These examples of fraternal modeling tended to support students’ positive impressions of university; as Nate observed, “negative exampling” (Attinasi, 1989, p. 258) was unlikely because “a lot of people in my family would like to see me go to university, so they might not tell me the negative stuff.”
None of these students lacked familial support and encouragement, and in most cases the students’ families had actively inspired them to consider post-secondary education as “the natural thing to do” (Nate) following high school. All of them, except possibly Frank, believed that going to university would be a positive experience, offering worthwhile learning and social opportunities as well as providing the means for pursuing career options they were considering. Even Frank, however, said that it was the influence of an important caregiver who thought he would enjoy and benefit from a college education that convinced him to join the study. A prevalent theme was that students’ families had impressed upon them that they would become more independent and “less sheltered” (Krystine) as university students but could always count on encouragement from parents, and/or siblings, and/or extended family members.

**Learning “by accident”: School communities and expectations about university**

Perhaps due to their long histories of thinking about university, these students did not ascribe great significance to their school experiences as catalysts to their developing expectations about university. They all had taken a compulsory Planning 10 course which included exploring post-secondary study options. Although I did not mention this course, eight of the nine students brought it up when I asked what they had done so far to begin preparing for university. Their comments about Planning 10 were generally negative; it did not prepare them for “big steps” (Katarina) involved in transition, was a “waste of time” (Robert) in terms of learning about university, or provided only “simplistic” (Buck) information that they “already knew” (Frank). The course did initiate students’ forays onto university websites; however, they said these sites could be “boring” (Frank) and did not “go in depth about what you’re actually going to experience” (Andrea), as well as being “hard to navigate” and “biased” (Robert). Such comments echo Boyer’s (1987) findings about students’ beliefs that standard college information sources insufficiently address their most important questions and concerns.

Whereas Attinasi (1989) identified mentor modeling from teachers as key to students’ formulation of college expectations, these students rarely mentioned teachers or high school classes as influential. When they did, they stated that they themselves had initiated conversations with teachers or that these talks had happened incidentally,
“along the way” (Andrea). George said, “Teachers haven’t been much of an influence on my decisions about university because I already had that in mind by the time they started talking about it at school.” Still, all eight of the students who had definite plans to attend university had developed ideas as to what to expect academically at university, reflected in comments that they thought relationships with college teachers would be less personal (Robert), that they would have to “take more initiative” (Nate) and “study a lot more” (George) with less “guidance” (Nate), “supervision” (Dan), and “help” (George) from teachers. Similarly, they had formed impressions that university academic work would “count more” (Katarina, Buck), be more “demanding” (Andrea), and involve “more lectures and fewer classes but with more work” (Buck). These students did not identify teachers as the source of these ideas, but many of them did indicate that they thought their honours classes were giving them a sense of what university academic expectations would be like. Honours classes also had offered the students indirect simulation of an intellectual culture they hoped to find at university, with “a lot more advanced” (Nate) content and “brighter and more motivated” (Robert) students who “love learning” (Krystine) and are “determined to do their best” (Andrea).

Given that these students had two years of high school left, most had not yet accessed some of the typical college-going guidance exercises usually offered to senior students in our school district; for example, only two students had attended a post-secondary planning seminar with representatives from various post-secondary institutions. However, many saw themselves as being at a major “turning point” or approaching “a whole new phase of life” (Krystine), and they were wrestling with big concerns. Some felt it was “intimidating” to have “so many options that it’s difficult to choose” (Krystine), or suspected that their schools might be “waiting too long” to help them make decisions about “university and career” (Katarina). Some described lacking a “vision” (Krystine) of “what life might be like in the four or five years after high school” (Buck). Some saw post-secondary decisions as highly “personal” (Robert) or were contemplating not just “what I might do” but also “how I might do it” (Gordon). Some felt “a bit scared” (Buck) about not being as successful academically at university as they were in high school, with others still “expecting” them “to keep that high standard” (Andrea). Many wondered how they would deal with much “bigger” (Robert) university
environments. Several said that being invited to participate in this study was itself a catalyst to thinking more about their post-secondary plans.

These students were anxious to discover more about what they would do, and be, as university students, and their concerns reflect those often associated with college-bound gifted learners – multipotentiality, pressure to succeed, perfectionism, fear of no longer standing out among their peers, or interest in specialized study and career paths. Yet, they felt they were not receiving the kind of assistance with problem-solving in relation to these concerns that they wanted; many felt they were lacking needed “direction” (Krystine, Katarina), that schools were “waiting until [they got] older” (Katarina) to share information that they needed now, or that their learning about university was happening “by accident” (Andrea) more than by intention. Further, despite their eagerness – “I can’t wait!” (Krystine) – to “know a lot more about university, campus life, and what university students do” (Nate) and find out “firsthand … how things are done” (George), they had been on college campuses only in very incidental ways, describing themselves as “sightseeing” tourists (Nate) or “visitors” (George).

“I will fit in more”:
Gifted communities and sense of future selves at university

These students’ perceptions about the ways their school experiences were engaging them (or not) with transition processes, and the anticipations about university they were developing, seemed intricately linked with their other- and self-identification as gifted learners. Through the practices that had identified them, they described being encouraged to see themselves as different from their peers – as “brighter or quicker” (Krystine), “more intelligent” (George), or able to do things “more quickly than others” (Robert). Such statements reflect the comparative impetus in identification practices that are designed to position students as exceptional in relation to norm-referenced peer groups. Some comments illustrated how comparison underlies academic activity in schools, also; students learn to aim “not only for the grades you want, but the grades that will get you higher than other students” (Andrea) and to “judge where you are on the spectrum” (Robert). Some experienced this identified difference “not in a bad way” (Krystine) or found that no one “even mentioned it” (Nate), but others, like Andrea, noticed that peers might “wish to be like you and take it out on you with little comments.”
Frequently, these students’ other-identified difference had afforded academic privileges, providing access to special programs or invitations to accelerate or do more challenging assignments; even participating in this study was offered due to their gifted status. Some gladly took advantage of selective programs, particularly honours classes, or explicitly stated that being identified had been “really helpful” (Gordon) in terms of gaining educational opportunities. Others felt uncertain as to why they had been identified when what they perceived as “odd testing” (Katarina) had not resulted in changes to their academic programs. Others resisted being named or treated as gifted learners. Frank, for example, did not think mastering the “simple” concepts in his textbooks signified intelligence. George was somewhat unwilling to engage with teaching practices designed to challenge him; he said that he regularly turned down more difficult assignments and made his own decisions about which subjects he was prepared to challenge himself in.

The students thus negotiated their own gifted identities in relation to systemic practices of naming and servicing gifted learners, as well as through interactions with teachers and peers. Overall, their reflections evinced a strong theme of comfort with being different, especially among the girls. Andrea accepted that she would never be “one of those popular people” but would not trade her intelligence for popularity and liked being recognized as a smart individual. Krystine wanted “more and more” to “stand out” for her academic accomplishments; yet, given the choice between standing out in a field of average learners and being with like-ability peers, she would choose the latter “all the way.” I was somewhat surprised by this self-confidence, given the literature on adolescents’, especially girls’, tendency to mask their intelligence (e.g., Gross, 1998; Pepperell & Rubel, 2009; Ryan, 2005). However, these girls’ strong intellectual self-concepts likely led them to self-select for the study, whereas discomfort with the gifted label or doubt about their abilities might have deterred others from volunteering.

The boys tended to present a more casual confidence when talking about their giftedness. Most downplayed their intelligence and spoke off-handedly about their selection for gifted programs. Still, they prided themselves on their strong academic records, and each pointed out that he handled school with ease. A notable exception was Frank, who had a history of underachieving in school; he revealed that he had told some of his friends he was going to participate in a university transition experience and
was quite upset when they didn’t believe him. It seemed as if he had deliberately under-
demonstrated his intelligence, hiding it behind poor work habits and grades, only to feel
indignant that his façade had been so successful.

A strong theme in the students’ gifted self-identities involved comparing their own
intellectual capacity and academic performance with peers’, consistent with the
pervasive comparative emphasis that underlies identification and teaching practices in
their school communities. When I asked students what they thought it would mean for
them to be gifted at university, they articulated this theme in two ways, often
simultaneously. On one hand, they felt nervous or even “scared” (Katarina) about not
comparing as favourably with peers at university, where “things [might] even out a bit”
(Robert) with less “difference between your ability level and the other students’”
(George), or being with “a lot more intelligent people” might make them feel “more
average” (Buck). They worried that they might not be able to continue “doing well”
(Andrea) at school, as they had thus far.

I learned later that the invitation to participate generated anxiety, as some
students questioned whether they were ‘gifted’ enough to handle the proposed activities,
especially interacting with professors whom they assumed would be much smarter than
they were. Katarina said that replying to the invitation by email helped her to manage her
self-doubt, whereas if she had had to attend a meeting and seen other “smarter”
students there, she might have lost her nerve. These students’ curiosity and desire to
learn more about university had outweighed their fears, but many said they had worried
that they would not be able to answer my questions or might not be intelligent enough to
fulfill the responsibilities they had signed up for. Little of this inner turmoil was apparent
to me at the time, yet students were wondering whether they would perceive themselves
as gifted in comparison with the other participants and whether I, or people at university,
would see them as gifted in the same ways they had experienced in school thus far.

At the same time, the prospect of encountering intellectually compatible peers at
university excited these students. Some welcomed the challenge that might come from
having to do harder work while competing with more intelligent classmates. They
suggested that being smart might help them figure out what to do in academic situations
where no one would look over their shoulders and were confident they could still get
“good marks” (Katarina) and “perform a bit better” (Nate) than other students at university, even with more difficult coursework. In this sense, students viewed their intellectual abilities as tools they could use to negotiate challenging new situations. Also, many anticipated that “being with other people who are like me” (Krystine) would increase their sense of social belonging at university, more deeply than they had experienced in school. Andrea’s belief that she would “fit in better” at university than in high school encapsulated the optimistic view expressed by many of the students that they could be gifted more comfortably at university than in their current school situations, that university would simply be “better” (Buck) than high school for gifted learners.

Crossing thresholds: Disrupting “sheltered”-ness

Thus, the students’ membership in several kinds of communities influenced their initial understandings of their potential future identities as university students. Their family networks had instilled and fostered beliefs that they would go to university and that they had abilities, skills, and knowledge that would help them to survive there, thus engendering expectations of college attendance and success. Except for Frank, their experiences within school communities had contributed to strong academic self-concepts and beliefs in their intellectual capabilities. At the same time, their labeling as gifted and consequent treatment from teachers and peers had occasioned some ambivalence about this label and/or doubt as to its appropriateness to describe who they were, or could become at university. Overall, the students seemed fairly confident that features they associated with their identification as gifted – ability to learn quickly and efficiently, desire to be challenged, self-motivation, and interest in connecting with similar students – would serve them well in university communities. However, they wished to test their anticipations of what it might be like to be university students in more immediate ways than they had yet experienced; they were ready for actually “being inside a university” (Gordon) rather than imagining what it would be like to be there.

Receiving the invitation to participate, deciding to accept, engaging in the first interview, and thinking about their first trip to campus were all activities which intensified the students’ transition-related identity work. Most of them had begun thinking about becoming university students long before, but now they were consciously thinking about what they had done, were doing, and could do to get ready for university and about
possible ways their giftedness might figure in these processes. They also started to consider what would be involved in getting in to university communities: what they might do there; what kinds of relationships they might have there; what being gifted might mean there. Being recruited to the study disrupted the students’ “sheltered”-ness (Krystine) – their comfort, in Wenger’s (1998) sense: It shifted their positionalities, from perceived legitimacy and competence within familiar communities to anticipated vulnerability and newness within the university communities. Accepting the invitation initiated a process of identity shift; they would be moving deliberately along outbound trajectories from high school communities and venturing tentatively into university communities on peripheral, potentially inbound, trajectories. In committing to the study, they already were negotiating changes in who they thought they were, and could be, in relation to people and practices they would encounter within university communities.

**Negotiating the Peripheries: From Being “Tourists” to Being “Inside” the Campus Community**

The first type of transition-related experience I planned for the students, incorporating their input, included interactions with university staff and students within the SFU campus community, which provided peripheral access to systems, structures, routines, and activities central to the practice of student life. We participated in a variety of activities through which we were exposed to the “joint enterprises” (Wenger, 1998, p. 83) of the campus community, as well as to “repertoires” (p. 95) of knowledge, skills, and practices which community members regularly use. Because we met with different people each month, in different locations around campus, these sessions are best described as one-time “boundary encounters” (Wong & Edwards, 2009, p. 133). Collectively, these experiences contributed to a growing sense of change for the students, as their initial “tourist” (Nate) identities gave way to feeling like they were “inside” (Krystine) the campus community by the end of the study. The students’ impressions of gaining “the inside scoop” (Andrea) resonated with Attinasi’s (1989) descriptions of getting in to college, as well as with Tsui’s (2009) idea of “legitimation” that develops from being granted “legitimacy” to participate peripherally within communities (p. 153).
From “big” to “comfortable”:
Impressions of the campus physical environment

Like Attinasi’s (1989) participants, these students initially described the physical space of the campus by emphasizing its size relative to their high schools. They felt intimidated by the largeness of the campus, being “overwhelmed by its grandeur” (Katarina) and feeling “quite small” in this “daunting” (Robert) new environment. Some commented on the size of buildings or classrooms – “how big they are!” (Katarina) Although most had been to a campus before, they now saw that on those occasions they had been like tourists, with no vested interest in developing “cognitive maps” (Attinasi, 1989, p. 268), since they either had been led around by someone or accessed only a very limited area. Now, they realized that they would need to find their own way from one place to another and tried to figure out ways to manage that challenge.

Robert described a strategy for trying to negotiate the campus terrain: “It was a labyrinth of hallways and buildings and I had no idea of how I would be able to master it. I tried to memorize the turns we took, but ended up getting myself even more confused.” The students also enlisted each other’s support, similar to what Attinasi (1989) called “peer knowledge sharing” or “cooperative exploring” strategies (pp. 263-264). Initially, during the unstructured lunch hours, students chose to stay close to the peers they knew best and/or to me. Although reluctant to state openly that they were nervous about finding their own way, they would accept readily when I invited them to join me on my walk to our next destination. In this sense, I (as a campus community member myself) became a guide or interpreter who could help them with “getting to know” (Attinasi, 1989, p. 262) the campus. In addition, some students did enlist passersby on campus to help them if they felt lost or unsure how to get somewhere.

By the study’s midpoint, many participants were beginning to feel physically relaxed on campus, identifying a sense of being “so familiar with everything now, I know where everything is, it’s just more comfortable” (Katarina). Students began to explore areas of the campus they had not been introduced to in the morning sessions and to find out on their own about events happening on campus. Whereas in the early months, Katarina had asked her cousin (who lived in Residence) to meet her at the group’s familiar check-in spot, she and Andrea now ventured off to meet him in other locations.
Buck had come to appreciate the expanded personal space the campus afforded – “I definitely love how there was actually room to walk in the hallways” – in contrast to his crowded high school.

By the end of the study, the students described an even greater sense of being “comfortable” (Robert, Katarina, Frank) and being able to “find [their] way around” (Robert) within the campus environment. Frank had a sudden moment of realization during our final interview, that he had gained an insider’s knowledge of the physical layout of the campus:

I didn’t really think about this, but I really learned my way around the campus. Like I can find places ... just now I was in the parking lot and some guy was asking me how you get to the Travel Cuts. I forgot what the building was called, the big circle – I remembered all the places around it – but I know my way around. It’s kind of hard to explain sometimes, but I learned how much time it takes to get places, like if you had a schedule how long it would take to get there, and if you were living here what time you’d have to get up.

Other students also expressed that “spending entire days on campus” gave them “a sense of the university” (George), which had felt intimidating and overwhelming at the outset. Their positions had shifted, as Frank’s experience illustrates, from those of tourists, dependent on others to guide them, to those of insiders, who knew the campus well enough even to direct others.

“I never would have thought”:

Recognizing gaps in understanding

When they arrived on campus, the students were well aware that they lacked experience and knowledge that would help them navigate its physical layout and were not surprised to feel lost, confused, or even scared as they tried to find their way around. In contrast, they seemed surprised to find out how much they did not know about academic and social structures and systems that university students routinely use. Most had accessed university websites or promotional materials and heard about university life from family members, teachers, or acquaintances, and I interpreted an implicit complacency in their initial comments about what they expected university to be like. Although many perceived that their information sources might not tell the whole story
about university experiences, they did not express clear ideas about what was missing. Through interactions with university people, the students developed an increasing sense of what they did not know, and perhaps could not have realized they did not know, before coming to campus. This process exemplified identity negotiation along the “community membership” plane (Wenger, 1998, p. 105), as students reconciled unfamiliar practices with their previously developed participatory repertoires.

**Academic structures and systems**

The morning sessions provided points of access whereby the students could learn about various routines, tools, and systems, engaging with these boundary objects with “people accompanying the artifacts” (Wong & Edwards, 2009, p. 137). Although they could have accessed some of the information in other ways – if I had directed them to particular areas on the SFU website, for example – bringing the students together with campus people created the conditions for “reification” (Tsui, Lopez-Real, & Edwards, 2009, p. 37) of such information to occur. That is, through personal encounters, students were prompted to think metacognitively about what they knew, what they didn’t know, and what they needed or wanted to learn. This process disrupted their complacency, encouraging them to expand their understanding of practices they would participate in as university community members; Buck noticed:

> How ridiculously unprepared I am for [life] after high school, like when they were talking about scholarships and applying early and residence and ... recording your marks ... I was just like, it kind of sunk in – it’s not like I haven’t given it any thought – but how I haven’t really sat down and figured it all out ... I realized how unprepared I really am ... I’ve started giving it more thought.

Interacting with community members who explained, demonstrated, and engaged the students in trying out systems and practices – and who embodied “paradigmatic trajectories” (Wenger, 2008, p. 110) of community participation – helped the relevance of such activities to students’ own potential university identities to sink in, in ways that simply hearing or reading about student life had not done.

Each of the session leaders offered “the proposal of an identity” (Wenger, 2008, p. 110) to the students, in light of which they had to assess and refine their sense of self, both current and future. For example, all the students expected the university to have a
library where they might access academic resources and support, but none had realized, until our guide engaged us in a scavenger hunt through the stacks, that university libraries use a different cataloguing system than the one used in their school libraries. Through “the librarian’s games” (Nate), the students practiced “how to find library books” (Katarina) within a multi-story building containing thousands of volumes. They also learned about the many different kinds of resources housed in the library and visited the Student Learning Commons, which offers academic support – but only to students who know about it and request assistance. The students knew there was a bookstore on campus, but they did not know about the buy-back system for used books that the store manager explained to them. These are practices that, without the library and bookstore tours, the students would have been unlikely to learn about before freshman year.

Many students expressed concern that, before meeting a Financial Aid officer and three scholarship holders, they had known so little about admission requirements and scholarship applications. They mentioned practical information they had not known, such as the way Grade 12 course marks are weighted in awarding scholarships and the fact that SFU offers automatic scholarships to students with 90% averages and above. None had been aware of SFU’s online scholarship database, nor seen a university calendar. Learning the small number of major scholarships made them “realize the fierce competition” (Krystine), and they were surprised that one had to maintain a certain GPA in order to keep a scholarship: “I never really thought about it. I was more interested and concerned with getting one” (Katarina). The scholarship holders impressed upon the students that earning a scholarship was not the end of a process, but could signal the beginning of a whole new set of stresses and challenges. In this case, the students felt less comfortable than they had before, but they were glad to have learned what they did. In an informal conversation with the student group following this session, I suggested to them that they might be exposed to this kind of information in the normal course of post-secondary planning at their schools. But, many of them were bothered by not having known it already; they felt it was relevant to them at the stage they were currently at.

Similarly, following the sessions on science co-op programs and study abroad, the students unanimously, almost indignantly, indicated that they “didn’t know anything about” (Krystine) such opportunities before visiting SFU. Again, these were examples of information that was available online, but many students’ prior experiences with
accessing information (or not) about the university’s academic programs and systems online exemplified what Dr. C came to realize through talking with Krystine:

I guess I learned a bit about the kinds of questions that they [prospective students] have that we [SFU] just don’t seem to have good forums for answering, about how the whole process works … the kind of stuff that isn’t captured well in any of our current outreach things … it’s obscure, it’s hidden. We have terrible online presence when it comes to answering questions for people not already here. If you’re already here you kind of know your way through all the nasty stuff of registrars and so on, but if you’re thinking of coming, it’s totally obscure.

In this sense, whether they were aware of it or not, students were accessing the hidden curriculum of the community’s academic practices through their interactions within its peripheries, with people who offered insider perspectives. These interactions opened up possible trajectories of participation that had not been – perhaps could not have been – apparent to students through researching academic structures and systems from the outside looking in.

**Social structures and systems**

The morning sessions also introduced the students to the social fabric of campus life in ways that led them to re-think their potential university student identities. In their entry interviews, some had expressed concerns often cited in the transition literature, that they might find it difficult to separate from old friends and make new ones, though many also hoped to encounter more peers who were “like” them (Krystine, Andrea, Buck) and shared their intellectual interests and motivation. Although most had read about Orientation Week on the SFU website, this had not alleviated “stress” (Robert, Krystine) about their early days as undergraduates. Interacting with the Student Life Coordinator, who oversees the university’s plan for assisting students to adjust, however, brought “very reassuring” (Robert) feelings of “ease” (Gordon) and relief that they were “not just going to be thrown into university life” (Krystine), which “helped bridge the transition a bit” (Robert). This particular interaction concretized information that was available online – the boundary object – as many students connected the idea of orientation with the person responsible for promoting freshmen’s comfort on campus. In turn, this prompted changes in positionalities, as these students’ anticipations of being nervous or vulnerable as freshmen shifted to encompass greater feelings of confidence.
Similarly, the participants felt more confident about developing social networks at university after meeting with student leaders who shared stories about the variety of clubs and activities at SFU. A theme in the students’ comments was how many “different” (Gordon, Katarina, Robert, Nate) types of involvement were available, “how there is so much else to do besides just attending classes” (Krystine) and “a lot more to university than studying, which is kind of comforting” (Andrea). Katarina described this session as having “opened [her] eyes about university life.” Familiar with extracurricular activities in their high schools, the students were happy to discover that similar opportunities were available at university. The students were figuring out potential ways of fitting in to university social life; by observing overlaps and identifying differences, they could consider which of their high school social activities could mesh with campus activities, perhaps through new modes of participation. For example, after meeting with varsity athletes and touring recreation facilities, Robert commented,

I was feeling a little disappointed about having to stop playing soccer once I graduate as I doubt I would have enough talent to be on a varsity team. So I was quite delighted to hear of the intramural soccer that SFU has set up.

At the same time, students saw that some ways of participating might be less accessible to them as freshmen; Gordon reflected, “I’m more interested in what’s next for me, [and] I’m not going to be student society president before I’ve gotten my foot in the door.” The students were developing their sense of who they could be, and what they could do, within the campus community; they were comparing self-understandings as high school students with potential identities as university students.

As with academic systems, there were some things the students learned about social structures that increased their anxiousness, despite their being glad to know about them. Our visits to the Residences and the Health and Counseling Centre exemplified this conflicted reaction. Visiting the Residences was endorsed enthusiastically by the students, who all felt they had lacked information to make decisions about whether they would want to live there. Some who had assumed they would live in Residence realized that they had “had no idea the types of expenses” (Gordon) involved in living on campus. On the other hand, some who had thought they would live at home while attending university began to rethink; Andrea said, “I do want to live on campus … it’s really made
me realize how good it is to have Residence and be able to just walk to your class, it makes it easier, less stress, I think.” All the students expressed unpleasant surprise at how small the Residence rooms were, and as they envisioned themselves living in those spaces, perhaps with an unfamiliar roommate, they wondered how they would fit in – literally – in a university Residence hall. At the Health and Counseling Centre, students were happy to learn that SFU provided “so much counseling and useful help … I never would have thought if I needed someone to talk to I could easily just book an appointment“ (Katarina); at the same time, they were sobered to hear about the array of challenges that Health and Counseling staff typically address with freshmen – from sexually transmitted diseases, eating disorders, or substance abuse, to roommate difficulties, homesickness, or depression. Yet, the important thing here is that the students valued the opportunity to learn about the potential for such issues to affect students; they felt empowered by knowing what might happen so they could handle such situations proactively rather than responsively.

“Not just tailored to SFU”: Local and global understandings of campus communities

Another plane of identity negotiation involves reconciling local ways of belonging to broader communities (Wenger, 1998). The students illustrated this process through considering how they could apply what they were learning about academic and social systems at SFU, if they attended other universities. They viewed the pragmatic knowledge they gained through the morning sessions as highly portable. Most identified the scholarship winners’ presentation as helping them to understand practices they would participate in no matter which universities they applied to, and learning about SFU’s orientation program helped them to realize that all universities probably offer support systems for students as they adjust to college life. Visiting the student housing complex helped students to decide whether they would enjoy living in Residence at any university they eventually attended. Touring recreation facilities and hearing about extracurricular athletics and clubs raised awareness that a similar range of activities would be available on most campuses. Learning about foreign exchange opportunities allowed students to view SFU as part of a global network of post-secondary institutions. Understanding how a campus bookstore operates and how a college library is organized was relevant to any post-secondary institution. Even Nate, who initially said that the
sessions were “definitely geared towards someone who is looking to go to SFU, which for me isn’t the case” – later stated, “I find myself to be miles ahead of everyone I know in terms of my understanding of university and its associated lifestyle.”

Thus, students developed more comprehensive understandings of academic and social structures and practices that they expected to encounter as freshmen on any campus. At the same time, they recognized that they probably could not know exactly what life would be like on any particular campus until they had spent some time there, as they had at SFU. They thought that becoming aware of how much they had not known before enhanced their ability to seek out the kinds of information they might require within new communities and to adapt to variations from what they had experienced at SFU, no matter which university they attended. Such realizations represented important moments of identity development, in which the students recognized, like Katarina, that “some things I thought were right but most [were] not.” Realizing what they did not know about university destabilized both their current sense of themselves as college-bound students and their future sense of themselves as university students, but this was an empowering disruption, in that it led them both to broaden their perceptions of the possible identities available to them and to anticipate further identity shifts as they negotiated their way toward membership in university communities. Andrea’s comment – “If this experience taught me one thing it was that the future can hold many paths” – aptly illustrates this kind of identity shift.

“I fit in fine”: Legitimacy and legitimation within the campus community

The students’ growing familiarity with physical and social environments contributed to greater feelings of comfort on campus, but they associated their increasing sense of belonging even more strongly with less tangible community features, experienced through both direct encounters with community members (as in the morning sessions) and indirect observations of student life in action. The direct encounters encouraged the students to feel that their presence on campus was valued by university people – that they were being granted legitimacy. Many, like Robert, were impressed by what they saw as genuine efforts to welcome them by session leaders:
All the people giving us gifts ... it may just be that they’re trying to ‘buy us,’ but I thought that was really nice and quite surprising. I mean, a whole bunch of high school students coming in and they’re giving us stuff. I would understand like giving away a pen that has SFU on it or a keychain, but all that stuff that the bookstore gave? Wow!

Many students described the “atmosphere” on campus in terms of it being “very welcoming” (Krystine), and felt that, beyond simply knowing where things were, they knew “where to go … [for] help and support” (Katarina) as a result of the morning sessions. Although they knew that campus people regarded them as novices, they were receiving a message, from community members, that they were on legitimate learning trajectories which, though currently peripheral, had potential to become inbound.

This perception of legitimacy, combined with indirect encounters that built a sense of affinity with university students, contributed to the students’ self-oriented legitimation (Tsui, 2009) – their own desire to gain competent membership within university campus communities. By the midpoint, almost all suggested that they were consciously observing student life and envisioning themselves belonging within this particular university context. Whereas they had spent the first couple of on-campus days simply trying not to get lost, they now were paying close attention to interactions among students and valuing this “firsthand” (Krystine) perspective as distinct from what they might have been told or read about. As Buck said, “It’s given me a better idea of what university is really like, as opposed to my dad telling me stories.” Robert noted that university websites and recruitment materials rarely offered the insight into student life that he could gain by observing it directly: “It’s not usually advertised that much.”

Through their own observations, participants took in implicit information about features of university communities, which they would be unlikely to derive from “advertised” (Robert) images of campus life, or even from the firsthand descriptions of academic and social organizational structures that were shared in the morning sessions. They noticed “rhythms” (Andrea) of campus life – changes in patterns of student activity from visit to visit. For some, visiting undergraduate lectures illuminated what they could expect in first-year classes. Students noticed a difference in the impact on their impressions of university, between such immersive experiences and other ways of learning about university that align more with mentor modeling or indirect simulation.
This difference was also highlighted in the way students contrasted high school and campus settings. Two paradoxical themes prevailed: On one hand, students perceived university academic and social atmospheres as more “relaxed” (Katarina, Buck, George) than those in their high schools, but on the other, they saw university students as more intense and focused than their high school peers. They were surprised to see students “hanging out” (Katarina) or studying in less formal ways than they had envisioned. They observed that universities are “not nearly as structured as high school. There’s no big bell system that forces you to move on after an hour” (Robert). They appreciated such “freedom” (Robert, Gordon, Buck, Frank) and the absence of tangible signs of authority such as “bells and yelling administrators” (Buck) or “teachers harping on [students] to study or do their homework” (Kryistine). At the same time, they saw university students as intellectually engaged, “mature” (Kryistine, Robert), and “want[ing] to be there” (Katarina, Buck, George) in ways they were not used to seeing in their high schools: “Everybody around you [here] is working and doing something with their time and then you come back to high school and … people don’t want to be there. People at university are very driven to get things done” (Gordon). Such comments suggest that the students perceived university community members’ mutual engagement with accomplishing a joint enterprise, in Wenger’s (1998) terms.

Several students found these aspects of campus life to be inspiring and exciting; they looked forward to having freedom and spending time with “like-minded people” (Kryistine) who “actually care” (George, Andrea) about learning, in contrast to some of their high school peers. For Gordon, observing undergraduate life in action fulfilled a main reason for wanting to participate in the study: “We get to learn about really what’s going on, what campus life is like, [and] that’s really what I wanted to know.” Although participants were aware that they were not yet full-fledged members of the campus community, their peripheral experiences sparked a desire to learn more, to become further immersed in university culture. Andrea said:

If I could, I’d do a day in the life of a student. Go to their classes, sit in on their lectures, and see from their shoes [sic] … I still don’t know what they do in their spare time, where they go, who they meet with … what’s it going to be like when I’m actually there?
Over the course of the study, many students seemed to develop a strong sense of affinity with university students. Krystine, for example, said she had initially thought she would stand out as younger than most in the university crowd, but she had been surprised to discover that she never once felt “out of place.” Andrea observed that university students “are the same as you and they are going to be going into the same things as you,” while Katarina came to feel it would be “easy to make friends … from everywhere instead of your little [high school] community” in contrast to her initial opinion that it would be hard to develop social connections at university. Robert said it was “hard to notice any difference between the ages of the university students” and thought it was “kind of fun to think that you might be mistaken for a university student.” A turning point for Gordon, Buck, and Nate occurred when they came across a free hotdog lunch for undergraduates; they boldly ate hotdogs and reported feeling amazed (and proud) that no one had questioned them. As Krystine succinctly put it, “I fit in fine. People were the same as me.” The students’ experiences, here, echo research that has shown that this kind of social comparison is a common strategy used by new college students to assess whether they fit in (e.g., Holdsworth, 2006; Maunder, Gingham, & Rogers, 2010).

As students increasingly observed overlaps between the activities and attitudes they observed among university students, and their own goals and outlooks, their sense of themselves as future members of campus communities solidified, and the emphases in their learning trajectories, initially very peripheral, became more inbound. They began to describe themselves explicitly as soon-to-be university students; Krystine said:

I can actually see myself becoming a student here soon, and it seems much more approachable, kind of, whereas before, it seemed kind of intimidating, like you’re just going there for schooling and stuff. I would be able to handle anything if I was to go there. I can actually picture myself there.

This comment implies that Krystine’s sense of the campus had broadened, by the end of the study; she had moved from seeing it as a place for “schooling” to recognizing it as a community within which she could participate on multiple levels. Similarly, Katarina said, “I thought university was going to be scary [but] going there and kind of being in the environment makes me comfortable with everything I’m going to have to do when I’m there.” Not only did students feel comfortable with the idea of being university students by the end of the study; some were anxious to begin as soon as possible. Andrea said
she would gladly skip Grade 12 to enter university immediately, and Gordon said coming to campus “motivated [him] to come back to school and work a little harder so [he] could come to SFU or another university someday.”

**Summary**

The students’ experiences of negotiating the peripheries of the campus community provided opportunities to consider what they would do, and who they would become, as more fully participating members in this or similar communities. In being recognized as legitimate potential members of the campus community and being invited to explore and test their ideas of themselves as future university students, the participants developed increasingly stronger beliefs not just that they *could* fit in here – but that they *did* fit in here, already. They legitimated their own identities as community members. The kinds of activities and interactions that the students participated in within the campus community were similar to those offered to many incoming college freshmen, through orientation programs and FYE’s. Sometimes, these orientation practices are extended to students after they have graduated from high school and before they begin college. Seldom, though, does the literature reflect efforts to encourage this kind of learning among high school students. These participants had a fairly unique opportunity to develop what Attinasi (1989) called getting in strategies during – rather than following – the getting ready phase of transition. They were moving beyond simulation university life to a sense of being truly “inside” (Krystine) the campus community; Krystine described this as “an awesome opportunity” to “kind of experience it before we come here, kind of like ‘try before you buy,’ kind of thing.” In this way, the students were experiencing a kind of synchronicity between their current and future learner identities, a sense of feeling like community members in the immediate present rather than awaiting the future. For some, this realization came early, as when Katarina noted in her midpoint interview that she already felt that she was “blend[ing] in ... If I was to go [to university] right now, I would feel really comfortable”; for others, it came later, as when Frank realized during his final interview that “after the whole thing, I feel comfortable, like I ... belong here.” All the students did express, at some point, something akin to this sense of being “comfortable” (Robert, Andrea) within the campus community as an immediate experience, not merely a projected one for the future.
The Work of Belonging: Living the Practice of Science Communities

The morning activities with campus staff and students comprised one major set of interactive opportunities for the student participants; they participated in another set of transition-related experiences through one-to-one sessions with faculty partners in various departments of SFU’s Faculty of Science. During the on-campus afternoons, the student-faculty pairs worked together on a variety of activities, with each partnership developing in different ways depending upon the partners’ mutual interests, priorities, and goals. The pairs had a common goal of preparing for a mini-conference on April 2 at which the students, supported by their faculty partners, would present their cumulative perspectives on what they had learned about the professors’ research and from the partnership experience. Beyond this, however, the partners’ shared time – as expected – generated many different kinds and combinations of experiences for the students.

Without exception, the students identified interactions with their faculty partners as deeply important aspects of their on-campus experiences, in terms of their developing perspectives on what university life would be like for them. They all described significant changes in their understandings of what it meant to be a university student and/or to be gifted at university, developed through engaging in the lived practice of science communities on both local (the professors’ research labs) and global (the professors’ departments or national/international scholarly networks) planes, with the professors guiding their participation. At the same time, the professors, by opening themselves to the possibilities offered by the partnering experience and enabling the students to participate legitimately in science communities, initiated shifts in their own identities. While guiding the students along peripheral trajectories – which in some cases began to approximate inbound trajectories – the professors travelled along insider trajectories of refining and expanding their own participation. These patterns in the data aligned with literature that has pointed to the positive effects for both students and faculty of their working together on research projects, both in general (e.g., Burke & Cummins, 2002; Forbes & Davis, 2008) and specific to science (e.g., Lopatto, 2007; Sadler, Burgin, McKinney, & Ponjuan, 2010) at the undergraduate level.
Through the pairs’ interactions, the professors reflected upon and deepened their own identities of belonging within local and global scholarly networks, and the students worked to compare their sense of future identities within university and science-specific communities against the professors’ paradigmatic trajectories. Gordon said, “It just got me excited that I get to spend time with people like this and talk with them and see what they have to say about things and see what they do and how they got there and how they learned to be so smart.” Through this boundary work, as the partners figured out overlaps and divergences in knowledge and practices among their respective communities and developed strategies for sharing resources and learning together, the science communities themselves underwent a dynamic process of growth and change. Among the wide-ranging experiences of the participants and pairs, I observed key patterns of individual and collective identity change occurring through these processes.

“A student, a person who learns ... a professor, a person who teaches”: Initial perceptions of self and other

As researcher, I occupied the privileged position of meeting all the students and professors before they met each other, and so I was able to synthesize impressions of each group’s initial perceptions of themselves relative to the other group. At first, members of each group expressed a strong sense of separation between students and professors; differences in their ways of experiencing that separation, however, illustrated the initial imbalance of power among newcomers and expert community members.

Retrospectively, many students admitted that, as prospective newcomers to the science communities, they had felt “nervous” (Robert, Buck, Katarina, Krystine, Gordon) about meeting their faculty partners. Some explained that they had expected that the professors would be highly intelligent and that they, in comparison, might feel embarrassingly less so. They implied that their identification as gifted, which defined their intelligence favourably relative to their high school peers’, might mean something different – perhaps less favourable – when they were with the professors. They recognized that they would soon step outside of their secure positions as highly competent students and try on, instead, possibly uncomfortable identities as intellectual
novices. While some relaxed a little after meeting their faculty partners, others confirmed that their intellectual complacency had indeed been disrupted; as Gordon put it,

> What I remember was just being totally blown away by how intelligent these people were. They knew so much about their field obviously; I couldn’t believe what kind of people there were out there. I don’t think I’ve ever had the opportunity to talk with a professor one on one, and it kind of blew me away that people like that were actually out there. Before I got there I expected to be just – I didn’t know what to expect, and that’s where the nervousness came from. I really didn’t know what was going to happen.

Yet, all the students were willing to risk such unsettling disruptions to their identities in order to discover what they could learn from entering relationships with the professors, which suggested an underlying confidence. On some level, each seemed able to tell her/himself, “I believe I will probably survive this” (Buck). They were prepared to undergo identity shifts that they regarded as unavoidable if they wanted to learn what they could become as university students.

Buck sensed that his partner was “equally nervous to meet me as I was to meet him.” He had “expected him [Dr. I] to be either an awkward super-genius who spoke in such a way that no one could ever understand, or … an insane mad scientist with crazy grey hair in all directions” and was “surprised to find that he was indeed a normal person.” During their first interviews, many professors stated or implied awareness of similar stereotypes that they believed many incoming university students held about professors and said they hoped to dispel perceptions of professors as exhibiting “a certain awe factor” (Dr. B) or even seeming like “ogres or monsters” (Dr. D). They wanted their student partners to perceive them as “human” (Dr. D, Dr. E, Dr. F) and approachable. Some also expressed uncertainty as to whether they had the right skills to build rapport with high school students. While those professors who had teenaged children or had worked with teenagers in the past felt reasonably certain that they could relate positively to the students, those with less experience worried more about this, showing their subtle attribution of some power to the students in this situation.

Still, the professors recognized that they were empowered, relative to the students, by their insider status. They were “gatekeeper[s]” (Dr. A) who had privileged access to information and ways of knowing, and whose understandings would be
broader and deeper than the students’ given the years they had spent building repertoires and refining practices in their scholarly communities. They recognized, too, that their identities of competence and belonging equipped them to help others navigate entry into their communities, acting as guides, interpreters, even mentors in this process. Their agreeing to participate represented a tacit acceptance of these roles and a sense of responsibility to contribute to their communities’ growth by legitimizing newcomers’ peripheral participation. Further, their interest in being part of this particular study implied an interest in engaging with potential incoming students who were identified as gifted. In our first interviews, I asked professors to discuss repertoires and practices that they thought the students would need to learn in order to work toward membership in their communities; to explain their ideas of what it meant to mentor or guide novice students; and to articulate their understandings about what giftedness meant. In the following sections I describe consistent themes in the professors’ responses and then analyze participants’ learning within the partnerships in relation to the themes.

“A series of doors down a long hallway”: Gaining access to university and science communities

Dr. G used this metaphor to describe the way that people progress from novice to expert status within his discipline. He explained that in his analogy, incoming students have the perspective of standing at one end of a hallway, which to me represented the peripheries of the disciplinary community. Students need not open every door, nor proceed linearly down the hallway, Dr. G said, but by opening several doors and foraying beyond the thresholds they can gain a good sense of what the field contains and of which parts they will choose to become more familiar with. The following represent the various practices and understandings that the professors identified as characteristic of science communities (embedded within university communities) which students would have to access in order to move in the direction of full membership. In each case, I discuss the learning that I, the students, and the professors observed as they participated in these practices together.

Rules of “the academic game”

The professors frequently alluded to concepts like “playing the academic game” (Dr. D) and “knowledge of the system” (Dr. F). They were equally concerned that
students learn about broad academic structures as about scientific concepts, suggesting a layering to community membership. If students did not develop repertoires for participating in the practices of the broader university academic community, they could not access discipline-specific scholarly communities of practice, many professors felt. Dr. F wanted to teach Katarina that students “need to be proactive and independent, or else they’re not going to do well” at university, and to help her understand how to select courses strategically in order to get onto the academic path she hoped to follow. Dr. C noted that information about how to navigate academic systems is often “hidden” to inexperienced persons. Professors observed that when freshmen enter university with inadequate understanding of unwritten codes of academic practice, it inhibits their integration. Dr. D said,

A university environment, just like any environment, like going from primary to high school … has a different set of rules, and for many students that transition is as much trying to figure out what the rules are and what the expectations are, as much as absorbing the educational or knowledge component.

Within the partnerships, many professors described deliberately attempting to make such codes explicit, and they – and I, and the students themselves – did observe the students to gain a good general “sense of the university” (Dr. E). Andrea learned how Dr. E had navigated university academic systems to end up in her current position: “It wasn’t just ‘this is what I study.’ It was ‘this is how I started studying it.’ She kind of walked me through everything from what she started studying.” Many students were interested to learn of the universities their partners had studied or worked at before being at SFU, and their ongoing connections with people such as their graduate supervisors. In this way, the professors helped the students form conceptual maps of the broad terrain of intellectual communities within which they had become researchers and developed their current scholarly work.

Dr. C described in detail what she had observed her partner to have learned about university routines, including things like the difference between first and second year versus senior classes, or between lectures and labs. Krystine learned that labs are “places where people know who you are and can answer questions,” whereas in large lectures, students may “tend to get lost.” From Dr. C’s perspective, a pivotal moment
occurred when Krystine attended a first-year biology lecture and was shocked by what Krystine saw as students’ immaturity, as they chatted or played games on their laptops. Dr. C said Krystine “was just really surprised by these types of behaviours … she asked me, ‘Are they allowed to do that?’ I said, ‘This is university, you’re adults, you are in charge of your behaviours.’ That really had an effect on her.” Dr. C noticed a perceptual shift, as Krystine realized a difference between high school students who are “allowed” to do things, versus university students, who are expected to self-regulate. What Krystine had seen did not correlate with her expectations of how first-year students would behave or of how university ‘teachers’ would respond to what she saw as student misbehaviour. She had to adjust her assumptions, formed through her experiences in high school academic communities, about what student and teacher positionalities would be like in university academic communities.

“What scientists are like”: The culture of science communities

Another important point of access identified by all the professors was for students to learn about features common to scientific communities, and attitudes and practices typical of scientists. Dr. I suggested that the most important understanding he hoped the students could gain would be about “what scientists are like” and the environments in which they work. Several professors mentioned each of the following as identifying features or practices that defined membership in science communities, and they worked to help students recognize and experience these, through processes of guided participation.

Science as a “passion”

Professors described scientific work as a passion or a vocation, grounded in an appreciation for “nature at its most fundamental level” (Dr. A) as being “beautiful” and “inspiring” (Dr. C). Their intensity about their work was evident in my observations of the pairs working together. Dr. B invited Robert simply to admire the floating action of a semi-conductor material. Dr. E asked Andrea to examine beautiful patterns made by pili on a microscope plate. Dr. I pointed out to Buck the vibrant colours of fluorescent proteins and the symmetrical perfection of DNA ladders. Dr. C described a bee specimen to Krystine: “See … how perfectly blue it is? … It’s like jewelry.” Students began to emulate the professors’ excitement, similarly noticing beauty in details, as
when Krystine described a bee with “yellow and orange on the abdomen, it kind of runs together … see?” and later told Dr. C, “I love this one!” Andrea got just as excited as Dr. E when she finally located a pili pattern, and Buck was keen to show me the interesting fluorescent proteins that Dr. I had shown him.

**Science as “fun”**

The professors unanimously described science as “fun” (Dr. I, Dr. E), “exciting” (Dr. E), or “cool” (Dr. I, Dr. F, Dr. B) and implied that this perception was a condition of science community membership. Dr. I described the “silly little things” that intrigue scientists as something a student must discover within himself: “You can’t make it fun for someone else; they have to come to it themselves.” Many said that such discoveries often occurred at a young age and recalled having had such experiences themselves. Dr. I said that he often asked students whether they had “ever collected tadpoles as a kid” as a test of whether they would “be all right” as scientists. However, the professors also thought they could instill this idea of science as fun in students who had lacked such formative experiences; hence, their interest in mentoring.

In their interactions with the students, the professors deliberately encouraged play and experimentation. As Dr. F told Katarina, “The easiest way to learn is just to play. I mean, people can show you here’s how you do this and this; the best way is to go in by yourself and click buttons.” The professors demonstrated their own play with scientific equipment and objects and modeled trial and error to reframe mistakes as learning opportunities. They also used high-tech tools as boundary objects, getting the students to experiment with using them as a way of capturing their interest, as when Dr. E invited Andrea to use her cryo-microscope and Dr. G taught George how to use DOS computer programming to control lab equipment.

Many students seemed to catch the professors’ enthusiasm, noticing that “They seem like they have fun over very simple things … they get all excited about it” (Frank) and “She is so excited that I can’t help feeling excited about it myself” (Krystine), or using words like “cool” (Robert, Krystine, Frank) and “fun” (Katarina, Gordon, Buck) to describe the science activities they engaged in. They were impressed by the professors’ willingness to let them play with high-tech machinery and authentic experimental objects. In being encouraged to make mistakes and allow errors to happen, the students learned
to feel comfortable in lab environments that at first had appeared intimidatingly unfamiliar in comparison with their high school science classrooms.

**Scientists’ flexible mindset**

Professors described scientists as needing flexible mindsets, including looking at situations from new, sometimes unpopular, perspectives; imagining possibilities beyond what one has always done or seen other others doing; having a spirit of adventure or risk-taking; and recognizing the qualitative nature of supposedly quantitative disciplines. Dr. B explained to Robert that the same scenario is viewed differently from classical physics or quantum mechanics perspectives. Dr. H told Frank several reasons why a glacier depth graph might look the way it does, specifically pointing out that data were not “truth” but merely the best estimate given the circumstances. Dr. D taught Gordon about how calibrating instruments for measuring volcanic activity can change the data produced and told him that he valued students’ challenging professors’ opinions. Dr. A used words like “guessing” and “gambling” to describe how physicists play with data to make it fit theoretical models. Dr. I joked about how the names of molecular base units in chemistry are always changing.

Students began to perceive science as less exact than they had been led to believe in their high school classes; they adjusted their perceptions of scientific practice as they were confronted with the unfamiliar notions that the language and activities of scientific work were not static, that authentic science learning was more complex than uncovering essential facts. Buck was intrigued to learn that the chemistry terms he was learning at school had different meanings when Dr. I was a high school student, and that scientists in Dr. I’s field were continually revising their methods for conducting the same type of experiment in order to refine the significance of their findings. Frank realized that the data on glacial movement that he was examining might look neatly numerical but were nonetheless “ambiguous” and “always open to interpretation” (Dr. H) depending on the conditions under which they were recorded. Observing how Dr. A screened out data that he described as “noise” in order to focus on those he perceived to be more significant, Nate said, “It seems like you have to compromise … in getting to the ‘truth’ of your data.” George learned that the “formulaic” (Dr. G) approach to lab work in high school leads students to think experiments have only one correct outcome, whereas true
experiments often have surprising results, and that rather than indicating failure, this leads scientists to pose new questions.

**Scientists’ “stamina”**

The professors emphasized the need for perseverance to succeed in science; Dr. C spoke of handling the “trial by fire” of “failed experiments” and having “stamina” to endure difficulties in the field, and Dr. D. talked of having “tenacity” to find creative ways to fund research. Using the example of Nobel laureates earning recognition for research done decades earlier, Dr. F said that scientists often must persist at research problems for years before the “gamble” pays off, and she encouraged Katarina to “practice, practice, practice” the techniques she was teaching her. Dr. G and Dr. E showed George and Andrea the sheer volume of microscope slides they produced before drawing conclusions and the number of times slides had to be re-done to get viable samples. Dr. I introduced Buck to the tedious work of “picking” worms that was the foundation for key genetic discoveries. Through participating in such practices, students came to appreciate the need to do repetitive, sometimes tedious or frustrating, work in order to produce data that might eventually lead to exciting conclusions.

**Situating local research within the “big picture”**

The professors consistently said that scientists must contextualize their own research within a “big picture” (Dr. B) in terms of its importance to human society. Dr. F described her work with tiny worms to Katarina as establishing “blueprints for human genetics.” Dr. E and Dr. G discussed implications of discoveries in their labs for global health issues. Dr. A showed Nate how his lab was working on one small piece of a much larger puzzle being explored at an international particle accelerator in Switzerland, and Dr. D described how his collaboration with scientists worldwide helped to create a global picture of volcanic activity. Dr. H helped Frank to see the significance of her glacier depth analyses for understanding global climate change. The professors showed the students how they not only practiced science within localized science communities but also participated in global networks, thus exposing students to broader “specialist discourse communities” (Northedge, 2002, p. 252). Students commented that working with the professors had opened their eyes to large bodies of knowledge they had not known existed, as when Katarina said, “It never really occurred to me, all the discoveries
you can get from one little worm.” Andrea described the tension between the local specificity and the global context of the professors’ research work as follows: “It’s interesting how much they study … researching one thing [topic] that seems so broad but can get so difficult and … really in depth with every little aspect of it.”

“Communication” as a scientists’ tool

Professors often noted “communication” to be a critically important “tool” (Dr. G) in scientific disciplines. Dr. G. emphasized that scientists need to communicate well in lab settings. Dr. A spoke of discussing research with global colleagues and co-authoring papers to disseminate findings. Dr. H described the peer review process as a “conversation” about what is going on with a discipline, which requires good written and oral communication so that colleagues can understand what one is doing or has found out. Dr. E likened sharing research to telling a “story” that can convince funding agencies to support further work. Dr. C and Dr. I alluded to scientists’ role in educating the public, with Dr. I asserting that university scientists, as “paid” public employees, are obligated to report on and archive their work. Dr. G summarized: “Communication is the most important tool outside of being in the lab. You have to be able to tell people and ultimately sell what you’re doing to people. If you’re not willing to get in front of people, it just doesn’t work.” This recognition of communication as a fundamental practice highlights sociocultural theory’s emphasis on relationships as the source of learning. These professors were acknowledging that a community does not grow, nor its members learn, except through relational engagement, on both local and global planes of interaction.

The strength of this belief may explain why most of the professors, in helping the students to prepare for the April 2 mini-conference, focused on teaching them effective communication strategies. Dr. F. instructed Katarina how to organize her material so that her audience would learn the broad importance of her topic before hearing research details: “When you talk science to people I think it’s really important to try to get across, ‘Why do we care?’ Why does anybody except for a handful of geeky scientists sitting in their labs care about this problem?” Dr. D taught Gordon to use metaphors to illuminate concepts. Dr. I encouraged Buck to gain enough comfort with the science concepts to be able to talk about them without referring to notes. Not only did Dr. C instruct Krystine in
ways to present the data she was compiling; she also explained how the data would be used in a research paper, with Krystine named as a co-researcher. Some professors were impressed by their partners’ learning of communication skills; however, in most cases, they saw synthesizing information sufficiently to communicate it effectively as an area of practice where the students still had a lot of growth ahead of them.

“Muddy boots” and “math literacy”: Discipline-specific practices

In addition to general competencies needed in broad university communities and understandings of what being a scientist entails, professors described specific practices that students would need to learn in order to gain full membership in their own particular fields. Dr. C explained that ecologists have to tramp through habitats in “muddy boots” to collect specimens; Dr. H said that working on remote glaciers meant being just as competent at repairing broken-down vehicles or equipment as at using advanced mathematical formulas to analyze data. Some said that students had to be highly literate in math or computers to succeed in their fields. Dr. E and Dr. G emphasized following safety protocols when working with bacterial pathogens, and Dr. D described necessary precautions when working close to active volcanoes. Buck learned the importance of setting up polymer chain reactions properly, since with thousands of them being performed each year in Dr. I’s lab, inefficient experiments can be very costly. Frank learned about radar’s significance as a geological research tool. All the professors showed the students equipment used for specific research-related purposes, from Dr. E’s cryo-microscope to Dr. B’s nitrogen tanks, to Dr. A’s and Dr. H’s computer programs, to “the great tool of microbiology – the toothpick!” (Dr. G)

Where the professors’ labs were their primary locale for data collection, they invited students to try using equipment or techniques, such as “picking” (Buck, George, Katarina) or “sloshing” nitrogen (Robert). In cases where equipment and processes were so rare, expensive, or centralized that the professors themselves had to go elsewhere to access them – for example particle accelerators, in situ volcanic activity calibrators, or actual glaciers – professors did their best to help students simulate the experience of engaging in the associated practices. Dr. A showed Nate interactive videos to simulate being inside the Geneva particle accelerator, Dr. D taught Gordon how to calibrate on small-scale models, and Dr. H had Frank envision himself on an actual glacier through a
guided imagery process. Following this, Frank commented that his work with Dr. H was “about as exciting as it could get without actually going to the glaciers.”

In addition to research-specific tools and techniques, the professors also described non-scientific tasks that they regularly did. Dr. D told Gordon about writing reference letters for students and explained the paperwork involved in getting permits and insurance waivers for international research sites. Dr. A talked to Nate about managing time, coordinating schedules, and meeting deadlines. Many professors shared information about the budgets they managed and how they secured funding for research, including purchasing and repairing equipment.

In these ways, the professors guided the students, under careful supervision, to engage in specific practices of their disciplines. Guided participation in such practices was one of the experiences that the students valued most out of all the things they did on campus. Students often began the midpoint interviews, in response to the general prompt “Tell me how this experience is going for you,” by talking about their time with the professors in the labs, making comments such as “I really enjoy learning about what [Dr. C is] studying” (Krystine), “I’m finding it really interesting!” (Katarina), or “I get to see what doing things in the lab is really like” (Buck). They appreciated gaining an “in depth view of what they [scientists] do” (Andrea) and “get[ting] to do the little tests and micro-experiments and so on” (Gordon). Students felt that being able to participate in lab practices from the “inside” (Gordon, Krystine) was a unique opportunity, very different from their own or their peers’ experiences at high school. George observed that what he was learning with Dr. G was “more complex,” Krystine noted that Dr. C’s lab had “such a different atmosphere,” and Gordon said that “everything there [with Dr. D] is just way more in depth” than anything they had encountered at high school. Nate believed he had moved “miles ahead of everyone” at high school and Katarina felt herself to have become different from “lots of high school students [who] probably have a fear of going to university,” since she now felt so familiar with a university style of learning.

**Shifts in academic identity**

Students noticed important changes in their knowledge, understandings, and perspectives that developed as they heard about, observed, and engaged in practices of broad academic, general scientific, and specific disciplinary communities, in partnership
with the professors. Not only did they access information they had not known existed and try out activities they had thought could only be done by “esteemed professor[s]” (Krystine); they also associated this learning process with becoming different from what than they had been before. Their outbound trajectories from high school communities became more pronounced, as they recognized a widening gap between restrictions limiting high school learners and potential for developing their knowledge and skills as university students. Frank had an epiphany about his preferred ways of learning and how they might be much more richly rewarded at university than they had been thus far in his high school experience. He explained:

[In high school] you just look in the textbook and it’s like, okay, they already know it and now I know it too, but here [at university] it’s like they’re trying to figure something out and you have to think and try and be smarter than everyone else and try and think of something else that can be written down in a textbook someday … I learned about how the students learn here. It’s a lot different. Because at high school, they’ll give you, like, notes, and a question that’s already known, and everyone will know the answer, and I was like okay, do this, but at university, they’re learning stuff that adds to society and isn’t already known, and they’ll be going off doing it and getting their education that way. They’ll be actually doing something useful. And I like learning that way.

Whereas at first, Frank was ambivalent about whether he would even apply to university, his view of himself had changed; he now felt that he could handle, and enjoy, university study – that he could be a university student. Other students commented on the depth of involvement in specific topics that characterized their faculty partners’ research and saw potential to learn more at university than they had ever thought possible before having these transition-related experiences within science communities.

Students also began to realize the importance of foundational knowledge to future learning, as some struggled with grasping science concepts because they were not taking high school courses that would supply background information. Nate was trying to understand theoretical physics without having taken any applied physics, and George and Andrea were participating in advanced experiments in gene structure without understanding basic genetics. On the other hand, Robert quickly picked up concepts about semiconductors because he was taking Physics 11, while Buck found he could grasp DNA structure because of his concurrent learning in Biology 11. Students
became aware of key overlaps and/or differences in the available knowledge and practices afforded within high school and university science communities.

Seeing the progression of learning from high school, through undergraduate studies, to graduate work and beyond helped students put their current and future academic identities in perspective. Whereas before, some “did not even know what a grad student was” (Gordon), by the end of the study they showed “increased interest in post-secondary education but also in continuing … education beyond a bachelor’s degree” (Nate). Many identified their partners as role models: “They put in a lot of work to get where they are, and it kind of gives you an incentive to push hard and make it where you want to be” (Andrea). Gordon said, “It’s somebody that you know has been there before and went through the same kind of things you did and had similar goals as you. They wanted to get into university and make something of themselves too.” For these students, working closely with someone who had followed a paradigmatic trajectory they could identify with was highly influential in developing their future sense of themselves as learners.

The professors’ perspectives crystallized the students’ and my perceptions of these shifts in academic identity. Along with observing learning about unwritten rules of university academic practice, several professors witnessed students learning about scientific codes of practice as well. For example, Dr. A said:

[Nate] didn’t come out as a physics expert, but he has a good impression of what people do and how it’s done … You have to get at least that and build on that. It’s important to get an understanding of the physics as well, but there’s a certain cultural thing he has to be exposed to first, which is the way physics is done and why it’s done, rather than the specifics of what I’m doing.

Dr. A saw this understanding of the cultural parameters of a field as fundamental to transition into science communities, without which scientific concepts would be meaningless to newcomers. Dr. B stressed learning about the multiple roles and tasks involved in science work and spoke of Robert’s being exposed to “some hot areas in physics,” which he felt is critical to attracting newcomers to physics: “We try to appeal to their sense of wonder about the universe. There’re a lot of wild and crazy things in physics and they get excited about those, so we use it to our advantage.” Some
professors connected their own paths with the ways they tried to support students; since most had followed their passions for particular topics, they looked for ways to ignite the students’ interest as a catalyst to their developing specific disciplinary competencies.

These shifts in academic identity, for the students, were accomplished through working with boundary objects – the key features and practices that the professors saw as definitive of membership in university, science, and their respective disciplinary communities. The professors, who already belonged to these communities but had all once belonged to high school communities – in all cases as students and in some as teachers – acted as boundary brokers, who could assist the students with developing understanding of tools, ways of doing things, and codes of practice that they were being exposed to. The students, as professors repeatedly said, had to engage with this process – to “try” (Dr. A) new things, to take “initiative” (Dr. D, Dr. F, Dr. H) and “responsibility” (Dr. I) in their learning. However, the professors also had to engage in identity work through the process of supporting the students, as I will discuss next.

Learning and “relearning”: 
Deepening belonging through boundary practices

It seemed to me that the professors all exhibited “healthy identities” (Wenger, 2000, p. 240) of belonging within these various communities. That is, they appeared to be fully engaged with community practices, to be able to view their communities as outsiders might, and to align their localized work with broader structures and enterprises. The professors evidenced these tendencies through their deep involvement within their fields; their thinking about how community practices could be improved – particularly around attracting and welcoming prospective students; and their collaborative work with other scholars. Along each of these planes of belonging, they were also – in my view – “connected” through enduring relationships with colleagues and “expansive” in their open-ness to trying new scientific practices and new ways of reaching out to prospective community members, and – as suggested by their own reflections on their previous experiences in mentoring roles – “effective” at guiding students’ participation (Wenger, 1998, pp. 239-40). Thus, they were ideally positioned to be boundary brokers. They had a wealth of experience and expertise to bring to supporting the students through exploratory engagement within science communities, especially. Yet, they also
discovered through working with their partners that they needed to revise or improvise practices, in order to engage the students' participation effectively.

**Familiar strategies: Meanings of mentoring**

I asked the professors, in our first interviews, to describe their understandings of what it meant to guide or mentor others and to connect those meanings to what they anticipated working with their student partners could be like. Without exception, the mentoring experiences that the professors described involved working with students (especially graduate students) in their disciplines to guide them to develop skills, scholarly methods, and connections with resources and colleagues that would enable them to pursue further work in those fields. Dr. D stated that in his experience, mentoring students was such a “common practice” in university science communities that “there are not that many [professors] who are not [mentors] … everybody in my department talks to their [graduate] students every day.” Given this emphasis on mentoring students toward scholarly careers within the professors’ work communities, it is not surprising that the ways they anticipated working with the high school students evinced an underlying tendency to think about how they could help the students to follow similar learning paths to those they had taken themselves. I observed the following themes in their responses to my initial question about mentoring, which illustrate the practices of guiding others that the professors brought to the partnerships. Following each, I describe the ways that students seemed to engage with these practices within the pairs’ work together.

**Desire to inspire**

A strong theme in the professors’ descriptions of mentoring was showing protégés one’s “love” (Dr. D, Dr. I) for one’s work. Professors wished to share their own deep interests with others who might be sparked to learn or do similar things. Although they hoped to raise their departments’ profiles and attract students to their fields, they also asserted a broader interest in inspiring youth to study science, and they saw opening high school students’ eyes to the wide range of science-oriented study and career paths as an effective means of doing this. They regarded these students’ age as an ideal time to help them choose where to focus their intellectual energies: “By the time they’re already here they’ve made their decisions, so … it’s better for us to appeal to them when they’re young” (Dr. B). Professors were motivated to show students what
they found appealing about their work and to help them develop long-range visions of
where careers in science could take them.

The students’ reflections suggested that they did feel inspired by the professors
themselves and by gaining access to their paradigmatic trajectories. Gordon said, “The
most valuable was the time I spent one-on-one with Dr. D. Dr. D and I spoke about my
future goals … and this motivated me to work towards these goals and try to make them
a reality.” Nate called Dr. A “a great mentor” who inspired him to consider graduate work
as a future option. Dr. E’s achievements represented “what you want to strive for” to
Andrea, and Krystine said it was “just incredible” to become aware of learning
possibilities in science through her work with Dr. C.

“An inner calling to encourage girls”

All the female professors had a particular interest in mentoring girls in science,
which Dr. H expressed as an “inner calling to encourage girls.” They wanted to help girls
to work against a persistent “subtle attitude” that “women aren’t expected to do as well
and go as far as men. I think both women and men kind of have that attitude, so women
might tend to settle for a little bit less because there are lower expectations” (Dr. E).
These women felt a responsibility to provide role modeling for girls. Dr. E spoke of
preparing girls to deal with unfortunate, but real, societal barriers that women in science
could encounter: “The physical and emotional demands on women trying to juggle young
children, babies especially, with very demanding careers is very hard, and a lot of
women drop off as you go up the ladder,” issues which have been put forth in research
(e.g., Holmgren & Basch, 2005; Saunders et al., 1992). Dr. F shared stories with
Katarina about bringing her first child to work and caring for an infant while running a
research project, so as not to lose her personal income or her research funding. These
professors conveyed a message that with tenacity and determination, girls need not be
limited in their ambitions or pursuits. Dr. H said, “It’s exciting to me to see girls interested
in science and [give] them opportunities to pursue these things,” while Dr. C aimed to
give Krystine “a glimpse of a professional woman’s career and to involve her in a
network of female scientists at different stages of pursuing their dreams.”

Dr. C’s goal evokes Neumeister and Rinker’s (2006) observation of professors
supporting gifted females to develop their “emerging professional identity” (p. 305). The
importance of female professors as role models for female science students also was emphasized by Campbell and Skoog (2004) and in Seymour and Hewitt’s (1997) study, where “the strongest, single need expressed by women S.M.E. [Science/Math/Engineering] majors was … a personal, supportive relationship with their faculty” (p. 305). Female professors were especially appreciated when they made “the attainment of a professional or academic career based on an S.M.E. major, and its combination with a satisfying family, social, and personal life, seem normal and achievable” (p. 307). For pre-matriculated girls, Wai-ling Packard and Nguyen (2003) also reported that engaging adolescents in mentoring relationships helped them to develop positive ideas of their “possible selves” (p. 251) as scientists; Kerr and Robinson Kurpius (2004) described how specific career identity exploration exercises encouraged talented girls to pursue science; and, in Canada, Madill et al. (1997) reported the success of a university-based intervention to encourage girls in science. This research suggests that the female professors’ belief in the importance of mentoring girls in science was well placed.

The female students did not specifically mention gender in their comments about their relationships with their faculty partners, with the exception of Katarina, who reflected that she had felt much more comfortable going into the study when she learned she had been matched with a “girl professor.” However, the girls each seemed to develop closer personal relationships with their faculty partners than was evident with any of the boys, and they each specifically mentioned their appreciation for feeling able to talk with their partners on personal as well as professional levels.

*Disrupting “hierarchal structure”*

The female professors identified one mentoring strategy that they used to support female students particularly, but also students generally, as deliberately disrupting traditional hierarchies within their communities. Dr. E tried to set up collaborative experiences that were not intimidating to less experienced community members:

Two things I do specifically. One is that I try to treat all people that I interact with, with a lot of respect – in particular the undergrads in my courses, to try to put them at ease a little bit. And with people I work with in my lab, I really consider us all spokes in a wheel or part of a team that’s working toward a common effort rather than a hierarchical structure.
Similarly, Dr. C described building a team-oriented lab environment and acting intentionally to include new members, as with the lunches she organized for new sessional instructors. She did not treat Krystine as a visitor but as a new member of her research team, even referring other students to her when they had questions that she knew Krystine could answer. Krystine reflected, “I never felt like an outsider. I didn’t feel like the high school student who was at university and who was like, too young, or whatever. She treated me like an actual one of her grad students.”

Male professors also wished to work against traditional power imbalances. Dr. D wanted to show students that professors are “human” and teach them “to always question” not just information, but also its sources – including professors. Dr. I showed Buck how graduate students in his lab were working independently to come up with their own hypotheses, not just carrying out research tasks for him. Dr. A spoke of the way students can be disadvantaged by typical department and lab organization – for example, graduate students depend on professors for access to scholarly networks and research tools and often are employed by their academic supervisors. Thus, he said he worked actively to grant as much legitimacy as possible to graduate students, giving them the lead on major aspects of research projects. As well, part of empowering students, many professors felt, was instilling the idea that they were competent and capable of overcoming any self-doubt they might experience during learning processes. The professors’ comments about their deliberate efforts to create learning situations that were less hierarchical and more collegial, both in terms of social character and of scholarly practice, illustrate their capacity, and desire, to legitimize the participation of new and fledgling members of their communities as important and valued.

Relational coaching

Many professors saw mentoring as including helping students to understand and engage in relational networks within their labs, departments, and scholarly communities. Most not only introduced their student partners to undergraduates, graduate students, and colleagues, but also explicated these people’s roles and how they were related to one another. Various professors let their student partners know how lab participants often formed teams that not only worked together but had fun and socialized together, how lab members took on different roles in research or teaching enterprises, how
broader politics might influence who they worked with (for example, when funding cuts led to sharing lab space or equipment), and how collaboration was managed among global partners. Also, professors explained how they helped students they worked with to grasp the diverse range of people who became scientists and learn how to navigate challenging relationships. Dr. C thought it was important to advise students about who they might (or might not) work well with: “I might [say] not to work with that person, or ‘Most people couldn’t work with that person but you could probably handle it.’ I’ve had some important mentors in my life that most people really don’t like. Everyone’s different.” This was an important way of granting access and legitimacy to the student participants, helping them to understand relational dynamics in their communities and to step into the flow of interaction.

Professors facilitated connections among the students and others working in their labs in ways that generated deep learning about such relational networks. Dr. B, Dr. D and Dr. I introduced Robert, Gordon, and Buck to graduate students and set up opportunities for them to collaborate. Through introducing Katarina to international graduate students, Dr. F helped her to understand global academic mobility, how people choose universities based on relationships they hope to develop with supervisors with certain research specialties. In telling Krystine how she had wanted to take her colleagues to see “The Bee Movie” but one of the researchers objected because the movie featured a “boy bee” (scientifically improbable because 99% of bees are female), Dr. C showed Krystine how lab teams may engage in intellectual debates that relate to their shared work but also foster social interaction. Dr. F also showed Katarina how her lab was a social as well as an intellectual community, by including her in ongoing jokes among lab members. The contribution of such connection-building to academic identity has been suggested by Valadez and Duran (1991), who described how placing students in mentoring teams consisting of undergraduate and graduate students with faculty leaders helped students to develop their capacity as research scholars.

**Passing it on**

Many professors asserted that in choosing to guide others, they wished to share positive growth experiences that they themselves had benefited from as they progressed toward expertise in their communities. Dr. D said that the mentors he had appreciated
most were those “who didn’t have a stake in the outcome; I wasn’t a disappointment … or a reward.” He saw mentoring someone else as a way of passing on this gift of unconditional support, as did Dr. H, whose key mentor had been not a “judging” figure but one who treated her as a peer. Dr. I described it as routine practice in his field for professors to accept students as protégés and assist them through various stages until they themselves were ready to mentor others. Dr. C thought people in her position should feel obligated to pass on the most helpful knowledge and skills they had accessed through their own mentors. Dr. G saw mentoring as bringing students into a broader “conversation” that crossed generations and even disciplinary boundaries, and Dr. E said she attempted to replicate actions and attitudes of female mentors that had influenced her positively. Dr. F emphasized the importance of her own mentors in showing her that women could succeed in science and felt an obligation - “it just feels like something I just need to do” – to pass on this belief to the next generation of girls.

This idea of passing on one’s positive experiences of being mentored to others also appeared in students’ comments about how they wished they could share the experiences they were having. For example, Andrea said, “This is something I wish every academically oriented student could experience,” and Katarina suggested, “I think all high school students should have a choice of going to a university while in Grade 11 or 12.” In recognizing how much they had learned about university and science communities relative to their high school peers, students implied that those peers could benefit from similar partnering experiences with professors.

The professors’ generational view of mentoring processes, expressed in their first interviews, suggested that in working with the students, they would be engaging them not just in guided participation but also on the broader plane of participatory appropriation, whereby entire communities collaborate in sharing and refining the practices that constitute membership, drawing newcomers in and creating conditions for them to contribute meaningfully. The professors were ideally situated to guide the students’ entry into their communities, not just because of their deep competence with community practices, but also because of their sophisticated understandings of relational dynamics and their roles in helping students to navigate participatory networks.
Negotiated strategies: Refining ways of sharing

Despite the professors’ empowered circumstances – their knowledge of their communities and their understandings of mentorship – which seemed to position them to facilitate the student-faculty partnerships with confidence, many nonetheless expressed some initial uncertainty around their mentor identities in relation to partnering with high school students. Most commonly, especially among those professors who had little experience working with students younger than third or fourth year undergraduates, they worried about “meeting the student at the right level” (Dr. H). Many had questions about what kinds of background knowledge, understandings, and skills they could expect the students to bring, or expressed concerns about finding a balance between insulting the students’ intelligence and going over their heads. Such concerns illustrated the professors’ awareness – though not always explicitly stated – that they themselves would be learners in this process.

The professors realized that they might need to modify strategies they had used in the past, and perhaps even develop new ones, in order to share resources and practices with the students. Sociocultural theory asserts that newcomers’ participation engages experts in evaluating and refining practices, and that these activities are highlighted during the boundary work that characterizes sustained interaction among people from different communities. The following are strategies that I observed across the student-faculty pairs, as they worked to reconcile differing levels and kinds of experience that each brought to the partnerships; these strategies represent boundary practices that developed as the pairs figured out how to learn together. Although many practices appeared to be initiated by the professors, this often occurred responsively, as they experimented with ways to answer needs they perceived students to have.

I interpreted the first four strategies to be language-based; by assessing and linking students’ background knowledge through conversation, scaffolding scientific terminology, speaking in metaphors, and storytelling, professors ignited students’ interest through rich talk about science. I viewed the second group of four strategies as activity-oriented; by breaking down and building up the ‘big picture,’ connecting concepts to lab activities, thinking out loud, and explicating research activities, professors engaged students in the hands-on practices of their disciplines. The last two strategies,
assigning research responsibilities and enacting collegiality, appeared to some degree within all the pairs, but developed with much greater depth of mutual participation depending on the level of “bond” (Katarina) that students and professors developed. Through all of these boundary practices, shifts in identity occurred on the community level, as both guides and newcomers re-evaluated their own and one another’s positions relative to community enterprises and adjusted their modes of participation accordingly.

**Assessing and linking background knowledge**

Professors assessed students’ prior scientific knowledge indirectly, by weaving key information into conversation and attending to how they responded. Dr. G did not question George about basic genetic principles but slipped information about cell structures into an explanation about how to stain microscope slides. Dr. H did not ask Frank what he knew about geometry; instead, she explained how she calculated ice thickness using Pythagorean theory, prompting Frank to share that he had learned that formula in math. Dr. I did not ask Buck whether he understood polymer chain reactions; instead, he asked Buck to find out whether his chemistry teacher at school understood them. I wrote in my notes:

This was a roundabout way of getting Buck to link what Dr. I is talking about here with what he knows, or doesn’t know, already ... Dr. I is quite clever here – he has led Buck to feel that he himself does understand the question, although he didn’t at first. He has positioned Buck as his collaborator – they are two people who understand the same question, versus someone else who may not. Buck seems empowered in this moment.

This was a consistent theme in my observations: professors actively working to help students feel confident that they understood more than they might realize about complex concepts. I saw this as an improvisational strategy similar to those observed by Holland, Lachicotte, Skinner, and Cain (1998) as people decide how to position themselves in particular situations. Professors chose to ascribe competence to the students even when they believed it might be lacking, for the sake of building trust in the early stages of their relationships; they positioned themselves as supporters rather than as testers of the students’ skills and knowledge. Students perceived these efforts as demonstrating respect for them as learners, as when Robert observed that Dr. B could “bring it down to where I can understand it” but “never talked down” to him. Some were
aware of the professors' strategy of not letting them feel incompetent and appreciated being helped to access concepts in ways that were appropriate to their novice status, as when Katarina said, “She [Dr. F] is really good at explaining stuff at my level instead of way up at the level I know she could be explaining it at.”

The professors needed to form their own cognitive maps of the students' familiar academic terrain, to “see more in the eyes of the inexperienced” (Dr. G). As they gained a better sense of students' background knowledge, they made more direct connections between information they could now assume was probably new to the students, and knowledge they could now presume to be familiar. Knowing that Andrea was taking Biology and Chemistry at school, Dr. E extended her existing understanding of acids and bases by teaching her about amino acids. Dr. B linked the high-tech frequency measurer in his lab to Robert’s study of electricity at school. In some cases, students also began to initiate such links, as when Buck related what Dr. I told him about medication patents to a friend’s antidepressant prescriptions. Some showed that they could connect not just prior knowledge, but also things they had learned while at SFU, to new information their faculty partners were sharing. Nate applied the concept of “decision trees” that Dr. A had explained to reading unfamiliar data graphs; Krystine applied her new understanding of bee features to creating her own specimen categories.

When students recognized such connections between familiar and new information, their excitement was often palpable; I wrote, “Buck clicks onto something he’s familiar with and understands and suddenly he’s in the zone!” My word choice suggests the “zone of proximal development” (Vygotsky, 1978, p. 86), where the level of challenge and the level of support from an experienced person are both just right for a learner to grasp a new concept. Similarly, Gordon said, “[That] was one of the best times, when I really started understanding what I’m doing, why we’re doing stuff in the lab. I’d say now I’m just right in the middle,” between feeling under- and over-challenged. Such moments indicated turning points, at which professors had gauged the current and potential understandings of their partners “just right” (Gordon), while students were ready to make conceptual leaps, as when Gordon shifted from grasping a technique for calibrating a lab instrument for measuring volcanic activity to understanding “why” and how this activity related to Dr. D’s big research questions. In this way, the pairs worked with boundary objects recognizable to both partners (simplified versions of scientific
concepts) in such a way that the student could start to utilize concepts with more depth, specificity, and complexity than they had been able to previously.

**Bridging lay vocabulary and scientific terminology**

Another language-based strategy I observed was a kind of negotiation among partners, as they worked out vocabularies that would provide access to concepts in student-friendly laymen’s terms, as a bridge to using more scientific terminology. Describing research grants to Gordon, Dr. D first called them “scholarships,” which a high school student could easily relate to. Dr. A described the variables represented on a graph as “brown … green … and blue stuff” and explained to Nate that “the ‘matrix method’ is a secret code word for the piece of code that actually figures out how much brown, green, and blue is in there”; later, he referred to the same graph using scientific terms. In showing Andrea her cryo-microscope, Dr. E first used descriptions like “little bridge,” “little sleeve,” and “little kind of pocket” rather than the technical names of the machine’s parts, but later dropped this lay vocabulary, showing increasing trust in Andrea’s ability to understand technical terminology.

Notable exceptions were Dr. I and Dr. G, who used highly technical language right from the beginning. Both volunteered justifications for this. Dr. I said it was a student’s responsibility to ask questions if he did not understand something; he also explicitly told Buck when he did simplify a concept and later offered the more complex version: “I lied to you a bit [before] to simplify. We actually …” Dr. G perceived George as “a smart kid who could handle that kind of thing,” so he did not feel the need to “simplify” the way he might with other students. This may have represented a misreading of George’s comfort level, though, as George said to me, “At times I was a bit overwhelmed I guess. I was usually able to get the basics but as soon as I ask questions he [Dr. G] moves on to a more complicated thing, so then I get a bit more lost.” George also was hesitant to ask questions if he was not grasping a concept; other professors may have anticipated and proactively circumvented such reluctance more than Dr. G thought was necessary with George. In using bridging strategies to build students’ scientific vocabularies, professors exemplified a theme in Garko, Kough, Pignata, Kimmel, and Eison’s (1994) study, where students described their ideal professors as teaching in a way that “connects or bridges the teacher and student together” (p. 57).
This boundary practice emphasized connections among the students’ prior knowledge and new concepts the professors were exposing them to, creating points of access.

**Speaking in metaphors**

A similar strategy was the professors’ use of metaphors to illuminate scientific processes to the students. For example, Dr. D explained the effect of carbon dioxide in volcanoes by comparing it to the foaming effect of soda drinks. Dr. G compared staining microscope slides to painting. Dr. F described cell division as “basically the equivalent of the family tree … but as opposed to the nephews and nieces and great grandchildren, it’s the cells.” Dr. B compared convection currents that affect clouds to heating systems in diesel engines. Dr. H likened glacial surveyors to construction surveyors. Some even personified scientific objects; for instance, Dr. I referred to two strands of DNA as “Crick” and “Watson,” and Dr. C attributed human emotions to bee specimens, saying things like, “And what’s this one over here? Just a lonely bee.”

When professors employed metaphors, their student partners quickly grasped concepts. Katarina appreciated how Dr. F “breaks it down, like when she was talking about DNA she was talking about a pearl necklace and stuff and making it so I could understand … little memory things so I can remember stuff.” Some students picked up on and extended the metaphors their partners used, as when George asked Dr. G whether he was “painting right” when he tried staining slides or Krystine referred to male bees’ fur as “facial hair.” Metaphors seemed to provide a comfortable language for the pairs to talk about abstract science concepts in a way that helped to concretize them for the students.

**Storytelling and alluding to stories**

Frequently, professors shared scientific anecdotes with vivid detail and engaging delivery, such that I could best describe them in these moments as storytellers. They drew students into narratives that captivated their interest about scientists, or scientific objects or discoveries, through imagery, characterization, and drama. Gordon learned about Kelvin, Fahrenheit, and Celsius through Dr. D’s rendition of “the science tabloids” (Gordon). Dr. I introduced Buck to historical developments in his field through richly characterized stories, such as the one about “this guy Kary Mullis … this is the weirdest
guy in the world … and he got the Nobel Prize in 1993.” Dr. B shared an amusing story
to illustrate how scientists troubleshoot, explaining how his team could not figure out why
their data did not align in a magnetic field experiment, until they learned that “there [was]
a giant superconducting magnet right under that spot where we had the experiment!”

I interpreted the use of allusions to be a related strategy, as when some
professors connected concepts to stories that students might know from popular culture.
For example, Dr. A showed Nate a video clip in which the Geneva particle accelerator
was featured in a recent Muppets movie, Dr. C talked about “The Bee Movie” to explain
the gender hierarchy in bee colonies, and Dr. D told Gordon that the first radio telescope
was featured in the James Bond movie “Dr. No.” I saw many students to exhibit positive
responses to their faculty partners telling and alluding to stories, such as appreciative
smiles and focused attention; these strategies seemed to me to contribute to building
rapport among many of the student-professor pairs.

**Breaking down and building up the “big picture”**

In addition to these language-based strategies that drew the students into the
professors’ research communities through conversation and story, the next group of
strategies engaged the students through activity-based interactions. Initially, the
professors had expressed to me that part of being a scientist was situating one’s own
research relative to broader enterprises. Through the pairs’ work together, professors
realized that before students could conceptualize their research on this broad plane,
you needed to understand the purpose of local activities. For the students, the local
research was, in a sense, the biggest picture that they were able to grasp at first; the
global level would remain largely inaccessible to them until they knew what the
professors were actually doing, and why.

Thus, many professors initially scaled the “big picture” (Dr. B) down to the local
level, focusing first on ways that specific lab activities related to larger goals of their own
research, before connecting those goals to even broader enterprises. Dr. G worked
backward from trying to explain how his research linked to chemotherapy drugs when he
realized that George had not grasped why they were staining slides, and began instead
by explaining the lab activity’s specific purpose. Dr. C saw that Krystine would not
understand how their lab work related to declining global biodiversity until she had seen
how many different kinds of bees her own lab was identifying; later, she could help
Krystine see that Dr. C’s lab was small-scale compared to another in the US that was
working with “specimens from all over the world” (Dr. C). Dr. I ensured that Buck
understood that the “picking” procedures done in his lab produced samples on which to
test polymer chain reactions, before he explained how this process differed from similar
research done in the past. Dr. B showed Robert what his own lab was trying to find out
about semiconductor magnets before connecting this to “a common thing in physics,
[where] you apply some sort of function and test the results,” and even more broadly to
the historical development of semiconductor technology.

Some professors went on to expand the global relevance of their research even
further, by connecting their work with enterprises in other fields or disciplines. Dr. D
explained to Gordon how volcanology was related to marine biology experiments and
explained that earth sciences “cross over into engineering, computing sciences … also
the time scale that we cover – from present here and now working all the way back
through time to understand early life. There are 4.6 billion years of time to play with.” Dr.
C differentiated her lab from molecular labs, saying “We don't use nasty stuff in this lab
… we just play with dirt in here!” Dr. F described how her lab work produced
foundational data for medical researchers who were interested in controlling cancer in
humans. Dr. H related the technique Frank was using to analyze her data to the fields of
“seismology or … any kind of geophysical discipline that involves waves.”

The students were deeply impressed by their new awareness of vast bodies of
knowledge gained through working with the professors: “It surprised me how much I
didn’t know about science ... I never knew that science could get so deep” (Andrea).
Many realized that what they had thought were specific branches of science, such as
physics or microbiology, were actually broad fields, and that contributions of many
researchers were each just “one little piece” (George) of a much bigger picture. Some
could now compare the work of scientists in different disciplines and consider how
distinctive their research tools and epistemologies could be; Krystine observed that
“because you’re studying living things [in biology], it does take a lot more time ... you
have to observe it over time” and that “there’s a huge difference between the kind of
people who study semiconductors and those who study the plants. I thought it was just
kind of under the whole umbrella” of science. Students showed increased understanding
of both the breadth and complexity of science; as Buck said, “This experience gave me a much better understanding in the field of genetics, but also … what it is that actually goes on in a lab.”

**Connecting concepts to activities**

The professors balanced verbal explanations of concepts and techniques by linking them to lab activities. Whereas more experienced students might have grasped concepts simply by hearing them explained, the high school students often evidenced confusion when their faculty partners gave verbal descriptions without concrete objects at hand (as I noted during my observations of the pairs). Many professors seemed to observe this as well and adjusted their information-sharing strategies accordingly, to focus the students’ attention on concrete lab activities. Whereas Dr. G and Dr. E initially spent the first part of each session with the students in their offices, by the midpoint they had changed this practice, instead going straight to the lab, where they could immediately apply concepts to activities. Although Dr. I continued to talk with Buck in his office before taking him to the lab, he began to use a white board to draw pictures of lab equipment and illustrate concepts. Dr. B told me that he decided to reverse his approach; instead of explaining a concept to Robert and then showing an example, as he did in the early stages, in later sessions he would first produce an object – “This is a sample, this black material, of those high temperature superconductors I mentioned” – and then go on to explain its relevance to a particular concept.

Andrea’s comment illustrates the students’ appreciation of having concepts connected to activities: “Sometimes when she [Dr. E] is telling me something I can’t put it into perspective … I can’t put it into a situation, yet when she’s showing it to me on the microscope I can say, ‘Now I kind of get it’.” Buck stated that getting to apply the concepts Dr. I told him about in lab situations was “very cool.” Others, like George and Frank, did not explicitly state that the concept-activity connection helped them, but during my observations of the pairs, I observed them to relax and appeared less confused when their faculty partners began to use this strategy.
Thinking out loud

Professors assisted students to understand concepts in connection with activities using a think-aloud strategy, giving students access to their own thinking processes as they worked through problems or ideas. Dr. C spoke out loud in a continuous monologue as she worked on categorizing bee specimens: “I have a lot more of these ‘unknowns’ now … so what we could do is label it with this name and a question mark, and then we just know to double-check it when we get more familiar.” I wrote, “She is making her research process transparent, talking aloud as she sorts and makes decisions and puzzles over problems.” Dr. H, similarly, talked through her demonstration of picking data for analysis: “I just picked that trace. This is another ugly one … there’s sometimes a lot of static … you can’t even see what that is … Okay, that looks better.” In this way, professors not only revealed their mental processes to students, but also let them see that a degree of ‘not knowing’ typified such processes.

Other professors engaged their student partners or others in the vicinity in such think-aloud processes. For instance, Dr. G talked through an experimental problem with a graduate student and George: “So what do we do with these things now? We’ve got them, but what does that mean? So we’re thinking about this.” As Dr. E examined slides, she spoke aloud about every detail she saw, using “we” to include Andrea and other students in this guided thinking process. Dr. A rehearsed a presentation by asking Nate to listen to and evaluate his thought processes: “I’ll run it by you and you can tell me if you think it’s a good way to explain what a particle physicist does and why.”

In these ways, professors explicitly shared with students how they were accessing information, how they planned to organize it, how they could relate it to things they already knew or did not know, and how they could communicate it to others. This invited the students not just to mimic the actions of the professors, but also to try thinking like researchers, exemplifying Vance’s (2010) call for transition support programs to focus on helping students learn how to think, not just how to study, as they enter university communities.
**Explicating research processes**

The think-aloud strategy was one means for professors to model activities that they engaged in as researchers. Many supplemented this strategy with didactic explications of what students would need to learn to do if they wanted to become researchers themselves. Dr. D told Gordon that he must never look at a problem from only one angle, but always seek different kinds of data. Dr. H instructed Frank, similarly: “I think what you should do first is to take a tour through all the data so you can see what they look like.” Dr. I told Buck he must be very precise in making scientific statements and repeated vague statements that Buck made back to him in more precise language. Dr. G told George that he must use experimental controls – “We have to know when things work, but then when things don’t appear to work, we also need to know why and where” – and taught him to label everything he did in the lab to produce a clear data trail. Dr. A told Nate about acceptable versus unethical manipulations of data: “Once you fire the decision tree and you actually apply it to data, and you see the distribution, you’re not allowed to change the background model … that’s not fair.” In this way, professors made codes of research practice explicit to the students, granting them access to their science communities on a level that they otherwise might have been unlikely to gain before being well into their undergraduate studies.

**Assigning research responsibilities**

I observed these four language-based and four activity-oriented strategies within all the student-faculty pairs at some point, though each pair used some more than others depending on the teaching and learning styles of the partners. The frequency and depth of the next two strategies, however, varied more widely among the pairs. First, many professors allowed students to work with data or specimens that belonged to actual research projects, thus legitimizing their participation in a deeper way than simply letting them try lab techniques. When professors did this, students rose to the challenge, acting in ways that suggested they, in turn, were motivated to legitimate their inclusion. Dr. G gave George the task of growing cultures on slides and labeling them so that others in the lab could incorporate these data into their research project; George asked key questions and practiced his technique so he could be sure his data were viable. Dr. I arranged for Buck to assist the graduate students in his lab with “picking” protein samples. Dr. A included Nate in discussions about data graphs connected to his
research. Dr. B set Robert up as a co-researcher in a mini-investigation, after which Robert asked Dr. B to involve him more in research activities.

However, only a couple of professors assigned research tasks for which the students would have nearly sole responsibility. When professors chose to legitimize students’ participation in this way, it was interpreted by the students as indicating a deep level of trust. Dr. C reserved an entire group of specimens for Krystine alone to analyze: “I’m going to leave the bumblebees and the easier groups for when you visit; that way you have a little piece of the project, and when it gets written up, we can acknowledge you and get your name on it”; subsequently, Krystine spoke with Dr. C as if she were a full-fledged member of the research team, as when she asked to “look at one of the ones that we know are identified.” Dr. H also assigned a data set to Frank and positioned herself as his research assistant: “I could record the ones you skip … so make sure you tell me if you’re going to skip so I can make sure I read the number.” Frank, in turn, began to double-check each decision and point out interesting observations to Dr. H: “Take a look there … it’s small … and it seems really quick, so maybe it [the ice] could be thin right there.” Frank expressed deep excitement to me about participating directly in research, and Frank’s grandmother told me she had never observed him to get so intensely engaged in a learning experience (personal communication, January, 2008).

Enacting collegial relationships

In entrusting students with research responsibilities, professors initiated exchanges among the partners that approximated those they might have with colleagues. In such situations, I observed students’ level of engagement with their partners to deepen. Speaking with a graduate student about a problem they had been trying to solve, Dr. D collegially asked Gordon to contribute “any ideas” he had, at which point Gordon began to participate actively in the conversation rather than simply listening. Dr. A scheduled a consultation with a graduate student when Nate was there, asking Nate to connect what they talked about to the data he had seen previously, thus including him in a collaborative research process. As I observed Nate during this conversation, he began to interject with observations about the graph material the group was looking at that illustrated he understood its implications for what Dr. A’s research team was trying to find out. I wrote, “This is a critical moment. Nate is thinking through
the problem in the same way that these more experienced people are. He comes to the same conclusion as they do, without anyone directly making the connection for him.”

Further, professors often explicitly pointed out to students that they were interacting in a collegial way and described the advantages of doing so. Dr. C told Krystine, “That’s why it’s good to key [sort specimens] with different people. Different people often find different characters. When I would key with Dr. X [a lab colleague] she would totally be able to see something that I never could”; Krystine mirrored this idea back to her with the comment that “people that kind of complement each other” make effective lab partners. Such interactions illustrate themes expressed by Garko et al.’s (1994) participants, who hoped for friendly relationships with professors that allowed for reciprocal engagement and respect. Where students experienced such collegial gestures from professors, they expressed strong esteem and admiration. Robert described Dr. B as “a very interesting man whom I respect greatly,” noting particularly that Dr. B treated him as an equal. Andrea felt that working with Dr. E exemplified how her experiences at SFU had involved “gaining lots of knowledge from very successful people.” Krystine said she felt privileged and “so thankful to be given that opportunity to work so closely with such an esteemed professor. We developed a nice friendship.”

Whereas I observed all the professors, at some point, to treat the students in a collegial manner, in some cases I interpreted a deeper level of respect for their student partners to develop, whether early in the relationship or gradually, over the time spent together. Dr. C said, “Krystine and I had a really good time … I had a lot of fun … I was totally open to having that relationship with a teenager … she seemed to be open, too, so we just clicked.” Dr. B told me that he was “impressed” by Robert’s ability to work with complex concepts in a very sophisticated way and said that in retrospect he regretted not having given Robert much more authentic research responsibility: “Without a doubt … definitely he could have handled the research stuff.” Dr. I stated that he had been “wrong” in his first impression of Buck as possibly signing up for the study “just to put us on his c.v.,” given that Buck’s “mature” engagement had struck him as approaching the level he might expect from senior undergraduate or even fledgling graduate students. To me, this deep level of respect seemed to be connected to these professors perceiving their partners to meet or exceed their initial understandings of what giftedness meant, in the sense that they expressed deep admiration of the students’ intellectual capacity and
commitment to developing as learners. This will be discussed further in the “Destabilizing giftedness” section below.

**Shifts in community identity**

All these processes – the professors’ attempts to enact their ideas of what mentoring newcomers entailed and the students’ responses to these; the language-based, activity-oriented, and collegial strategies that were negotiated within the partnerships – comprised boundary work that contributed to important shifts not just for individuals’ sense of self, but for the identities of the science communities themselves. Changes occurred for both students and professors in terms of how they interpreted each other and themselves to be positioned along a continuum of newness versus experience in science communities of practice. All the participants were involved in analyzing similarities and differences among practices of high school and university science learning communities, as a means of refining their understandings of their membership status in the latter. Through peripheral, but meaningful, participation, the students were gaining a sense of what it was like to be members of university-based communities of scientific practice in relation to the paradigmatic trajectories presented by the professors; and the professors were renegotiating their own status within these communities as they compared their positionalities to the students’.

Eventually, all the students experienced a narrowing of gaps between their initial and potential future identities within the university science communities. Whereas many had felt nervous or even scared before meeting the professors and overwhelmed by the sophistication and depth of their knowledge upon first meeting them, by the concluding interview all of the students expressed some level of feeling accepted within the professors’ scientific communities, and many indicated a desire to join those or similar communities in the future. At the same time, the professors reflected on the learning trajectories by which they had arrived at their current identity statuses. Engaging in the partner relationships helped them, as well as the students, to recognize rules, codes, and practices that defined full participation in their communities. Dr. C positioned herself as an assistant in Krystine’s process of synthesizing information, impressions, and questions, since Krystine “was not as aware as I was, when she was asking these questions and I was thinking, you know, that isn’t something she could get other places.”
Professors saw that they held the key not only to information that students did not have, but also to the very awareness that they lacked and/or needed this information. They gained a new, or renewed, appreciation for novice and expert status positions; as Dr. F said, Katarina was “starting from ground zero” and it was her responsibility, as the insider, to imagine the limitations of being a novice and share the tools that would help Katarina move forward.

Professors increasingly adjusted their modes of engagement to ensure that the students could be “along for the ride” (Dr. G). Dr. C placed the onus on herself “to learn from my interaction with [Krystine] … how to be more effective in talking with her and mentoring, both as a scientist and as a person” and to remember the importance of spending time with people who have different learner identities: “Slowing down to take time like this is incredibly valuable, for both of us.” Dr. E shared her renewed perception of professors’ need to be flexible and dynamic in their approaches in order to span gaps in knowledge and experience; she said that working with Andrea reminded her that professors need to “continually assess” what students are taking in and then “modify their teaching” accordingly. Dr. H described this as a “relearning” of “how important it is to engage with your audience, not just be talking.” Dr. A reflected on what he could have done differently to get Nate “into a better frame of mind to ask lots of questions … to encourage questions, rather than just asking … ‘Do you have any questions?’”

In order to guide the students toward greater confidence with scientific concepts and practices, professors had to recall their own experiences as novices and re-imagine their learner identities before they gained their present level of expertise. Dr. B recalled working with a professor when he was about Robert’s age and feeling “shy” and intimidated; he hypothesized that Robert, like him in that earlier situation, might be taking in more than could articulate. Dr. I remembered that he, at Buck’s age, “read [something] that made me want to go into the field I’m in now” and wondered whether this experience was similar for Buck: “Was this an epiphany like that? I don’t know. It could be. It’s hard to tell. Could’ve been. Ask me in five years.” This comment suggested that he saw his time with his student partner, as many professors did, as part of a learning trajectory that would continue into the future for the students.
As well, professors noted that working with the students reinforced, for them, the power of personal connections in drawing newcomers into their communities: “Humans work on a one to one relationship. That’s where people excel, when you make that personal relationship” (Dr. D). They saw the potential of such connections to reinvigorate not only their own approaches to building relationships with newcomers, but also the relational structures of their labs and departments. They re-viewed such relationships in light of their interactions with their student partners. This was exemplified by Dr. C’s description of Krystine’s influence within her lab:

We’d get this real multi-wave thing going on, and I’d say to Krystine, ‘You want to answer that?’ and she would, and it was just ... this really cool synergy ... for the grad students it was more someone for them to mentor, talk to in a different way, because they explained what they did to her. For the undergrads, they asked me questions that for some reason they weren’t quite asking me before.

Dr. C realized that the presence of a legitimately inexperienced person gave the undergraduates permission to inquire, where they might have been hesitant otherwise to reveal lack of understanding. Krystine’s newcomer status helped others to re-view their own statuses, now seeing themselves as more experienced. The success of this “synergy” also had to do with Krystine’s willingness to take risks, but that in turn was connected to Dr. C’s ability to help her feel safe enough to ask any question and be sure of a supportive response. Dr. C and Krystine’s relationship exemplified the kind of community growth that is possible in a situation where the sociocultural nature of learning is acknowledged, and actively nurtured, by community leaders.

Thus, the student-faculty partnerships involved learning processes that seemed just as important for professors as for students. The shared work that the pairs engaged in was the location of identity shifts, as participants evaluated, expanded, and refined not only their repertoires but also the positionalities that had been, were, and could be available to them. The students and professors helped each other to clarify where they had been, where they were, and where they were going. They each deepened their belonging within science communities. The students saw potential for their peripheral trajectories to evolve into inbound ones. The professors re-examined the depth and complexity of their own insider trajectories and renewed their sense of community affiliation, while expanding community practices for promoting newcomers’ legitimacy.
and desire to further legitimate their presence. The health of the science communities themselves thus was strengthened through this process of participatory appropriation, involving identity changes for both novice participants and expert members.

**Destabilizing giftedness: Evolving intellectual identities**

I entered this research assuming that giftedness, in a sociocultural view, is an unstable concept – an unfixed dimension of identity negotiated through interactions within communities of practice. Thus, although the student participants’ involvement in the study was determined by the practices used to identify students as gifted learners within their school district, I wanted to know what giftedness meant to them and what they thought being gifted would mean for them as university students, and also what the faculty participants thought was meant by the term gifted. I posed these questions during the first interviews, and over the course of the student-faculty partnerships, I interpreted both groups of participants to articulate changes in their ideas about giftedness.

Many professors, like me, questioned the stability of the idea of giftedness. Given their scientific disciplines, I had anticipated that the professors might hold quantitative worldviews compatible with the approaches to defining giftedness that dominate identification practices in my school district and elsewhere. Many did ask me about these identification practices; however, overall they articulated qualitative views of giftedness that emphasized its relativity. Two themes seemed to dominate their initial descriptions; they expected that gifted learners would exhibit:

- a stronger ability than most people their age to engage independently (without much direct instruction) in higher level thinking processes such as comprehending difficult concepts, synthesizing information, and articulating understanding in sophisticated ways – summarized by Dr. D’s description of “raw talent”; and
- a deep and sustained interest in learning for its own sake and self-motivation to seek out learning opportunities – encapsulated by Dr. A’s belief that gifted learners would “be very intense and would approach any task with great intensity” and Dr. B’s reference to “enthusiasm for the learning at hand.”

At the same time, the professors seemed reluctant to define giftedness, acknowledging that any individual view could represent a “bias” (Dr. D). Many implied that they would feel better able to define it once they met and worked with the students,
suggesting that giftedness was context-dependent. Many suggested that they were unqualified to define giftedness since they did not have “experience with how giftedness is evaluated” or, because they did not work with many high school students, lacked “a sort of terms of reference” (Dr. D) within which to assess a student’s exceptionality. Such statements may have represented gestures of deference to my positioning as the gifted ‘expert’ in my school district, but I also perceived these professors to be underscoring that giftedness could only be understood in relativist terms.

The students were less overtly philosophical in their initial expressions about giftedness. In their experiences, giftedness was a label that had been assigned to them as a result of their performance on some tests at school and subsequently led to their being included in specialized learning groups or activities. This process had identified them as somehow different from their peers, and for most this was not too difficult to accept since they did perceive themselves to be different kinds of learners than many of their school peers. For the most part, they perceived identification practices to have empowered them; they felt that being called gifted had benefited them academically and affirmed positive feelings about their own intellectual capabilities, without causing any insurmountable difficulties in their social relationships. A notable exception was Frank, who dismissed the gifted label, since he did not equate intelligence with what most of his school work entailed, and adopted underachieving attitudes and behaviours.

The students probably had had little reason, before the study, to analyze their own gifted identities. Certainly, their responses as to what they thought it would mean to be gifted at university suggested that they had not considered that giftedness might mean different things in different situations. Most hesitated over this question and then answered in a fairly consistent way – they thought it would be much like being gifted in school, in that they would be well equipped to handle academic challenges, though perhaps less likely to be noticed or singled out for specialized learning groups or activities; they anticipated that there might be more quick learners, like them, at university and thus they might not feel as exceptional as they did relative to their high school peers, or be perceived as such by others. I interpreted the students’ responses, in general, to reflect that they expected more changes in the ways others noticed their capabilities than in the ways they understood their own self-identities as learners.
Over the course of the students’ interactions with the professors, however, I observed all of them to reassess their understandings of themselves as gifted, undergoing shifts in their intellectual identities. Importantly, the students were not just being exposed to the types of intellectual tasks and environments commonly experienced by university freshmen, for example by visiting first-year lectures. Instead, by connecting them with faculty partners, I also was connecting them with paradigmatic trajectories of individuals who had progressed far beyond the students’ next step. As Andrea intuited, I was positioning them to engage with what they could “expect to find, maybe not right away but later on.” Almost all the students expressed awe, even felt “intimidated” (Krystine), as they began to grasp the scope of the professors’ education and intellect, describing the encounters with their faculty partners as broadening their vision of their future selves as learners. In their final interviews they made statements to this effect, such as “This experience has been an eye-opener” (Katarina), “This experience has really opened my eyes” (Gordon), and “This has been a unique, eye-opening experience” (Buck).

Most students felt reassured, by the end of their experiences with their faculty partners, that they were intellectually capable of handling university study; however, reaching this positive evaluation of their potential followed an unsettling period during which they negotiated serious challenges to their beliefs in their own intelligence and to academic complacency that they had developed at school. I observed a strong theme across the students’ midpoint interviews that they experienced wrestling with very challenging science concepts, with very skilled and intelligent guides, as “humbling” (Gordon). They were realizing that they knew very little about scientific fields they had assumed they would enter with ease, and that achieving even minimum competence in these disciplines would require intense intellectual work.

George explained, “Everything’s really easy for me in school … if [confusion] does happen in school, usually I’m able to just think about it for a minute and figure it out and get back on track,” in sharp contrast to his experience with Dr. G, which was “kind of uncomfortable … at times when I’m not sure exactly what we’re talking about.” George struggled with what was perhaps a new experience of feeling less competent than he would have liked, given the high standards he set for himself and the ease with which he had grown used to achieving them. Robert, similarly, found it “a bit overwhelming” when
he understood “only about half” of what Dr. B was explaining. Andrea spoke of moments of feeling “kind of a little [in] over my head” and said her time with Dr. E’s graduate students led her to view her own academic performance from a new perspective: “I’m not underachieving, but I’m not pushing myself to my full potential … If I was compared to students at my school, I’m an overachiever, but if I’m compared to students at university, then I feel like I’m not doing enough.”

Such statements illustrate the shift, commonly attributed to gifted learners when they move into learning situations that present authentic challenge, from having a sense of competence associated with being like a “big fish” in a “little pond” (Marsh & Craven, 2002, p. 1) to feeling under-confident in their intelligence and abilities. Within these new-to-them scientific scholarly communities, the students’ intellectual identities were disrupted, as they adjusted familiar perceptions of themselves as intelligent and academically competent to accommodate new reference points embodied in the professors’ knowledge, thought processes and accomplishments. These students, who were used to being the top students in their high school classes and feeling very confident in their intellectual abilities, were realizing, sometimes for the first time, that there was a lot they didn’t know, and some feared exposing their confusion by answering questions incorrectly or asking questions that would reveal gaps in their understanding. Thus, while the professors pressed the students to engage more fully and sometimes grew frustrated when the students didn’t respond, the students restrained their verbal participation, to a certain degree, as an improvisational strategy of self-protection.

Despite this reticence, professors did not tend to evaluate students’ intelligence as less than they had expected. The vision and experience afforded by their insider vantage points allowed them to see the students’ negotiations with challenging concepts and tasks differently from how the students perceived such difficulties. When the professors observed students’ reluctance to ask questions, they seemed to interpret it as I did – as reflecting unwillingness to reveal a perceived lack of knowledge or understanding – and they found explicit ways to invite questions from the students. For example, Dr. G told George that questions arise not because people lack intelligence but because “different people have different logic” or ways of looking at problems, and Dr. E told Andrea not to be “afraid to ask her any questions.” When professors saw students struggling with concepts, they usually attributed this to insufficient background
knowledge or experience rather than lack of intelligence. They distinguished between what they saw as students’ intelligence, versus their level of experience or “maturity” (Dr. D) as learners, between their “still [having] a lot to learn” (Dr. F) and their capacity to accomplish that learning.

As professors modified their teaching approaches to accommodate the students’ inexpert status, students experienced renewed confidence, and many expressed feeling invigorated or inspired to push themselves further in their learning. Buck was pleased when the science material was “challenging … but definitely not boring,” and Gordon shifted from being “overwhelmed” to feeling that time with Dr. D “feeds my drive rather than takes away from it.” By believing in students’ potential to grasp difficult material and accommodating “limitation[s]” (Dr. F) posed by their fledgling status, the professors acted as ideal boundary brokers, establishing the partnerships as places where students could experience intellectual identity shifts with dignity. One of the most remarkable shifts was Frank’s; he began with a low opinion of his own intellect, but in his final interview he reflected, “I didn’t think I was intelligent enough to go to university but now I know I am,” and went on to explain Dr. H’s pivotal role in this realization:

I knew I had that IQ thing, the high IQ, but I didn’t really know how that could relate to anything … when she was teaching me all those advanced concepts and things and she’s been studying them really long and I was understanding them really fast, I started to understand what that [being gifted] means … it was a good feeling.

Thus, the student-faculty interactions engendered Frank’s new perception of, and the rest of the students’ renewed confidence in, their intellectual competence and capabilities of handling university level learning experiences, by the end of the study.

Another way that the professors built up the students’ positive sense of themselves as future university learners was the “tact” and “diplomacy” (Wong & Edwards, 2009, p. 135) they employed in connection with the other major quality they had associated with giftedness – self-motivation and enthusiasm for learning. While most professors did perceive the “raw talent” (Dr. D) they had expected to see in their partners, many expressed surprise at what they described as students’ passivity during their time together, minimal efforts to engage with related science materials between campus visits, and/or procrastination and over-reliance on professors in preparing for the
mini-conference. Those professors who did see their partners as enthusiastic and self-motivated shared these insights with me but not with the students themselves, which suggested to me either that they had been expecting to see these qualities, or that they had not, but did not want the students to know that – possibilities that each seemed to illustrate respect for the students. Professors who perceived their partners to lack self-motivation also refrained from revealing any disappointment they felt to the students. This may have reflected an impulse to be polite, but I also thought it possible that the professors were striving to assess the situation fairly, seeking to understand the extent to which “social barriers” such as gender differences, nervousness or “reticence” in new situations, learned habits of “intellectual laziness,” and/or their own “assumptions” or actions could be influencing the students’ behaviours within these relationships.

I have not identified the speakers of the quotations in the preceding paragraph and this one, to protect the confidentiality these professors clearly wished to maintain in this situation; as one said, “If [the student] were going to see [my words], I would have liked to talk to [them] about it personally.” They acknowledged, implicitly, that their evaluations of the students’ engagement were generated relationally, not just through the pairs’ interactions but through broader boundary work where expectations and practices of various communities might conflict, in ways that the students might not yet be equipped to understand or negotiate. Rather than assigning blame, the professors seemed to be honouring the process of mutual participation, trusting that “it might take many iterations for these kids to kind of get” the practices of university communities and that the “feedback loop” of seeing what students learned through this experience could take many years. In this sense, the professors were operating at the level of participatory appropriation, considering holistically the roles of entire communities in supporting newcomers to develop capacity to make positive contributions.

Thus, the student participants experienced changes in their intellectual identities and perceptions of their own giftedness. They thought of their abilities, and capabilities, differently after engaging in sustained interaction with people whom they saw as much more educated and intelligent than themselves. Most experienced diminished confidence, followed by reconstructed beliefs that they could handle not just the first year of university, but also the more complex and difficult learning they might encounter further into the future, within scientific communities of practice. The faculty participants,
in turn, re-evaluated their expectations of seeing behaviours and attitudes that they associated with giftedness, in light of their own and their student partners' positionalities in this situation. They re-envisioned what they perhaps had assumed to be innate qualities – self-motivation and passion for learning – as possibly being constructed (or not) by prior school experiences and current relational dynamics. Implicit in this process was deepening their understandings of ways that they themselves were different now than they had been when they were in the students' positions. While some professors simply did not see their partners as gifted, in the end, according to their own understanding of that concept, for most, participating in the partnership prompted them to incorporate or deepen an element of intellectual maturity gained through experience and practice, into their perceptions of what it meant to be gifted.

**Summary**

The students all identified the partnerships with professors as being, for them, the most significant kind of transition-related experience they had on campus. The more comfortable students felt with their faculty partners, the more they perceived the broader university community as welcoming. Where students felt accepted and “involved” (Krystine) within the science communities, it consolidated beliefs that they could fit in at university and develop strong relationships there in the future. Students frequently expressed happy surprise that the professors had been “open” (Krystine) and approachable; they had a new perception of professors, generally, as helpful people who would be willing to meet them at their level. The professors perceived these interactions as beneficial, too; they all described learning and growth, in terms of their approaches to guiding newcomers. For many professors, working one-on-one with a newcomer reinforced the power of personal connections in learning processes; Dr. I perceived value in “the fact that they [students] feel comfortable dropping into a lab and chatting to someone; it establishes that connection. It’s an icebreaking thing … to be able to talk to someone, that’s what’s important.” Professors realized that the novice status of these high school students had prompted them to renew their own commitments to welcoming newcomers with explicit words and gestures, to reaching out and taking the initiative in building connections. Thus, both groups’ capacity for belonging within science communities was deepened, through this rich and complex process of boundary work.
“Someone There That You Know”:
Peer Relationships and Social Identity

The third type of transition-related experience I had planned for the student participants involved interactions with gifted peers who were participating in the same morning sessions with university staff and students and in similar types of afternoon activities with faculty partners – in other words, with each other. Tenets of sociocultural theory, and research that has emphasized the importance of social support in students’ adjustment experiences at university (e.g., Buote et al., 2007; Morosanu, Handley, & O’Donovan, 2010; Wilcox, Winn, & Fyvie-Gauld, 2005), and my own practice-based intuition all suggested to me that as newcomers sharing similar experiences, the students might rely upon each other for support, and so I wanted to facilitate their doing that. Specific ways that I tried to encourage peer interactions included the welcome meeting in September 2007, ice-breaker activities during the first on-campus morning, beginning and end-of-day informal gatherings at a campus café, and the online discussion forum. As well, I used every opportunity that I saw to connect individual students with others in the group through informal conversation during our time together on campus.

One of the most important emic issues I explored during the study concerned the relationships among these students. I had conceptualized, in sociocultural terms, the student group providing a support network as they entered unfamiliar communities. I assumed that their shared gifted designation, combined with their sharing similar experiences on campus, would predispose them to come together as a group and perhaps even form strong friendships. The students did agree, collectively, that sharing the transition experiences with at least one peer who could understand what they were going through – another newcomer – enhanced their enjoyment of the process. However, the peers they valued the most, in this regard, were those they had known before the study, within their school or neighbourhood communities. Overall, they showed little interest in forming relationships with other student participants and gave priority to the connections they were developing with university people such as the professors. As well, they anticipated valuing relationships with new peers they would meet in the future at university.
I interpreted the students’ perceptions to suggest that they appreciated having a familiar person with whom to share the on-campus experiences, especially when dealing with nervousness in the early stages, but as they grew more comfortable in the university communities, they felt less need for support and became more focused on envisioning their future relationships at university. This seemed to correspond with the idea presented by Swenson, Nordstrom, and Hiester (2008), that previously established friendships are important to students in the first stages of adjusting to college, but after that it may be more helpful to develop new friendships. Interacting with unfamiliar peers in the participant group did not seem to alleviate the students’ initial nervousness and in some cases added to it, nor did the study peer group seem to represent authentically the social networks that the students envisioned belonging to at university. Thus, though none of the students appeared to dislike one another, they each simply seemed to be more captivated by the types of experiences that involved meeting university people and participating in university communities, than by deepening or building their relationships with one another. The changes in their social identities were largely future-oriented.

“A friend or two”: Support from familiar peers

From their first group meeting, the students clustered within three groups that formed based on common schools, childhood friendships, and/or extracurricular experiences. It was understandable that students initially gravitated toward “familiar faces” (George) in a situation of meeting many new people and experiencing many new things, but I did hope and expect that the students would grow closer, eventually, to those whom they had not known initially. However, although the students did grow more comfortable with one another, it could not be said that they ever bonded as a whole group. I was troubled by this lack of cohesion for a while, but over time I viewed the matter differently, focusing instead on the positive support the students drew from the peers they knew best within the group.

Several students did place importance on sharing the experiences of the study with friends. George said it would have been “lonely” to have gone through this process without friends present who helped him to feel that “not everything was completely new.” Gordon stated, “It was really good for me to have other people here that you could talk with about what you were doing with your professor … it took a lot of pressure off.” Buck
said more simply that “it was just more fun to do with a friend or two.” Familiar peers supported one another and served as sounding boards with whom they could discuss their experiences on campus and the range of associated emotions, from “excited-nervous” (Katarina) feelings at the beginning, to frustration when they were not grasping science concepts, to stress about their mini-conference presentations. These informal conversations among students as they drove together to and from campus, chatted over lunch, or touched base at school became, in fact, the discussion venue that I had planned the online forum to be, with the critical difference that I was not included.

In retrospect, I could have predicted that the kind of debriefing I felt the students would need – opportunities to speak freely and work through anxieties or frustrations that might arise – might be unlikely to happen in my ‘researcher’ presence. I believe that the online forum did not work precisely because I was a member of it. These students may have wanted to appear grateful for the activities I had arranged and thus may not have wanted to tell me about things that weren’t going well. They did not disclose the full extent of their initial nervousness and discomfort until the final interviews, by which time they had overcome these and felt much more secure in the university environment. Yet, along the way, they now revealed, they had had many opportunities to confide in peers with whom they had a previously established level of familiarity and trust: as Andrea said, “It helps a lot to have someone there that you know and you can talk [with] about what went on in a way that you’re comfortable.”

The students’ choices to commiserate with their friends privately rather than conversing as a group in the FirstClass discussion forum meant that I had no formal access to the kinds of data I had hoped to gather through the online forum. However, each student mentioned to me, at some point (whether during the midpoint interview, the final interview, or informal conversations in between), that they had spoken about their experiences on campus with at least one of the other students, and many of them also told me they had discussed aspects of their participation with friends at school or family members. Thus, I felt reassured that each student had access to a safe space in which to express fears and concerns as well as excitement and pleasure related to their on-campus experiences, things that they might not have felt comfortable exposing to me or to less familiar peers. And by the end of the study, many students felt comfortable enough with me to admit at least some of their initial nervousness or fears, so I did gain
some retrospective access to these aspects of their evolving perceptions of the transition-related experiences.

**Implications for the science community partnerships**

Much of the students’ early nervousness seemed to be related to anxious feelings about meeting their faculty partners. Reflecting on their initial discomfort in the unfamiliar environments of the professors’ offices and labs, some students thought they might have preferred to have a friend with them, rather than being one-on-one with the professors. This idea was introduced by Andrea and Katarina, who had had the unique experience of spending one afternoon together with Dr. F when Dr. E was away. Both girls highly enjoyed this; they felt reassured knowing there was a peer to commiserate with if they did not understand something. Although both had positive, comfortable relationships with their faculty partners, they believed the partnering activities would have been strengthened, overall, by having at least some opportunities to share science community experiences with another newcomer. I posed this emic question to the rest of the students during their final interviews. Responses were mixed, with some valuing the one-on-one time with professors highly enough that it was worth the cost of some initial nervousness, and others suggesting that they might have appreciated a combination of one-on-one and paired time. None would have preferred only to meet with the professors together with another student.

I asked the professors the same question, and some did feel it would have worked as well, or better, to have had more than one student matched with each professor. Dr. F, for instance, thought this might have allowed the students to “feed off of each other …you get more of an interaction going, a conversation going” in the manner that she tried to encourage among her graduate students. This emic concern suggested to me that there may have been something lacking in the peer support structures I had tried to initiate for the students. It may not have been sufficient, for some, to have peers who were going through similar experiences with different professors; it may have been more powerful to have peers who were going through comparable experiences with the same professors. Perhaps I had compartmentalized intellectual and social dimensions of the transition-related experiences where I should have recognized their
interconnectedness, especially given the research base on gifted learners appreciating opportunities to pursue intellectual passions in the company of like-minded peers.

“In the long run”: Future-oriented social identities

Overall, students voiced few complaints about the peer interactions that unfolded within the participant group. They enjoyed moments of spontaneous camaraderie that did occur, as when some of the boys got lost in the library, causing good-natured teasing and laughter, but in general they were rather indifferent about developing new bonds with group members whom they had not known previously, and most responded, when I asked them about it directly, that they were not really bothered by the apparent lack of rapport among the group as a whole. As Andrea said, “In the long run, most of us are going to go to different universities anyways”; she, and others, already were looking ahead to the friendships and social connections they would form at university and did not regard this group as authentically representing the peer groups they would join there. On the whole, they felt it was more important to meet SFU students than to network with the high school group.

Considering how they would fit in socially at university seemed to highlight the students’ positioning at a nexus of membership between high school and university communities. They were in a “betwixt space” (Palmer, O’Kane, & Owens, 2009, p. 37) in terms of their social affiliations. Meeting and observing university students intensified their outbound trajectories from high school communities as they got excited about, and looked forward to, meeting new people with whom they shared greater intellectual affinity than with many of their high school peers; at the same time, they recognized their comparative youth and inexperience. George’s comments exemplified what many students expressed. He found it “interesting to meet these other students [at university] who were gifted; in each school there aren’t so many, but here you get to be surrounded by them”; yet, he believed he still belonged “more with the high school crowd.” In contrast, Buck felt confident that he could fit in with older students and found connecting with graduate students to be one of his favourite activities: “Dr. I let me work with his grad students, which was really cool. I really enjoyed that experience.” Krystine, similarly, felt that she did not “stand out as a high school student” in Dr. C’s lab. Most students felt comfortable with the idea that they had another year before they would
enter university communities as full time participants, but they looked forward quite eagerly to doing so.

Katarina’s statement that “it’s not going to be that bad and it’s easy to meet people, lots of people are in groups and very friendly” reflected many students’ sense that they had grown to feel very comfortable among university students during their time on campus. They could easily imagine themselves fitting into the social networks they had observed and participated in, in peripheral ways, through their connections with students in their faculty partners’ research labs and interactions with university students in the morning sessions. By the end of the study, none of the students reported feeling trepidation about meeting people or making friends at university, in contrast to the initial insecurity many of them had expressed. They now could envision themselves within university social networks, showing a positive shift in their future identities, a deepening sense of potential social belonging on campus.

“Framing” and Brokering: My Role as Boundary Spanner

My research questions did not include an explicit etic question aimed at generating data concerning my own role as a boundary spanner throughout the transition-related experiences that the students were having and the professors were sharing in. It was, however, implied by the design of the study, and by my participation in the various on-campus activities and data generation processes together with the students and professors, that interactions among the participants and me would be an integral part of the whole experience. Over the course of the study, the meaning that participants and I made of these interactions became an important emic question in its own right. In general, the students seemed less aware of, or at least less articulate about, the ways I was brokering their entry into the various communities on campus than did the professors, who often referred more directly to my “framing” (Dr. H) of their and the students’ experiences.
**Connecting student participants with university staff and students**

In introducing the students into the campus community and connecting them with university staff and students in the morning sessions, I was constantly attentive to kinds of information, types of academic practices, and systemic structures that I thought, from my teaching experience, would be different from what students were used to at high school. As we listened to presentations together, I made notes in my research journal about points that speakers discussed that I thought the students might not have the background or context to understand, so that I could bring them up when the speakers provided opportunity to ask questions. I anticipated when session topics might be totally out of the realm of students’ high school experiences – for example, co-op or study abroad programs – and frontloaded the students for those presentations, usually with an informal preview when we had our morning check-in for that day. Similarly, when I thought a topic would present strong points of connection with students’ prior experiences, I highlighted that as well; for example, the library tour provided an opportunity to build on students’ understanding of using a school library as a resource for research and computing, but at the same time to point out the differences between a university and a high school library system.

During the broader framing of these experiences, when I was organizing the schedule and recruiting speakers, I took every opportunity available to secure speakers with whom I thought the students could make a connection based on their prior experiences; for example, the football coach whom I asked to have some of his players speak with the students was a former high school physical education teacher – and I chose the football team to be involved with this session because two of the student participants were serious high school football players. Similarly, I recruited one of the SFU scholarship students who spoke with our group specifically because she had attended high school in the student participants’ school district. I did not plan these choices in the design phase of the research; I made them as I got to know the participants and intuit which people and activities among the available options might offer the best possibilities for bridging the students’ experiences of high school and university communities.
None of the student participants made direct statements about meaning they attached to my boundary spanning strategies. In my view, this was probably at least partly due to my being a teacher in their school district, which was, at the same time, the reason I was able to act as a boundary spanner. I was affiliated with both the students’ high school communities and the SFU campus community. But to the students, I believe my association with their school lives held more weight in their view of me. On campus, I probably seemed to them to be acting the role of a teacher leading a field trip; their previous experiences in such situations would support their assuming that I, as a teacher who was organizing activities for them, would do all the kinds of things I was doing, such as finding people to talk to them and leading them around in unfamiliar places. Thus, although many students did express “thanks” (Robert, Krystine, Buck, Gordon) to me in their final interviews or reflection pieces, for allowing them to participate and organizing the activities for them, I believe they did not regard it as unusual or particularly noteworthy that a teacher would act in the way I did with regard to the morning sessions. However, I interpreted a perception that I was more deeply involved in the SFU campus community than a visiting teacher would be, in the requests made by two students at their final interviews. Andrea and Katarina both asked me to try and arrange for them to come to campus during their Grade 12 year and walk through a “day in the life” (Andrea) of an SFU student; to me, this suggested that they were seeing me as much as an SFU insider, with connections on campus, than as a facilitating teacher, by this point.

**Connecting student and faculty participants**

In facilitating the students’ entry into the science communities of practice, I also played an important role in brokering the relationships among them and their faculty partners. I took great care, in matching the pairs, to find some point of connection between each student and her or his faculty partner – a shared interest, whether scientific or extracurricular, or at the very least, an aspect of personality or demeanour that seemed similar in both partners. I took deliberate steps to prepare the students to be able to engage comfortably in conversation with the professors, by helping them access the professors’ websites so they could learn something about them before meeting them. I also coached the students, at the start-up meeting in September 2007, to remember that the professors were excited to work with them and that they were all “human” (Dr. D), so as to build their comfort level about the first face-to-face meeting.
the same time, I was supporting the professors to be prepared for meeting and working with the students, telling them basic information about their student partners such as name, gender, science interests, science courses they had taken or were taking at high school, and what they had told me they hoped to gain from the on-campus experiences, as well as providing the professors with suggestions about what they could do together with their student partners.

At the first on-campus afternoon whole group session, I made certain to introduce each pair to one another and seat them beside each other. As the pairs continued to work together during the months following, I asked each student informally on each on-campus day (at the morning check-in, lunch hour, or afternoon check-out) how things were going with their faculty partners, what they were learning about, and whether they had any concerns they wanted to discuss. For the October 16 on-campus afternoon, I did not schedule any formal observations, so that I could visit each pair that day to inquire informally whether they felt they were getting off to a good start and whether they had any questions or concerns I could assist with. At this time, for example, a couple of professors asked whether it would be all right for them to take their student partners to visit undergraduate lectures (which the students had requested), and I was able to encourage them to pursue that activity.

The formal observation times scheduled for each pair were also opportunities to chat informally with the pairs about how the partnering experience was going from their perspectives. During these sessions, I was not merely a silent observer; I often participated in activities the pairs were working on together, and this allowed me to ask science-related questions of the professors, not just for my own benefit, but also because I thought students might appreciate hearing the answers but be hesitant to ask. I relied on my intuition, developed over years of working with teenagers in high schools, as to when professors were venturing into academic territory that would be unfamiliar to the students, and when the students might be needing some background information or simply needing to know that they were not the only person not understanding the science material at hand (since many times I did not understand it myself). On the rare occasion when a professor was away due to illness or a job commitment, I also stepped in to re-direct the student partner’s activities for that afternoon, connecting the student to another professor or arranging for them to attend a class or lecture.
I did not ask the students directly whether or in what ways they perceived my brokering strategies concerning their relationships with the professors to influence their transition-related experiences. Every student initiated conversation about these relationships during the midpoint interviews, however, and this led me to ask each of them to what extent they felt that they and their faculty partners had been well matched. Indirectly, their comments about this could be seen to reflect on my brokering role. All except for George and Frank felt that the matches were very appropriate, as shown in their enthusiastic descriptions of the time they spent with the professors and their volunteering, on their own, similarities they had noticed between themselves and the professors that corresponded to my own reasons for matching them. For example, Buck stated that he felt very comfortable with Dr. I because he was “just a good guy to talk to,” and Katarina noted that she was glad her preference to be with a female professor had been met during the matching process. George was impressed by Dr. G and felt he was learning a lot from him, but he felt that the science material they worked on together did not fully complement his interest areas; I was not surprised by this, however, since this was one instance of a match made primarily on the basis of convenience (because George did not volunteer for the study until all the other partnerships had already been formed, and Dr. G agreed to join the study so that George could be included).

Frank’s case was noteworthy here. At the midpoint interview, he acknowledged having an interest in Dr. H’s research work but did not seem to be developing a sense of affinity with her beyond that – an impression echoed by Dr. H’s own comment that she felt she struggled to build a rapport with Frank; even by the end of the study, she stated, “I don’t feel like we developed any kind of relationship at all.” However, during an informal conversation with Frank’s guardian on the last day on campus, she told me that she had “never seen [Frank] so engaged with a learning experience” as he was with regard to his time with Dr. H (personal communication, May 7, 2008); I wrote in my research journal, “Is it possible that he [Frank] has a totally opposite view of what’s been going on in this relationship than Dr. H does?” My brokering role in this particular relationship involved emphasizing to Dr. H, during an informal conversation with her after Frank had left on the day I observed this pair, the signs of interest that I observed in Frank’s interactions with her and discussions with me, relative to the lack of interest in school generally that he had described to me in his first interview. I also encouraged her...
to continue using strategies that Frank had noted as enjoyable in his midpoint interview, especially giving him responsibilities for working actively with data sets from her research. With Frank, I encouraged him, when he did volunteer that he really enjoyed Dr. H’s engaging him in active problem-solving, to express that verbally to Dr. H and be assertive in asking for more opportunities to do that kind of work. This pair represented a situation where one partner (Dr. H) had compromised on a preference for the matching process (her first choice had been to be partnered with a girl) and subsequently experienced frustration in trying to build what she saw as her ideal mentoring relationship. This re-emphasized, for me, the importance of attending to the strength of participants’ pre-existing goals and affiliations in the matching process. Dr. H was deeply committed to mentoring girls in science and although she graciously agreed to partner with Frank and worked very hard at developing a connection with him, perhaps it would have worked better to recruit another female student to partner with her and seek a different faculty partner for Frank.

In contrast to the student participants, the faculty participants frequently commented on my “framing” (Dr. H) of the partnerships in their final interviews. I did ask them, during those interviews, for feedback on the ways I had structured their interactions with the students, and they responded with evaluations of the way the partnerships had been set up in terms of the frequency and duration of student-professor contact time, the relative benefits of one-to-one time with their partners versus the possibility of their working with more than one student simultaneously, and the helpfulness of the suggestions I had made as to what they could do with their partners. This feedback from the professors is discussed further in Chapter 6, in terms of implications for practice around supporting students in transition. Many professors also offered unprompted direct or indirect assessments of the importance they attached to my own role as a facilitator of their relationships with the students. For example, Dr. C commented that Krystine and she had been well matched, that the two of them had “just clicked” right from the start of their time together. In his final interview, Dr. I stated that he had been “wrong” in his initial cynicism that the student participants might be more interested in building their resumés than in pursuing a pure interest in science. I interpreted this statement as an indirect reflection on the care with which I tried to match students and professors with similar attitudes and learning interests.
As well, professors often expressed a wish, in their final interviews, that they had known more details in advance about the scientific “background” (Dr. A, Dr. E, Dr. F, Dr. G) that their partners would be bringing to the partnership. This was never stated as a criticism of my design; nonetheless, I interpreted from this theme in their comments that I could have improved my effectiveness as a boundary spanner by, for example, providing each professor with a list of science courses their student partners had taken in high school, with links to the curriculum outcomes for those courses. As university instructors, they had the teaching experience to recognize the efforts I was making to provide structure and suggestions to guide them in working with high school students, but as a practitioner who was more familiar with high school science curricula than they were, I could now see that this was one area where I could have done more to help them understand the high school learning communities the students were coming from. Because of my teacher role, I was focused on helping the students to understand the practices of the university communities they were entering; meanwhile, the professors might have benefited from more support than I offered.

**Connecting the student participants**

As described earlier in this chapter, the formal means I had initially conceived to facilitate the student participants developing connections with one another (particularly the online discussion forum) did not work very well, from the students’ perspective. The students’ lack of engagement with the online forum did, however, have the positive outcome of prompting me to initiate direct discussions with them about why they were not using it; at the midpoint interview, this became an emic question that I posed to all the students. These conversations were illuminating for me; the impression that I had formed from the students’ comments was that a more effective means of brokering relationships among them would be, simply, for me not to try so hard to get them to bond as a group, nor to expect that they necessarily would do so. As Robert said, “You can’t make people talk … it doesn’t really help. It’s hard to be yourself … I don’t think that’s a good way to get to know people, really. I’ve gotten to know people best over lunch … just talking.” Frank echoed this sentiment when he said, “If somebody was going to be a good friend, you’d sort of just meet them on your own … you’d just start talking.”
My attempts to connect the students online felt artificial to most of them, causing them to feel “uncomfortable” (Andrea, Katarina) or “awkward” (Sam, Krystine, Gordon) in that forum, whereas once they had started to get to know each other through the unstructured time I built into each on-campus day, they began to develop their own ways to interact with each other that felt more comfortable. Gordon noted that the initial awkwardness he had perceived “broke down over lunch and we were talking more to each other … now I have some of them on my Facebook account … and we’ll talk to each other” between campus visits. I learned that it was more effective, in terms of my supporting the students’ relationships with one another, to provide opportunity for and encourage informal interactions. I perceived students to respond well, also, when I would broker connections among them on a casual basis. For example, on the December 4 on-campus day, a snowstorm delayed many of the students’ arrival to campus, so in recognition of their efforts to get there, I invited them to join me for lunch at a campus restaurant; when Andrea and Katarina decided to go to a different food outlet together, I encouraged them to invite Krystine to join them, which she did, and after that point I observed the three girls to spend more time together as a group of three. At the same time, I learned to honour the relative importance that students ascribed to connections with peers they had known before joining the study, over that they gave to making new friends among the student participant group, as discussed earlier in this chapter.

**Shifts in my ‘researcher’ identity**

Initially, I conceived of the strategies I was employing to help participants span the boundaries of high school and university communities in terms of repertoires of knowledge and practice, and to broker relationships among participants and other people they interacted with during the study, largely as “behind the scenes” (research journal, September 25, 2007) work. In retrospect, I can see that as a novice researcher planning the study, I was influenced by an as-yet unrecognized assumption that I would set up situations and interactions for the participants and then observe what happened and listen to what they had to say about these experiences. I was not entirely naïve; I had what I thought to be a fairly strong understanding of principles of action research and qualitative inquiry. As such, I was committed to drawing upon participants’ input as I planned the transition-related experiences and making responsive modifications as we went along, and I acknowledged the constructed nature of both these experiences and
our various interpretations of them. I expected also, as sociocultural theory suggests, that I would learn through my relationships with the participants, as they would learn from interacting with me and with each other.

Yet, I was still unprepared for the extent to which, I came to realize, my own presence within the situations and relationships I had precipitated, and my own processes of identity shift, would be inextricably part of the other participants’ experiences. I could not be behind the scenes; I was part of the scene. Every word that I spoke, every action I took, every gesture I made, could not help but alter the course of the research process. The student and faculty participants may not have noticed this in a conscious way, and/or articulated it during interviews or conversations I had with them, but my own participation – my brokering efforts, my words, my questions, my emotions, my interpretations of what was happening for them and for me – were an integral part of their transition-related experiences over the course of the study. In this sense, my own identity as a researcher shifted as I internalized, in a more meaningful way than I had before, the precept that this research was “all about me” (S. de Castell, personal communication, 2004). I could say that this idea was reified for me, in sociocultural terms, in that I did not fully grasp it until I experienced it relationally. This was a critical moment of identity change for me, when I recognized that to be a researcher, for me, was not just to read about, or think about, or look for evidence of, or try to articulate, but actually to live the sociocultural principle that learning is relational.

“All of it Together”: Doing Transition

Through participating in the three types of transition-related experiences I initiated – interacting with staff and students in the broader campus community, developing relationships with professors in science communities, and sharing these experiences with peers – the students’ current identities as well as their future sense of themselves as university students evolved. They saw their positions relative to practices and people within high school and university communities and people to be changing – on academic, intellectual, and social planes that often overlapped; and these perspectives were crystallized by their faculty partners’ reflections and mine. The professors and I also observed differences in the professors’ own understandings of
themselves and their relationships with newcomers, signifying that not only individual, but community identities had shifted through the student-faculty partnerships. Interactions that participants had with me, as the researcher and someone who acted as a boundary broker in the connections they were developing with others, also could not but influence the meaning they made of their transition-related experiences. I myself had developed new understandings of transition processes, and of my own identities, through my observations and participation in activities with the students and professors.

All of this identity work that was occurring within the boundary areas of university communities – the students’ exposure to systems and practices of campus life; the student-faculty pairs’ negotiation of strategies to deepen their belonging in science communities; the students’ ideas about their social identities within current and future peer networks; our collective efforts to interpret these experiences – seemed to me, taken together, to represent a phenomenon I will call ‘doing transition.’ All the participants’ various kinds of learning trajectories constellated around this central enterprise. As Robert explained during his final interview, he could not say which part of the whole experience he thought was the most important in terms of transition-related support. He said that what was important to him was being able to experience “all of it together” – the whole set of activities, interactions, conversations, relationships, and reflections he engaged in during the study. Doing transition encompasses a range of activities that these high school students did together with university people, including me, which assisted the students to negotiate peripheral areas of and develop capacity for participation in the practices and relationships integral to university communities. At the same time, this participatory engagement deepened the belonging of experienced community members and contributed to the growth of the communities themselves.

This view is different from other conceptualizations of transition that have predominated the literature. It positions students and university people as mutually participating actors in transition processes rather than passive recipients of information about transition or distant distributors of such information. It empowers university-bound students to engage, to participate, to do things rather than to wait for things to happen, and it shows university people the potential for growth of their own communities when they support students in such processes. During this process of doing transition, two themes appeared to me to encapsulate empowerment of individuals and communities:
the importance of personal gestures to connect with students, compared to institutional
efforts to recruit them; and the deep sense of satisfaction derived from feelings of
present and/or potential belonging, compared to the anxiety of marginality.

**Personal connections versus recruitment**

The students and I observed increasing sophistication in their evaluations of their
own decision-making processes about university and of the influence of institutional
recruitment strategies on their decisions. When I first asked how they had formed their
existing opinions about university, many identified the Planning 10 course as the catalyst
to their first exploration of university websites and promotional materials. Two also had
attended recruitment officers’ presentations at school post-secondary planning days.
The participants’ reactions to these initial encounters with universities’ online presence
and personal representatives often evidenced cynicism. They commented that the
websites and glossy print materials probably glorified the universities, while the
recruitment officers were focused on delivering sales pitches.

Some students attributed “sales pitch” (Robert) overtones to some of the morning
sessions, usually those delivered as “laptop lectures” (Katarina). Yet, once students had
spent some time on campus, and once they learned that the presenters were
volunteering rather than being paid, they began to recognize value in these people
sharing positive views of their own university. As Robert (who had been one of the most
skeptical about “recruitment” at the outset) put it,

> I don’t think this was ... a recruitment program, but for a lot of the
> speakers there was an underlying motive of getting us to go to SFU ... I
> think it was not bad. Of course they want you to go to their school; it
> almost makes you feel special that you’re wanted ... I wasn’t planning
> that much on applying or going to SFU ... but now I’m actually quite
> excited and a little bit surprised to say that the ‘recruitment’ process
> has worked on me!

This change in attitude reflects that Robert, through his on-campus experiences, came
to evaluate testimonials from a new perspective. He now had first-hand knowledge of the
campus and the opportunities it afforded, developed through personal connections with
university people, which helped him to make more informed assessments of recruitment
claims, from more of an insider perspective. Similarly, Frank indicated that his
experiences on campus meant that now, when presented with recruitment material, he would be equipped to “understand it a little more” and ask questions more effectively, since the morning session leaders and his faculty partner had personalized such information for him.

Students also could articulate more clearly, now, what it was about recruitment pitches that offended them. They identified a tone in smoothly delivered presentations and almost propagandistic media materials that made them feel they were being talked down to. Now they could contrast their previous lack of knowledge about university environments with the insider information they had begun to access. This meant they could recognize a difference between their previous resentful attitude toward recruitment strategies and their now strengthened ability to assess universities’ advertised appeals. They identified “interacting” (Katarina) with people at the university as much more meaningful than print or spoken materials on their own, suggesting the importance of boundary brokers in making artifacts meaningful. Times when community members had simply sat down and talked with the students about their own experiences of university life had the most positive impact on their views of SFU and of themselves as potential SFU students. People who talked with the students about their own experiences as newcomers and explained how they had established their own connections and attachments within university communities provided much-appreciated access to paradigmatic trajectories.

The personal ways in which the students felt their faculty partners had reached out to them seemed to have an especially important influence on their willingness to be drawn into SFU communities. Robert said: “Just starting to make a connection does help quite a bit. Just one person you know is better than none. It’s not that big a step, but it is a significant step.” Almost every student connected positive partnering experiences with developing a stronger sense of affiliation with the university overall, in contrast to their previous experiences with what one faculty participant referred to as the “cattle call method of recruitment” (Dr. C). Robert, Gordon, Andrea, and Katarina all stated that they had not considered SFU as an option before this experience, but now planned to apply; Frank said he would consider applying, which was a big step from not thinking of going to university at all; Krystine and Buck had been considering SFU before the study but now felt more strongly that they belonged there. George and Nate still planned to attend
UBC, because the engineering programs they wanted were not available at SFU, but Nate did say he had “thought a lot” about his decision while participating in the study.

Given the relatively short amount of time that these students spent with the professors, comments such as these indicate a strong potential to strengthen newcomers’ attachments to university communities through providing opportunities for them to feel welcomed and cared about by senior community members. It was not so much the amount of time spent with the professors, but rather the quality of that time, with someone who was well established in the community acknowledging and valuing them, that seemed to be most significant for these students. The students’ feelings, here, echo Walsh and Maffei’s (1994) study, where participants identified “treating [students] as equals and displaying a friendly demeanor” (p. 23) as critical ways for professors to contribute to positive student-professor relationships.

Professors also valued such personal connections in terms of strengthening students’ attraction to their communities; indeed, this was a determining factor in many of their decisions to participate. They were interested in drawing students into, if not their specific science departments at SFU, at least their disciplines or science generally, and they saw “personal” (Dr. D), “one-to-one” (Dr. G) connections as a powerful way to ignite such involvement. As Dr. C observed, the kinds of relationships these professors had volunteered to participate in with the students had potential to offer more authentic kinds of mentoring than, for instance, those between first-year students and assigned academic advisors. Dr. C said that Krystine “could learn things from her interactions with me that she couldn’t get other places,” suggesting that these relationships afforded unique points of access for students to learn about the inner workings of university communities from people who were deeply engaged in their enterprises and practices.

**Gender differences in developing connections**

Personal connections with the professors, particularly, helped the students with what Attinasi (1989) described as scaling down the size of a university community by developing attachments within smaller departmental networks (see also Stevens & Walker, 1996). I observed a difference in the activities and types of interactions that seemed most important to the boys and the girls in establishing a sense of connection with their faculty partners. For the boys, engaging in laboratory activities alongside their
faculty partners seemed critical, as if being able to “actually do something” (Dr. G) not only consolidated their conceptual understanding but also helped them to feel they were contributing usefully to the partnership. Buck, Gordon, and Robert commented on the importance of trying out research-specific scientific concepts in the lab, and I observed Nate, Frank, and George to become visibly more engaged when their partners gave them specific research tasks. These responses to activity-oriented encouragement reflect research that has suggested that opportunities to practice being in a possible future career role encourages commitment to academic and career paths (e.g., Niles, Sowa, & Laden, 1994).

For the girls, interactions with their partners that they perceived as highly personal seemed more important, in helping them feel comfortable. They appreciated being trusted to participate authentically in lab activities, too – and their partners did engage them in this way – but they suggested that such trust had been established through exchanges on the level of their personal lives. Krystine felt a close “bond” with Dr. C because she perceived her as “a really nice person” who “actually cared about” her. Andrea connected to Dr. E because “right off the bat, we were talking about things other than science too.” Katarina described her relationship with Dr. F as “close … it was just comfortable and we were just two normal people … we were both coming from the same kind of place.” The girls’ sense that they could identify closely with their partners calls to mind research that has asserted role models to be particularly critical to the development of gifted girls’ talents (e.g., Neumeister & Rinker, 2006; Reis, 1999), with encouraging professors being especially important for first-generation gifted female college students (Kastberg & Miller, 1995) – which Krystine, Katarina, and Andrea all intended to be.

**The satisfaction of belonging**

For professors, engaging in these connecting experiences with the students deepened their own identities of belonging. They often described clarifying their sense of purpose or their goals as community members, through interacting with the students, as when Dr. B realized aloud that conveying a passionate excitement for his work was the most important tool “we [professors] have got” for drawing new members into his scholarly community. They showed a heightened awareness of how they themselves...
engaged with community practices, as they worked to draw newcomers into community enterprises and to imagine how the students might be seeing things, as when Dr. G noted that working with George helped him to recognize “where the hanging points were, where he [George] could not move forward” without guidance from a more expert person. They recalled anew what it had been like for them to be novices and were inspired by the idea of bringing students from initial marginality toward the same deep sense of belonging that they felt; as Dr. D said, “If you get the right match with a student, you can get that next potential superstar if you can really nurture them.” Even when professors experienced frustration in their work with the students – mostly when they felt that students were either not understanding the scientific concepts or not engaging with them as actively as the professors would have liked – they framed these moments as opportunities to reflect on and revise their own teaching practices. Many faculty participants expressed deriving personal, not just professional, satisfaction from the partnering experience.

For students, the more time they spent on campus, interacting with people, participating in practices, and developing personal connections, the more they expressed a sense of comfort and satisfaction within the university communities. They often contrasted this growing perception of belonging to feelings of anxiety and discomfort they had experienced during the early days on campus, which in turn had felt very different to them from the familiar ease which characterized their high school experiences; Katarina explained,

When I first thought of university I was scared and worried. I thought it was going to be a big scary step and transition. I am sure many high school students feel the same. Once I was at university all my fears went away. The more I went the more relaxed I started to feel. Just being in the university environment makes me feel good. I am actually more confident than I thought I would be there. I thought university would be very intimidating but this program has ... made me realize that if I am put in a brand new environment I can deal with it ... Now I know I will be fine in university.

Krystine, too, had “felt a bit out of place at first” but grew increasingly at ease on campus. Andrea “was kind of anxious before” but felt “ready” for university by the end of the study. Gordon said, “Before it was like university was the unknown, and now I’ve actually been there. Before I thought of it as kind of intimidating and now ... it’s not scary
at all.” Frank said, “I sort of belong here. If I see people doing stuff, I know what they’re doing and I know what it’s like for them.”

These students’ experiences exemplified Palmer et al.’s (2009) description of shifts from feelings of “not belonging” (p. 37) to feelings of inclusion during transition, and also Attinasi’s (1989) description of getting in to college being accomplished through strategies of gaining familiarity. Their comments all denote contrasts between initial feelings of marginality, of being outsiders relative to university communities, and later feelings that they not only could belong to such communities in the future, but also belonged to them now, at least in peripheral ways. The students were experiencing both legitimacy – validation of their current efforts at participation by experienced community members – and legitimation, shown in their strong visions of themselves as university students and desire to maintain and build upon connections within the communities. When I asked what might improve the on-campus experiences, several said they wished that they could continue participating in the same or similar activities in Grade 12; as Katarina said, “It’s just going to be sort of weird if it doesn’t continue and we sort of want it to.” They were already doing transition, and they wanted to continue the process.
Chapter 6.

Looking Back, Looking Forward

Summary of the Study

I designed this interpretive qualitative study to explore the meaning, for gifted secondary students, of participating in three types of transition-related experiences during monthly visits to SFU's Burnaby campus, over the course of their Grade 11 year. These experiences included: (a) opportunities to interact with SFU staff and students, in ways specific to those individuals' roles within the university's communities; (b) opportunities to interact one-on-one with Faculty of Science professors (the faculty participants) in scholarly and/or lab environments; and (c) opportunities to interact with the other student participants so as to share their experiences as newcomers within SFU communities. I planned these experiences, engaged in them with the participants, and included students and their faculty partners in interpretive processes, through an action research design and ethnographically oriented methods such as interviewing, observing, and researcher journaling.

The conceptual framework for the study, sociocultural theory of learning and identity, also guided the research design and process. I entered into this research with an assumption – fundamental to sociocultural perspectives on how learning happens – that engaging in relationships within communities of practice would feature centrally in the students' experiences of transition processes during the study. I saw the students initially as belonging already to multiple communities – including but not limited to those within their high schools and those of identified gifted learners in both local situations and global contexts. In volunteering for the study, they also joined a micro-community of peers who were sharing a similar set of experiences, which included being introduced into communities of practice at SFU. I deliberately attempted to connect these students
with experienced community members and create conditions whereby they could experience legitimate peripheral participation. In the case of the general scientific and specific research/laboratory communities, I paired each student with a professor who, I hoped, would encourage the student through processes of guided participation.

My interpretive processes focused on ways that transition-related experiences might involve negotiating shifts in identity as students, and professors as well, developed and/or adapted their sense of who they were or could become within university communities. Thus, having constructed the activities that the participants and I engaged in with an eye to creating situations in which such identity work could happen, I looked for evidence of its occurrence during data analyses. The principle of reflexivity (Cousin, 2010) demands that I explicate this presumptive position; however, while I was working within a sociocultural paradigm, I also attended conscientiously to possibilities of discrepant data and alternate views of situations. Important emic questions arose in two key areas: the student participants’ perspectives on current and future peer relationships; and my own understanding of my researcher identity and the influence of my participation in shaping the other participants’ transition-related experiences. As well, my initial intention to focus on the students’ understandings of opportunities to develop relationships with faculty partners (the second of my etic research questions) shifted, as I became increasingly interested in the faculty participants’ experiences within these partnerships.

Summary of Interpretations

I observed the student participants’ initial situations, as they entered the study, to show a broad theme of identifying their own positions within overlapping communities. Volunteering for the study got students thinking about ways that their membership in family networks and school communities had influenced their thinking about themselves as future university students, and more specifically their sense of themselves as gifted learners within present and future school contexts. They began thinking about ways that their current self-understandings and modes of belonging in learning environments might or might not change as they became university students; they started considering potential similarities and differences among high school and university communities.
Receiving the invitation to participate, and talking with me during the first interview, prompted reflections on their identities: What did it mean to be gifted? By what means had they arrived at their own assumptions that they would become university students? What did they think was going to happen for them as they left high school and started university? Joining the study initiated a process of learning what they could do and be within university communities.

I saw the interactions that the students had with members of the campus community as engaging them in negotiating the peripheries of a relatively unfamiliar cultural space, compared with their deeper understandings of their high school communities. A dominant theme was students making comparisons between their high schools and the university campus, in terms of physical aspects (such as size, layout, or architectural features), academic structures and systems (such as entry requirements, advising mechanisms, or study resources), and social structures and systems (such as formal orientation and networking opportunities and informal rhythms of student life). Recognizing similarities with their familiar school locales increased students’ comfort on campus and belief in their potential competence as university students, while differences were sometimes intimidating, sometimes inspiring. As well, students were able to extend their perception of similarities to realize that other university communities might share academic and social features they had observed in the SFU campus community. Through this process of negotiating the peripheries, students experienced identity shifts that moved them closer to feelings of belonging within the campus community. The legitimacy that they perceived university people to be granting them helped them to feel increasingly like insiders, in turn motivating them to want to legitimate their continued presence and participation.

The one-to-one interactions among the students and their faculty partners within science communities evidenced, to me, the participants engaging together in what I called the work of belonging. For the students, working with the professors was initially unsettling, as they became keenly aware of differences between their academic repertoires and those that characterized membership in university communities generally and science communities of practice specifically, both local (their partners’ research labs) and global (broader discursive networks in their partners’ fields). The students’ self-understandings as gifted learners were challenged also, as they compared their own
sense of intellectual capacity and confidence with their perceptions of the professors’. At the same time, the faculty participants had to work, together with the students, to use their positions of belonging within these communities effectively to legitimate the students’ participation and also to revise or improvise strategies for guiding them toward deeper belonging. Through these processes, the professors’ own sense of themselves as community members evolved, such that I saw change and growth in community identity to occur as well. The students expressed that through their relationships with their faculty partners, they had renewed or gained a belief in their capacity to be university students, to belong within university communities.

My own assumptions were unsettled by my observations of interactions among the student participants. I had tried to set up opportunities for the students to support one another, believing that as newcomers having similar experiences they would feel an affinity and develop a bond. Quite simply, I was wrong. While students did value having a friend within the group that they had known before, someone with whom they shared established membership in a non-SFU community, their social identity shifts during the study were future-oriented. They were much less interested in forming relationships with the other student participants than they were in thinking about the potential relationships they might have with actual college peers once they got to university. They did not interpret the group of study participants as an authentic peer community, in relation to their understandings of their future identities as university students. The study peer group could be seen as a simulation of a university peer group – but these students were not interested in social simulations; they wanted to experience the real thing.

Though initially surprising to me, the students’ forward-looking decisions about where to invest their energies for peer relationships strengthened my overall impression that what was most exciting for these students was the opportunity to ‘do transition’ through active, purposeful participation. They valued being welcomed into university communities before matriculation, rather than waiting until they were enrolled there to begin experiencing university life. They described chances to meet and work with university people as affording them privileged positions relative to high school peers who were not having such experiences. They liked learning about university communities and figuring out how they would fit in there from the inside, rather than feeling vulnerable to making misinformed choices through the transmission-style recruitment strategies they
had experienced previously. They found it deeply rewarding to form personal connections with university people; they associated relationships with people who challenged them to extend their vision of what they could do and be, such as their faculty partners, with a growing sense that they not only could – but did – belong within university communities.

Every one of the students indicated that participating in the experiences at SFU had engaged them, in some way, in reflecting on the understandings of transition, what university would be like for them, and what they would be like at university, that they had held before the study, and on how these had changed – how they had changed – during this process. Each one of them both exhibited and expressed a stronger sense of future orientation and vision of themselves at university than they had held at the outset of the study. Their sense of how they could be within university communities – academically, intellectually, and socially – expanded and deepened as they overcame initial discomfort to establish a sense of familiarity, renegotiated their understanding of their giftedness, and developed future-oriented social identities, helped by their faculty partners, by their peers in the participant group, and by me in my role as boundary spanner. Not only the students, but the professors and I as well, reflected on important ways their perspectives and self-perceptions had changed through these transition-related experiences, such that each individual’s identity shifts were part of a broader, dynamic process of participatory appropriation that indicated the growth of entire communities.

**Implications for Practice**

Because this study was an action research endeavour, the interpretations I have outlined above have implications not just for research and theory – which I will discuss below – but also for practice. I begin with practice because the study was motivated by a problem I encountered through my teaching practice, because my underlying goal was to try out possibilities for helping pre-matriculated gifted students to have “better” (Noffke, 2009, p. 8) transition-related experiences than I had observed among my own students. Although this study can speak only to the experiences of the nine student participants themselves, their perceptions invite consideration of the potential for activities such as those I involved them in through this research, to enhance transition
experiences for others who belong to this particular sub-population of university-bound students.

Especially when gifted learners are not involved in programs that are accelerating them toward early college entrance, transition support may often occur in rather sporadic, even “accident[al]” (Andrea) ways. Types of support that often are offered to new college students generally (more so in the US than in Canada) and in specialized ways to gifted early entrants – organized opportunities to learn about and be coached to participate in university academic and social systems, to build relationships with peers and college faculty, to develop a sense of belonging within college communities – seem to be extended rarely to pre-matriculated gifted learners, in contrast to other sub-populations such as students who exhibit academic under-preparedness or belong to disadvantaged societal groups. While universities profess a desire to attract students with strong intellectual capacity, there is little evidence of their reaching out to these students in ways that involve them authentically in the life of campus communities.

The student participants – like many other students in my teaching practice – were eager to get involved, to interact with university people and to learn firsthand what it might be like to become a university student. And, these students appeared to find the transition-related experiences offered by this study to be meaningful, enjoyable, and inspiring. They left the study expressing that having spent time on campus – most particularly having spent time with their faculty partners – had given them, as Robert put it, “a far better representation of what life was like [there] than could be given with dozens of photos.” They felt that they had accomplished important learning and developed a strong sense of familiarity and comfort within the university communities in which they had participated, which they thought they would have been less likely to gain in the absence of such experiences.

Although these students’ experiences are not transferable to all non-accelerated, pre-matriculated gifted learners, the positive meanings that they all attached to being invited to spend sustained time on campus, to feeling welcomed by university people, and to having faculty members mentor and support them, suggest that similar students might respond in similar ways. The faculty participants also expressed enjoyment of developing connections with these students and acknowledged new perceptions of and
ideas about how to improve their practices around supporting and mentoring newcomers to their communities. These communities themselves showed signs of positive growth; the science communities stood to benefit from expanded repertoires of practice for inspiring youth to pursue the study of science, and the broader university community benefited from many of the students’ new, or renewed, interest in attending SFU by the end of the study and their increased comfort with the idea of both learning from and contributing to the university’s intellectual and social systems.

Thus, it seems germane to recommend that university personnel who are interested in attracting gifted learners to study at their institutions consider offering explicit invitations to such students, pre-matriculation, to participate directly in campus life in sustained ways, to legitimate their presence within university communities before they enroll as undergraduates. Aside from the potential benefits of doing so from a recruitment perspective, universities could be encouraged to ascribe value to situations where the individuals involved – both inbound and established community members – are, simply put, enjoying themselves and experiencing transition-related enterprises as positive. Future programs could offer similar experiences to students interested in scholarly disciplines other than science, as well.

It seems especially important to recommend involving faculty members in welcoming students into university communities. The repeatedly asserted need for gifted learners to be connected with intellectual mentors seems relevant here. The student participants were deeply impressed by the opportunity to observe their faculty partners’ paradigmatic trajectories, to access long-range visions of the potential paths they themselves could follow as they entered intellectual communities like the local and global disciplinary networks to which the professors belonged. Having professors act as boundary brokers, showing interest in where the students were coming from (both personally and academically) and including them in their practices, not only inspired students’ interest in joining science communities but also seemed to increase their general feeling of comfort and fit within the broader university community. Given the role that I, as a practicing teacher who was also familiar with participatory repertoires of university communities, was able to play in brokering connections among the students and university people, it also seems helpful to suggest that universities enlist high school personnel as collaborators in such initiatives.
A new outreach program very recently initiated by SFU’s Faculty of Science incorporates many of these elements. The University Science Transition Experience Program (USTEP) (Agnes, 2012) was developed in collaboration with one local high school teacher and implemented in consultation with others, including myself. The program invites students, and their high school teachers, to attend monthly evening seminars on campus; at each seminar, the Dean of Science introduces a professor from the Faculty to the student group, describing their research and outlining the academic pathways they took to arrive at their present position. The professor then gives a university-style lecture connecting her or his own research to a broad scientific theme (such as ‘energy’), and following that, the Dean facilitates a discussion period. At the first seminar, which I recently attended in October 2012, I observed many facets of this interactive opportunity that resonated with my study. One example was the way that the Dean interjected at intervals during the professor’s presentation to explicate typical university academic or scholarly practices, such as stating that university lectures move quite quickly so students should not try to write everything down but focus on salient points, or noting that a professor’s job includes not only research but also teaching and communicating results to public audiences.

In planning similar kinds of transition-related experiences to the ones appreciated by the gifted learners in this study, some further recommendations can be offered based on feedback from the participants as well as my own assessments of the effectiveness and appropriateness of various activities and organizational strategies. These students attributed high value and enjoyment to their interactions with faculty partners. Given the varying perceptions as to the appropriate duration and frequency of the pairs’ contact time, however, a suggestion might be to match students with faculty and, after providing initial support with helping pairs get to know one another (as with, for example, the September 25 opening session), invite them to plan a schedule for their work together. If students wished, professors might also arrange with colleagues to pair their student partners with one or the other professor for some sessions. If professors wanted to work with more than one student simultaneously, students could be invited to commit to participating together with a friend they already knew, which many of the student participants indicated was or could have been helpful to them in the partnering experience.
In their final interviews, many professors emphasized that involving students in activities in their labs was an important component of the partnering experience, suggesting that doing so was both “very motivating” (Dr. F) for the students and very helpful to themselves in terms of understanding what the students were bringing to the experience academically and adjusting their practices accordingly. As well, they generally agreed that having the students present what they had learned at the April 2 mini-conference, and helping them to prepare for that event, was “good for them [the students]” (Dr. B) and gave the professors access to the students’ learning trajectories. One professor suggested that if similar partnerships were planned in the future, faculty members could be given a summary of these participants’ reflections on their experiences within the pairs to guide them in their approach to working with high school students. Many of the student participants also emphasized the importance, to them, of being included in authentic lab activities; this seemed to contribute to feelings of being connected to the research communities within the professors’ labs. The boys in this study particularly appreciated doing hands-on scientific work alongside their faculty partners, and the girls often associated such activities as strengthening their sense of a “bond” (Krystine) with their faculty partners. Such perceptions prompt me to suggest that involving students in authentic scholarly work with professors should be a key component in future endeavours to provide transition-related support to pre-matriculated gifted learners.

The student participants also saw the morning sessions, which introduced them to structures and systems of the campus community through contact with university staff and students, as important. In order to ensure students could still access such opportunities even if student-faculty pairs designed their own timetables, a set schedule of group activities could be organized in consultation with them so that the pairs could then plan their meeting times around this. The student participants did not place high value on spending time on campus engaged in activities to support the building of peer networks; however, they did appreciate chances to debrief their on-campus experiences with others, especially trusted friends. One student suggested that creating a Facebook page for participants would have been a more appropriate way to use technology for this purpose. In addition, for those students who might prefer in-person conversations, providing regularly scheduled, optional opportunities to debrief in a support group kind of
setting (e.g., Pratt et al., 2000) might be worthwhile. It would be important not to overlook many participants’ assertions that sharing their experiences with “a friend or two” (Buck) enhanced their sense of comfort in new environments, but at the same time to explicitly encourage students to take ownership of the means of doing so, more than I did in the current study.

Finally, Kanevsky (personal communication, September 25, 2012) and Toohey (personal communication, October 24, 2012) both observed that the kinds of opportunities students accessed during this study were different not only from those usually offered to pre-matriculated college-bound students (whether or not they are identified as gifted), but also from those typically available to new undergraduates. From their perspectives as established insiders of university teaching and research communities, students entering a university are unlikely to be welcomed and included in practices and relationships of its communities in personalized ways, as were the participants in this study. Most new entrants, even those who have been recruited because a university recognizes their potential to contribute to its academic and intellectual life, are not personally introduced to members of various campus communities, guided toward understanding of the range of ways they can participate in these, engaged in authentic scholarly activities, and asked to share their perspectives on such experiences with an interested participant-observer. Thus, an implication for practice that extends beyond the immediate scope of this study is the suggestion that universities should consider not only implementing the ideas I have outlined above to enhance the transition-related experiences of pre-matriculated gifted learners, but also aligning such strategies with enhanced means of supporting new undergraduates generally. Many learners who are not identified as gifted learners may also stand to benefit from the shifts in practice I have advocated.

**Implications for personal practice**

Initially, I became interested in gifted students’ transition-related experiences through my own teaching practice, because I worked with many gifted learners who seemed to me to need more, and different, kinds of support than they tended to receive. My research journey involved me in evaluating this problem on a broad scale and considering ways that universities could draw prospective students into participation
within their campus and discipline-specific communities. However, this journey also caused me to reflect on and adapt my own practice as a teacher, where university-bound gifted students are concerned. My own deepening belonging within SFU communities, as a student myself and through the relationships with faculty and staff that I formed during the research study, developed my capacity to act as a boundary spanner and my awareness of the potential ways I can enhance students' transition-related experiences through boundary brokering.

Now, when I work with gifted students who are starting to think about becoming university students, one of the first things I do is to connect them with someone who is already immersed in a university community. This may be a university student, but wherever possible I try to create an opportunity for these students to meet and talk with a professor, given the high value that the student participants in this study ascribed to such interactions. I do not hesitate over whether professors will have time or desire to accommodate such requests; the faculty participants in this study have encouraged my impression that most professors are not only willing, but also excited, to meet prospective students, especially those who evidence interest in scholarly work and passion for learning. Whenever possible, I attempt to have such meetings between students and professors occur on a university campus, and to combine them with personalized tours while we are there. As well, I no longer assume that students will be able to access all the information they need, and have most of their questions answered, by consulting online materials or attending post-secondary planning days. From working with the study participants, I have a much better sense than I used to, of what kinds of information might be “hidden” (Dr. C) from students, and I discuss these explicitly with students.

**Implications for Research**

The literature on high school to college transition conveys the impression that the kinds of transition-related experiences that were offered during the current study are infrequently accessed by pre-matriculated gifted learners who are not accelerating into university, especially so in Canada. This may not be the case in practice; it may be that universities are inviting such learners onto campus and engaging them in interactions
with university people to help them begin developing a sense of what they could do and be as university students. If so, however, it does not appear that students participating in such ventures are being involved in related research. Empirical explorations of pre-matriculated gifted learners’ engagement with transition processes within university communities, especially investigations of their own perspectives on the meaning of transition-related experiences, are rarely seen except in the context of bridge-type programs targeting talent search participants, and such studies have tended to focus on specific features of programs or their participants (e.g., Enersen, 1993; Matthews & McBe, 2007; Rinn, 2006) rather than on the phenomenon of transition itself as experienced by students.

Studies such as Little, Kearney, and Britner’s (2010) and Subotnik, Edmiston, Cook, and Ross’s (2010) explorations of students’ perceptions of mentoring relationships and evaluations such as Marshall’s (2005) and Percy’s (1990) – the latter two related to mentoring programs on Canadian campuses – are notable in that they do give voice to students’ own expressions about what they have found helpful in transition-related mentoring arrangements. In general, though, the predominant voices of gifted students heard in the transition literature are those of matriculated early entrance program participants (e.g., Muratori, Colangelo, & Assouline, 2003; Noble & Drummond, 1992; Noble & Smyth, 1995; Noble, Arndt, Nicholson, Sletten, & Zamora, 1998), and, to a lesser extent, non-accelerated-entry gifted undergraduates (e.g., Hammond, McBee, & Hébert, 2007; Olenchak & Hébert, 2002) and early-entry-affiliated pre-matriculated gifted students, of which Richardson (2005) provides a notable example in the Canadian context. Further research is needed that reports gifted students’ own opinions about transition-related experiences that they engage in pre-matriculation, particularly in Canadian contexts. Such perspectives will be important to building understanding of what students themselves find helpful in terms of transition support and to refine practices around supporting them appropriately as they move from high school into university communities.

As well, studies that follow the same gifted students longitudinally, from pre-matriculation through post-matriculation stages of transition, would provide valuable insight into the long-term impact of efforts to support pre-matriculated students. The only examples that I found of studies following the same gifted students pre- and post-
matriculation (e.g., Peterson, 2000b, 2001; and, in Canada, Remizoff, 1989) did not focus specifically, although they could be seen to reflect indirectly, on students’ transition experiences. Creating situations in which students’ perspectives on transition processes could be explored holistically, as they developed from pre-matriculation anticipations, to early undergraduate experiences, to retrospective views, would allow researchers to investigate the cumulative influences of students’ participation in various kinds of transition-related experiences and access to various kinds of support during transition. Such holistic approaches are largely absent from the current literature.

**Implications for Theory**

Dominant trends toward program evaluation designs and quantitative methodology in empirical research related to students’ transitions have corresponded with a theoretical landscape in which examination of transition as a conceptual construct has, in the past, tended to focus on institutional perspectives (e.g., Astin, 1993; Tinto, 1993) more than student experiences. Attinasi (1989) did theorize transition in a way that ascribed agency to students, and recent sociocultural views of educational transition have positioned students as active participants in processes of identity change, as reviewed by Crafter and Maunder (2012). Specific to pre-matriculated gifted learners like the student participants in the current study, I have found no deliberate applications of such theoretical stances to understanding their transition experiences.

Perhaps the most discussed kind of transition-related experience, for the population from which I recruited the student participants, is opportunities to be mentored by university faculty; there is a good deal of research-based support for the idea that gifted learners value and benefit from such opportunities (e.g., Contreras, 2011; Hicks & Ranis, 2001; Higgins & Boone, 2003; Little et al., 2010; Marshall, 2005; Percy, 1990; Subotnik et al., 2010; Wai-ling Packard & Nguyen, 2003). Some of these studies have hinted at processes of identity work enabled through students’ relationships with mentors, for example Wai-ling Packard and Nguyen’s (2003) exploration of how mentorship contributed to girls’ imaginings of their “possible selves” (p. 251) as future scientists and Subotnik et al.’s (2010) discussion of students gaining “insider knowledge” (p. 714) of fields of study through being mentored.
The current study strengthened the theoretical premise of learning as relational, seen in the ways that mentoring relationships assisted the student participants to develop their sense of themselves as members of scholarly communities. The participants’ perspectives highlighted, as well, that opportunities to be engaged in the practices of such communities – students doing authentic activities alongside faculty partners – was intimately connected with students’ perceptions that their relationships with professors were meaningful and rewarding. For most students and professors, mutual participation in scholarly practices deepened both their feeling of connection with their partners and their sense of belonging within both broadly academic, and discipline-specific, university communities. “The science [was] a venue for the mentoring stuff,” as Dr. C observed. Even when – perhaps especially when – students’ connections with their faculty partners appeared to develop more slowly (if at all) on a personal level, as in the cases of Frank and George, they expressed strong appreciation of the opportunity to participate in lab activities. This speaks to the importance of acknowledging and encouraging student agency as a means of supporting them to develop their identities as university learners and future scholars. Being treated as capable, contributing members of science communities enhanced the student participants’ beliefs in what they could do and be as university learners. Future studies could build upon such contributions by explicitly engaging students in theoretically framed situations where they can evaluate their learner identities relative to mentors’, through the medium of shared scholarly practice, and reflect on how their self-understandings change through interacting with mentors in ways that emphasize student agency.

This study represented a new theoretical venture, in that it looked at pre-matriculated gifted learners’ transition experiences through a particular epistemological lens – sociocultural theory of learning and identity. In this view, the importance of such students’ developing relationships with university professors that has been established elsewhere was re-affirmed in the current study, but other relational facets of transition also were highlighted. Notable examples of this were: the ways the student participants anticipated and imagined their future social relationships with peers at university; the ways the faculty participants not only supported the students’ transition processes but also experienced change and growth themselves (as did the university communities themselves); and the key facilitative role that can be played by a boundary broker – such
as myself, in this instance – who operates from an ethical stance of wanting to “better” (Noffke, 2009, p. 8) the experiences of all who are participating in ‘doing transition.’ The key importance of students having “actual interaction” (Nico, interview, 2004) with members of university communities and participating directly in the practices of those communities was highlighted by the current study; honouring students’ agency in transition processes seemed to facilitate their experiencing transition-related identity shifts in positive ways. Further theoretically oriented investigations could test and extend these propositions with other groups of gifted learners, in other university communities.

Limitations of the Study

The appropriateness of sociocultural theory for explaining the meaning that the participants and I made of their transition-related experiences within university communities is, of course, an interpretation arising from my own preference for this paradigm, my own tendency toward a relational worldview. I framed the participants’ activities with the idea of stimulating them to reflect on their identities relative to communities of practice and of encouraging them to develop relationships with community members and with each other. I drew the participants’ attention to their shifting perceptions of themselves and others and to their changing understandings of and competence with practices that defined community membership. In this sense, the current study provides a bounded view of what transition entails. However, I emphasize Cousin’s (2010) assertion that as long as researchers “own up” to the truth that “our knowledge of the world is always mediated and interpreted from a particular stance,” then our own identities and perspectives do not “contaminate” (p. 10) research processes. My sociocultural approach to constructing and interpreting the participants’ experiences and describing these as stories of identity work is an under-represented one in the literature. Talking about transition in this particular way thus strengthens an alternate perspective to the strong tendency, seen in the existing literature I reviewed in Chapter 2, to represent transition as an individualized event rather than a relational process, or as involving an assimilation of students into institutional structures rather than mutually negotiated changes in identity for newcomers, expert members, and communities themselves.
A troublesome limitation, to me, was that students in the target participant pool quite possibly were affected, in their decisions about whether or not to volunteer, by factors such as previous schooling experiences, concern about transportation, or parental influence. The letter of invitation was addressed to students and their parents, and many of the student participants indicated that their parents had encouraged them to respond despite their own hesitation. In this way, perhaps parents assisted me to recruit students who really did stand to benefit from and enjoy the opportunities offered by the study and might have missed out due to shyness or under-confidence if their parents had not intervened. However, it is also possible that some of the students who joined the study were resistant to participating and only did join because their parents pushed them to do so.

Further, even when a researcher specifies criteria and then seeks willing participants, “whole subsets of the desired group may [still] be lost because people missed the researcher’s advertisements or because the judgment calls of many who may have seen them differ from that of the researcher” (Goetz & LeCompte, 1984, p. 70). Situating the partnership component of the study in the Faculty of Science likely discouraged gifted Grade 10 students in my district who were university-bound but not science-oriented from volunteering. A particular problem, here, concerns the well-documented tendency for girls – including gifted girls – to be discouraged, actively or implicitly, from seeing themselves as capable of succeeding in science-related fields (e.g., Kerr & Robinson Kurpius, 2004; McCormick, 1997). Some of the student non-responders may have been girls who were interested in science but lacked the confidence to think they could participate in a science mentorship, or girls who had strong potential in science but did not hold this self-perception due to discouraging formative experiences. The invitation to participate also may have discouraged students who were more interested in studying humanities than sciences; such students may also appreciate and benefit from the transition-related experiences on campus.

These are conjectures, but the fact remains that I do not know the reasons why half of the Grade 10 gifted students in my school district did not respond to my invitation: Did they never receive, or never read, the invitation? Did they read the invitation but believe that they did not meet the criteria I had specified? Did they read the invitation, believe that they met the criteria, but not respond because they were fearful or shy, or
uncertain how they would be able to get to campus, or unwilling to accept the identification as gifted, or simply not interested in participating? Perhaps the non-respondents did not perceive transition into university, as I did, as a process that was important to reflect upon or engage with actively. I wondered persistently about the non-responders, and in retrospect I wish I had contacted them to confirm whether they had received the invitation and if so, to ask them to share their reasons for not responding.

Other limitations were posed by restraints on data generation due to distributing my research time across a rather large participant group, in combination with the already-stretched time resources of the faculty participants. With nine student-faculty pairs and only six on-campus afternoons, I usually had to observe two pairs within one afternoon, and I only observed each pair together once. This meant that I often was not able to observe, in person, ways that dynamics of interaction might have evolved over the course of a whole afternoon session, or changed from month to month. I only glimpsed snapshots of the partnerships in action and had to rely on the partners’ descriptions of their time together to envision the bigger picture. This situation could have been ameliorated by increasing the contact time of the student-faculty pairs, but the frequency and duration of their meetings was constrained by the professors’ “ridiculous work load” (Dr. B). Although many professors expressed that they would have valued more contact – and some students even wished for weekly visits – I had to balance respect for their time with my need for data. My own work schedule and family commitments would have made it difficult to increase the amount of contact/observation time, in any case.

Time shortage was also a key reason for not interviewing the faculty participants at the study’s midpoint; this decision represented a limitation in that hearing the professors’ perspectives at that point might have enriched developmental understandings of the partner relationships and provided alternate views of the students’ learning trajectories at a time when the students were indicating turning points in their grasp of science concepts and in their feelings of comfort within university communities. As well, suggestions that the professors made in their final interviews, as to ways to improve the partnering experience, perhaps then could have led to modifications in the second half of the pairs’ time together. For example, Dr. E suggested retrospectively that a formal opportunity for the pairs to reflect on what the students had learned and were
wondering about could have been helpful at the midpoint, and a couple of professors reflected that they would have liked to try working with more than one student simultaneously. Had I interviewed the professors at the midpoint, I could have encouraged them to try out these variations.

Given the flexibility I had emphasized in terms of what the pairs could do in their time together, it would have been fine for professors to introduce such variations on their own, but I thought perhaps they had chosen not to do so out of respect for my original design. Overall, however, the most commonly mentioned suggestions by the professors in their final interviews had to do with alternative schedules for the students’ visits to campus – for example, inviting them to come bi-weekly over one semester, or inviting them to come for full instead of half days – and such changes would have been difficult to implement at the midpoint, given that the students and their parents had already arranged their schedules to participate in the planned on-campus days, and if students were to come to campus at different times they would miss the morning sessions, and I would not be on site to supervise them.

The limitations posed by time constraints might have been offset by enlisting a research collaborator, so that interviews with student and faculty participants could have occurred simultaneously, and more, and more sustained, observations of the student-faculty pairs would have been possible. Sharing data generation and analyses with another researcher would have added depth to the interpretive processes, as well, providing opportunities to evaluate my perceptions against another researcher’s perspective. Although dissertation research typically is not done collaboratively, I experienced it as a personal limitation to be the only one working with the data in an organizational mode. Sharing interpretations with the participants, through member check conversations, was deeply enriching to my perspective on the meanings being made, but I would have valued opportunities to learn what kinds of meanings another researcher would make, also. In this sense, I was like the students, in that while I did not need a peer in order to “survive” and enjoy this experience, it would have been more “fun” to engage in research with “a friend or two” (Buck).

I also experienced it as a limitation imposed by time and resource constraints that this study could not follow these students longitudinally, as they began to participate
in university communities post-matriculation. I remain curious as to what kinds of influences they might have perceived the transition-related experiences they engaged in during this study to have, as they progressed further toward full membership in similar communities as undergraduates. Given my sociocultural view of transition, which focuses on students’ ongoing processes of developing relationships and repertoires for participating in practices of university communities, I feel that the insights offered by the current study could have been enriched by following the participants’ learning trajectories further than was possible in this instance. This would have provided access to students’ retrospective views on their pre-matriculation transition-related experiences, to crystallize their perceptions at the time they were engaging in those experiences.

**Significance of the Study**

The importance of the current study lies in my attempt, as an action researcher, to address the gaps in practice and research, as well as the opportunities to develop theoretical perspectives, that I have reviewed above and illustrated throughout this thesis, with regard to pre-matriculated gifted learners’ experiences of transition. I believe that this study offers a novel contribution to the literature in several ways. First, it adds to the available empirical explorations of such learners’ transition-related experiences, which are scarce relative to the more comprehensive literatures that address high school to college transition among general student populations and post-matriculation transition experiences of gifted learners. Understanding what kinds of activities and relationships seemed important to the student participants provides some bases for pursuing further exploration of the ways gifted students’ sense of what they could do and become as university students change, when they are invited to participate directly in university communities before actually enrolling there.

Second, this study directs a particular, and unusual, focus on pre-matriculated gifted learners who are following conventional paths toward university along with their age peers, rather than those who are accelerating toward early college entry. Gifted learners who are university-bound but not affiliated with acceleration-based transition support programs have been suggested to comprise a sizeable group in North American educational contexts (Belanger, Akbari, & Madgett, 2009; Bers & Galowich, 2002;
Frenette, 2007; Guerrero & Riggs, 1996; Hossler, Schmit, & Vesper, 1999; Lee, Matthews, & Olszewski-Kubilius, 2008). In the Canadian context and the specific locale of this study, the Lower Mainland of BC, the large majority of identified gifted learners who plan to attend university probably belong to this group. The study highlights not just the scarcity of initiatives that allow such non-accelerated gifted students to have campus-based transition-related experiences (both generally and locally), but also the enthusiasm and appreciation that these student participants evinced when invited to participate actively in transition processes. This study provides a rare example of research related to such learners, in such circumstances, in a Canadian context.

Third, by enacting a proactive effort to support such students by engaging them in participatory activities and connecting them with people within university communities, the action research endeavour underlying this study represents a departure from the kinds of transition support that are more usually offered to gifted college-bound students. Students may be well supported to gain college-level academic skills in credit-based transition programs; they may even experience a reasonable simulation of university intellectual circles in more holistic programs such as International Baccalaureate. In addition to receiving the standard transmissions of information about university via college recruitment officers or promotional materials, gifted students may have school counselors lend a hand in planning campus visits or providing some specialized long-range academic and career advising. Counselors also may help such students to access summer programs or mentorship arrangements that allow them to spend some time on a university campus and work in a sustained way with university people, prior to enrollment. However, for the most part, the latter kinds of opportunities – to learn about how university communities work by participating within them, are rarely accessed by students – whether gifted or not – until they are already enrolled there (and sometimes not even then). This study supports the idea that at least some pre-matriculated gifted learners deeply value the chance to learn by being supported to do things that university community members do, within actual university communities.

Fourth, this study gives voice to students' own perspectives on and interpretations of transition-related experiences while they were engaged in them, adding depth to the more commonly available retrospectively generated student reflections on their adjustment to university. While retrospective views are certainly
valuable, the immediacy afforded by hearing these student participants speak about their experiences of transition as they were happening provides glimpses into their moments of realization and change that are not filtered through their subsequent experiences at university and beyond. The constant process of reflection and discussion, concurrently with the participants and I engaging in activities and developing relationships, helped us to build understanding of what was happening for us in the moment. Also, it reinforced for me the very real way that positional and relational identities continually shift, due not only to changes in context or circumstances but also to choices people make to alter or respond to social situations (Holland, Lachicotte, Skinner, & Cain, 1998).

Finally, as the latter observation illustrates, this research involved not only describing, but also theorizing, pre-matriculated gifted learners’ understandings of the meanings of transition-related experiences, working within the conceptual framework of sociocultural theory of learning and identity. Whereas sociocultural theory has been used with growing frequency to examine what happens for students during various periods of educational transition including entry into post-secondary academic communities of practice (Crafter & Maunder, 2012), to my knowledge this theory has never been used to illuminate transition processes as experienced by members of this particular population, before the current study. A further theoretical contribution that this framework helped me to develop was the interpretation of the ways not only the students’ identities, but also those of others involved in supporting their transitions – such as their faculty partners and me – developed and changed as we engaged together in transition-related experiences. This invites an extended way of looking at transition, as a process of identity shift not just for students, but also for other members of the various university communities they are entering – indeed, as a phenomenon that involves transformation on the community as well as the individual level.

Epilogue

Writing this dissertation represents a culminating point in my research journey – not the end of my exploration of gifted learners’ processes of beginning to develop their identities as members of university communities, but a point at which to reflect on what I have learned thus far and to share that learning with a wider audience. Among the
student participants for this study, I observed an eagerness to engage with the life and work of university communities, and to get to know university people, that the opportunities afforded by the study only began to answer. Many students wanted to continue their connections with SFU, and many expressed disappointment that there were no plans to offer the same types of experiences to students in subsequent years. These students expressed that the transition-related experiences they had engaged in had changed their perspectives and anticipations about university in important ways, and also that they themselves had changed during this process. Although these students’ experiences cannot be generalized, I do hope they offer insight into the possible kinds of experiences that college-bound gifted students of similar age and circumstances might have if they, too, were encouraged to participate actively within university communities pre-matriculation. I believe the participants’ and my interpretations speak to the potential benefits – not only to students but to post-secondary institutions as well – of inviting such learners to come out of the “waiting room” (Nico, interview, 2004) and start doing transition in meaningful ways.

I am left with questions that were not possible to pursue within this particular study: What happened to these student participants as they continued on their transition journeys? Who did they become, as university students? What do they think, retrospectively, about the transition-related experiences they participated in back in Grade 11? Like all the gifted high school students I have worked with in my teaching – and now research – practice, I am sure these nine will be ever present in my consciousness, continuing to grow and change in imagined ways, as they have moved beyond my view and gone out into the world. Often, my imaginings are interrupted by purposeful or chance encounters with students – chances to talk, catch up, and learn what is happening for them on their journeys. I look forward to such interruptions occurring with Krystine, Frank, George, Andrea, Katarina, Robert, Buck, Nate, and Gordon, who have contributed so importantly to my own learning.
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Appendices
Appendix A.

Study Information Form

Study Information Form
FORM 5 (Department of Research Ethics, SFU)
STUDY INFORMATION

Title: Interpreting gifted students' experiences of transition between high school and university from a sociocultural perspective: A case study

Investigator Name: Kristi Lauridsen

Investigator Department: Faculty of Education

Place where research will occur: Lower Mainland school district and Burnaby, BC, Canada

Who are the participants (subjects) in this study? The participants are 4-6 high school students from one Lower Mainland school district and 4-6 faculty members from SFU Burnaby.

What will the participants be required to do?

Student Participants:
The student participants will be required to travel to SFU Burnaby one day per month from September 2007 – May 2008. During these on-campus days, they will participate in informational sessions or workshops designed to orient them to various aspects of campus life (e.g., Simon Fraser Student Society, Academic Computing, Library Services, Athletics, Health and Counseling Services, Residence). As well, each student will spend part of the on-campus day working with a faculty member on a scholarly investigation or research project the faculty member is currently working on. During one of these working sessions, students will be observed by the researcher and videotaped. The September on-campus day will include an introductory session with all the student and faculty participants; the April on-campus day will include a mini-conference with each student-mentor pair presenting on some aspect of their work together. Students will be individually interviewed at five points during the study (three formal interviews, with brief follow-up interviews to the first and third). The interviews will be audiotaped. For the third formal interview, the students will be asked to create a reflection piece (in writing or another format of their choice) to illustrate what the experience of

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2 The title of the study was changed, with approval by SFU’s Department of Research Ethics, subsequent to these original documents being submitted and approved.
participating has meant for them. The students will also be asked to contribute to an online discussion forum once per week during the study. Students will be asked, but not required, to exchange emails with their mentors on a weekly basis. These emails will not constitute a source of data and the researcher will not view their contents unless requested to by one of the participants.

Faculty participants:
Faculty participants will be required to commit one half-day per month, from September 2007 – April 2008, to mentor a Grade 11 gifted student, allowing the student to participate to the greatest extent possible in a research project or scholarly investigation the faculty member is currently working on. One of these working sessions will be observed by the researcher and videotaped. Faculty will be required to attend an opening session in September with the entire group of student and faculty participants and to attend a closing session in April at which each student-mentor pair will present on some aspect of their work together. As well, faculty will be asked to respond if students choose to email them; to this end, faculty will be requested to provide students with their email addresses. These emails will not constitute a source of data and the researcher will not view their contents unless requested to by one of the participants. Faculty participants will be interviewed four times (two formal interviews, with brief follow-ups to each) over the course of the study; the interviews will be audio-taped.

How are the participants recruited?
The faculty participants will be recruited from within a single department at SFU Burnaby and will be selected on the basis of their willingness to mentor a high school student over the course of one academic year. Faculty participants will be approved to work with students by the participating school district, prior to matching them with student participants. The student participants will be recruited from among Grade 10/11 students in the school district who have a Ministry of Education coding as 'gifted' learners. A letter will be sent to all such students and their parents describing the study and asking them to contact the researcher if they are interested in participating. A follow-up phone call will be made to the students' homes to answer any questions they or their parents may have before deciding whether they would like to participate. Students' addresses and phone numbers will be obtained from school district records, which are available to the researcher through her employment with the district. From among those who indicate interest in the study, 4-6 students will be selected whose areas of academic interest can best be matched with the available faculty expertise.

Overall goals of the study:
This study is designed to investigate gifted high school students’ perceptions and understandings of the process of transition between high school and university, while participating in a set of experiences designed to orient them to university life on a specific campus: SFU Burnaby. The researcher’s goal is to gain insight into how best to support gifted students as they make this transition.

Risks to the participant, third parties or society:
This study will not pose any risks to the participant, third parties, or society. Should students refuse to participate, or their parents/guardians refuse to allow them to participate, in any or all aspects of the study, there will be no adverse consequences for their academic grades or evaluation.
Benefits of study to the development of new knowledge:

Very little research exists regarding gifted learners’ perspectives on transition between high school and university. A benefit of this study is that it will involve gifted students in a process of examining their own perceptions during transition and articulating how they experience this process. This will help the researcher and other educators to better understand these students’ perspectives when attempting to support and assist them as they transition into university life.

How confidentiality and anonymity will be assured if applicable:

The data of this study will maintain confidentiality of participants’ names and the contributions they have made to the extent allowed by the law. Pseudonyms will be used in reporting this study; participants’ names will not appear in the reports. However, participants should be aware that due to the small number of participants, complete anonymity may not be assured.

Approvals that may be required from agencies, communities or employers:

Permission has been obtained from the school district to conduct this study with students from the district. This study has been approved by SFU’s Department of Research Ethics.

Persons and contact information that participants can contact to discuss concerns

[Name], Director
Office of Research Ethics
Appendix B.

Schedule of On-Campus Dates for Faculty Participants

Note: on one of these dates (October 16 – March 5) I will be observing and videotaping during your time with the student. Let me know if you have a preference; I will let you know the date at the first meeting.

Please ensure you will be available from 1:00-3:00 p.m. on the following dates:

Tuesday, September 25
- opening session with all participating students and faculty (lunch provided)
- room TBA
- at this session, you will be asked to introduce yourself to the group and speak briefly (5 minutes or less) in general terms about your research area and specific research projects you have worked on or are currently involved with

Tuesday, October 16
Tuesday, November 13
Tuesday, December 4
Wednesday, January 9
Wednesday, February 6
Wednesday, March 5
Wednesday, April 2
- closing session with all participating students and faculty (lunch provided)
- room TBA
- at this session, student-faculty pairs will be asked to make a brief presentation (10 minutes or less) to the group focusing on the current research of the faculty member (similar to a conference-style poster presentation). Students will be expected to take the lead on preparing and giving the presentation, with faculty support and guidance. The objective is for students to share with the group what they have learned about your area of research and any specific research projects you may be working on.
Appendix C.

Letter of Invitation to Participate
(Students and their Parents)

May 24, 2007

Dear [student’s name] and parents(s)/guardian(s),

I am writing to invite you to consider participating in a research study that I will be conducting during the 2007-2008 school year, as part of my PhD studies in the Faculty of Education at Simon Fraser University (SFU). This study has been approved by School District [blank] and by SFU’s Department of Research Ethics.

The study will provide students with the opportunity to spend time with professors from SFU who have volunteered to act as mentors. The students will travel to SFU (Burnaby campus) for one full day each month from September 2007 – May 2008 to work with their mentors and to participate in orientation sessions with on-campus groups, such as the Student Society, Library Services, Athletics and Recreation, Residence, and others. This is a unique opportunity to “try out” university life before enrolling in university. Potential participants need not necessarily be planning to attend SFU, but they should be intending to pursue a university education. As well, they should have a strong interest in the Sciences, as the mentors will all belong to SFU’s Faculty of Science. Some of the mentors’ research areas, for example, include Molecular Biology and Biochemistry (e.g., genetics, vaccine development), Biological Sciences (e.g., plant evolution, ecology), and Earth Sciences (e.g., climate change).

The research will investigate the participants’ perceptions of the process of transition between high school and university. Participants will be interviewed five times (three formal interviews, with brief follow-ups to the first and third). They will also be asked to contribute regularly to an online discussion forum with the other student participants and me, and they will be invited (but not required) to exchange emails with their faculty mentors. A detailed description of the study, its benefits and risks, is enclosed with this letter (“Form 5”). Once participants are selected, they and their parents/guardians will be guided through a process of giving informed consent to all aspects of participation in the study.

This letter has been sent to all Grade 10 students in District [blank] who have a Ministry of Education coding as “gifted” learners. If you are planning to pursue a university education, are interested in the Sciences, and feel that you can make the time commitments described above, you are a strong candidate for this opportunity. Please note that while it is preferable that participants arrange their own transportation to SFU, I will do my best to assist if transportation appears to be the only obstacle (for example, I may be able to arrange carpooling with other participants).

If you are interested in participating in this study, please contact me by phone (111-222-3333) or email [email address] no later than JUNE 5. If you have any questions that would help you decide whether you would like to participate, please do not hesitate to contact me. Please note that not all interested students will be selected to participate, due to the availability of faculty mentors. If you are not interested, there will be no academic consequences whatsoever; participation is entirely voluntary.

Thank you very much for your time and attention. I hope you will consider participating in this exciting opportunity and I look forward to hearing from you soon.

Sincerely,

Kristi Lauridsen

PhD Candidate, Faculty of Education, Simon Fraser University

District Facilitator for Gifted Services, School District [blank]
Appendix D.

Suggested Activities for Faculty/Student Pairs

Asking the student “What would you like to do today?” may or may not be effective, depending on the student. Try showing the student this list of options and asking which appeals most. On your first day together, you could discuss these options and see if either of you has any to add, then prioritize together which you would most like to do over the course of your time together. Ideally, some part of each session would include either or both of the first two items.

Show the student aspects of your research in progress – visit your lab, look at data, explain methods of data collection, discuss the purpose of the research or hypotheses under investigation, discuss implications of the research. Most students have indicated very little understanding of what a scientific researcher actually does.

If at all possible, give the student a chance to participate in lab work in some small way. They might enjoy the chance to observe what goes on in a lab ‘up close.’

Introduce the student to graduate or undergraduate students who are working in your lab or taking your classes. Talk about what the difference is between undergraduate and graduate level coursework (in terms of content, specialization, expectations, standards of work, etc.). Talk about special programs that might be available within your department/faculty (e.g., honours, undergraduate research opportunities).

Take the student to sit in on part of a lecture or class, whether you are instructing it or not. Many students expressed an interest in seeing what university classes are like. Discuss the topics raised in the class and give the student opportunity to ask questions.

Talk with the student about the standards for academic work in your department – both undergraduate and graduate level. Discuss the expectations that professors/instructors have of students at each level.

Take the student on a tour of your department and/or faculty buildings. Show the student where he/she might expect to attend large lectures or lab classes and other areas that might be of interest.

Talk about the role of publishing and conferences in your academic work. Help the student to gain a sense of the networks you participate in at local, provincial, national, and international levels. Talk about the format for the April 2 presentation that the student will be preparing for; offer suggestions or show examples of poster presentations.

Talk about leaders in your field and/or people who have influenced you in your work. Discuss some of the most important historical developments in your field.

Other? ... This list is neither exhaustive nor prescriptive. You may have many other ideas for the time you spend with the student. However, please do not ‘drop off’ students at a lab or class and leave them there. Doing so raises concerns about supervision, and more importantly, they are really looking forward to spending the time with you!
Appendix E.

School District Letters of Permission and Approval

Letter of Permission

To: District Principal, Student Support Services, School District
Cc: Senior Administration Team, School District
From: Kristi Lauridsen
   District Facilitator for Gifted, School District
   PhD Candidate, Faculty of Education, Simon Fraser University
Date: March 30, 2007
Re: Request for permission to conduct research with School District students

Please find attached a description of my proposed research for my PhD thesis (Form 5). This is a copy of the document that I will be submitting to SFU’s Department of Research Ethics. I am required to obtain permission from the school district prior to submitting for ethics approval. Once my study has been approved by SFU, I will be happy to forward evidence of that approval to the school district for your records. No contact will be made with students until approval has been obtained from both the district and SFU.

Thank you for your consideration of my proposal. Please let me know if you require more detailed information about the study, such as my full-length thesis proposal.
April 2, 2007

Ms. K. Lauridsen,
Facilitator,

Dear Kristi,

At the Senior Staff meeting on April 2nd, your proposal to conduct research for your Thesis on “Interpreting gifted students’ experiences of transition between high school and university from a socio-cultural perspective: A case study” was approved. You may conduct your research in School District following the procedures stated in your proposal.

Please provide an executive summary and a synopsis of your results when your research is completed.

Congratulations on reaching this stage of your program.

Sincerely,

Assistant Superintendent
Appendix F.

Consent Form (Parents of Student Participants)

FORM 2A (SFU Department of Research Ethics)
Informed Consent by Parents of Participants in a Research Study

The University and those conducting this research study subscribe to the ethical conduct of research and to the protection at all times of the interests, comfort, and safety of participants. This research is being conducted under permission of the Simon Fraser Research Ethics Board. The chief concern of the Board is for the health, safety and psychological well-being of research participants.

Should you wish to obtain information about your rights as a participant in research, or about the responsibilities of researchers, or if you have any questions, concerns or complaints about the manner in which you were treated in this study, please contact the Director, Office of Research Ethics by email at [Contact Information] or phone at [Contact Information]

Your signature on this form will signify that you have received a document which describes the procedures, whether there are possible risks, and benefits of this research study, that you have received an adequate opportunity to consider the information in the documents describing the study, and that you voluntarily agree to consent for your child to participate in the study.

Title: Interpreting gifted students' experiences of transition between high school and university from a sociocultural perspective: A case study

Investigator Name: Kristi Lauridsen

Investigator Department: Faculty of Education

Having been asked to participate in the research study named above, I certify that I have read the procedures specified in the Study Information Document (FORM 5) describing the study. I understand the procedures to be used in this study and the personal risks to my child in taking part in the study as described below.

Purpose and goals of this study: This study is designed to investigate gifted high school students' perceptions and understandings of the process of transition between high school and university, while they are participating in a set of experiences designed to orient them to university life on a specific campus: SFU Burnaby. The researcher's goal is to gain insight into how best to support gifted students as they make this transition.

What the participants will be required to do – Student participants: The student participants will be required to travel to SFU Burnaby one day per month from September 2007 - May 2008. During these on-
campus days, they will participate in informational sessions or workshops designed to orient them to various aspects of campus life (e.g., Simon Fraser Student Society, Academic Computing, Library Services, Athletics, Health and Counseling Services, Residence). As well, each student will spend part of the on-campus day working with a faculty member on a scholarly investigation or research project the faculty member is currently working on. During one of these working sessions, students will be observed by the researcher and videotaped. The September on-campus day will include an introductory session with all the student and faculty participants; the April or May on-campus day will include a mini-conference with each student-mentor pair presenting on some aspect of their work together. Students will be individually interviewed at five points during the study (three formal interviews, with brief follow-up interviews to the first and third). The interviews will be audiotaped. For the third formal interview, the students will be asked to create a reflection piece (in writing or another format of their choice) to illustrate what the experience of participating has meant for them. The students will also be asked to contribute to an online discussion forum regularly during the study. Students will be asked, but not required, to exchange emails with their mentors on a weekly basis. These emails will not constitute a source of data and the researcher will not view their contents unless requested to by one of the participants.

**Risks to the participant, third parties or society:** This study will not pose any risk to the participants. Should students refuse to participate, or their parents/guardians refuse to allow them to participate, in any or all aspects of the study, there will be no adverse consequences for their academic grades or evaluation.

**Benefits of study to the development of new knowledge:** Very little research exists regarding gifted learners' perspectives on transition between high school and university. A benefit of this study is that it will involve gifted students in a process of examining their own perceptions during transition and articulating how they experience this process, thus helping the researcher and other educators to better understand these students' perspectives when attempting to support and assist them. For the student participants, a major benefit is the opportunity to have individualized attention from SFU faculty who will mentor them as they “try out” scholarly research in a field of interest to them, as well as the opportunity to visit the SFU campus regularly and learn about various aspects of university life.

**Statement of confidentiality:** The data of this study will maintain confidentiality of your and your child’s names and the contributions you have made to the extent allowed by the law. However, you should be aware that due to the small number of participants, complete anonymity may not be assured.

**Interview of employees about their company or agency:** Not applicable.

**Inclusion of names of participants in reports of the study:** Pseudonyms will be used in reporting this study; your name will not appear in the reports.

**Contact of participants at a future time or use of the data in other studies:** The information you contribute may be used in future studies that may be similar (or dissimilar) and may require future contact with you or your child. Do you agree to future contact? If so please initial the box on the signature form.

I understand that I may withdraw my consent for my child’s participation at any time. I also understand that I may register any complaint with the Director of the Office of Research Ethics.

Director, Office of Research Ethics
8888 University Drive
Simon Fraser University
Burnaby, British Columbia Canada
V5A 1S6

email: [Contact Information]

I may obtain copies of the results of this study, upon its completion by contacting:

Kristi Lauridsen
c/o SFU Faculty of Education
Simon Fraser University
Burnaby, British Columbia Canada
V5A 1S6

I understand the risks and contributions of my participation in this study and agree to participate:

The participant’s parent/guardian shall fill in this area. Please print legibly

Parent/Guardian’s Last Name:

Parent/Guardian’s First Name:

Parent/Guardian’s Contact Information:

Parent/Guardian’s Signature:

Date (use format MM/DD/YYYY):

Contact at a future time / use of data in other studies: (initial)
In addition to providing your consent for your child to participate in this study on Form 2A, your specific consent is required for the following. Please indicate separately whether you consent to the following:

I hereby give my consent for the researcher to use any and all information from school district files to gain background information about my child. This information is not a major focus of the study and will not be reported in detail; however, it will be used to form profiles of the participants in the study. The information may include: report cards, history of schools attended and school performance, test scores and interpretations, courses taken and activities the student has participated in, disciplinary reports, anecdotal comments from teachers, parents, or the students themselves, and information about the student's family context (e.g., number of siblings, parents' occupations). I understand that the confidentiality of this information will be preserved to the extent allowed by the law. However, I am aware that due to the small number of participants in the study, complete anonymity may not be assured.

Parent/Guardian Signature: ______________________________ Date: _______

I hereby give my consent for my child to be audiotaped during the interviews (for purposes of transcription) and videotaped during one working session with her/his faculty mentor (for the researcher’s observation purposes; the videotapes will not be shown to anyone else without seeking my further consent).

Parent/Guardian Signature: ______________________________ Date: _______

I hereby give my consent for my child to receive email correspondence from her/his faculty mentor. If she/he chooses to engage in email correspondence with her/his faculty mentor, the faculty member will first provide my child with an email address, and the faculty member will obtain my child’s email address only if my child chooses to email her/him. The researcher will not view the contents of these emails except at my child’s or a faculty member’s request.

Parent/Guardian Signature: ______________________________ Date: _______

I hereby give my consent for my child to participate in an online discussion forum through an SFU server (FirstClass). I understand that my child will be given a username and password and that it will be her/his responsibility to follow the guidelines for acceptable use of these (to be provided to participants by SFU Academic Computing).

Parent/Guardian Signature: ______________________________ Date: _______

I hereby accept responsibility for my child’s transportation to the SFU Burnaby campus. I acknowledge that the researcher and/or the school district are not liable for any accident or personal harm that may occur as a result of the method of transportation my child and I choose. If I notify the researcher that I require assistance with arranging transportation, I will sign any appropriate documents that the school district requires to participate in such an arrangement.

Parent/Guardian Signature: ______________________________ Date: _______
I hereby acknowledge that I am prepared to support my child in fulfilling the commitments of participating in this study, by attending all on-campus sessions and scheduled interview dates. I understand that if my child becomes unable to fulfill these commitments, for any reason, the researcher reserves the right to withdraw her/him from the study and replace her/him with another participant.

Parent/Guardian Signature: __________________________ Date: _______
Appendix G.

Consent Form  
(Student Participants)

FORM 2A (SFU Department of Research Ethics)  
Informed Consent by Participants in a Research Study

The University and those conducting this research study subscribe to the ethical conduct of research and to  
the protection at all times of the interests, comfort, and safety of participants. This research is being  
conducted under permission of the Simon Fraser Research Ethics Board. The chief concern of the Board is  
for the health, safety and psychological well-being of research participants.

Should you wish to obtain information about your rights as a participant in research, or about the  
responsibilities of researchers, or if you have any questions, concerns or complaints about the manner in  
which you were treated in this study, please contact the Director, Office of Research Ethics by email at  
XXXXXXXXXXXXXXX or phone at XXXXXXXXXXXX.

Your signature on this form will signify that you have received a document which describes the procedures,  
whether there are possible risks, and benefits of this research study, that you have received an adequate  
opportunity to consider the information in the documents describing the study, and that you voluntarily agree  
to participate in the study.

Title: Interpreting gifted students' experiences of transition between high school and university from a  
sociocultural perspective: A case study

Investigator Name: Kristi Lauridsen

Investigator Department: Faculty of Education

Having been asked to participate in the research study named above, I certify that I have read the  
procedures specified in the Study Information Document (FORM 5) describing the study. I understand the  
procedures to be used in this study and the personal risks to me in taking part in the study as described  
below.

Purpose and goals of this study: This study is designed to investigate gifted high school students'  
perceptions and understandings of the process of transition between high school and university, while they  
are participating in a set of experiences designed to orient them to university life on a specific campus:  
SFU Burnaby. The researcher’s goal is to gain insight into how best to support gifted students as they make  
this transition.

What the participants will be required to do – Student participants: The student participants will be  
required to travel to SFU Burnaby one day per month from September 2007 - May 2008. During these on-
campus days, they will participate in informational sessions or workshops designed to orient them to various aspects of campus life (e.g., Simon Fraser Student Society, Academic Computing, Library Services, Athletics, Health and Counseling Services, Residence). As well, each student will spend part of the on-campus day working with a faculty member on a scholarly investigation or research project the faculty member is currently working on. During one of these working sessions, students will be observed by the researcher and videotaped. The September on-campus day will include an introductory session with all the student and faculty participants; the April or May on-campus day will include a mini-conference with each student-mentor pair presenting on some aspect of their work together. Students will be individually interviewed at five points during the study (three formal interviews, with brief follow-up interviews to the first and third). The interviews will be audio-taped. For the third formal interview, the students will be asked to create a reflection piece (in writing or another format of their choice) to illustrate what the experience of participating has meant for them. The students will also be asked to contribute to an online discussion forum regularly during the study. Students will be asked, but not required, to exchange emails with their mentors on a weekly basis. These emails will not constitute a source of data and the researcher will not view their contents unless requested to by one of the participants.

Risks to the participant, third parties or society: This study will not pose any risk to the participants. Should students refuse to participate, or their parents/guardians refuse to allow them to participate, in any or all aspects of the study, there will be no adverse consequences for their academic grades or evaluation.

Benefits of study to the development of new knowledge: Very little research exists regarding gifted learners’ perspectives on transition between high school and university. A benefit of this study is that it will involve gifted students in a process of examining their own perceptions during transition and articulating how they experience this process, thus helping the researcher and other educators to better understand these students’ perspectives when attempting to support and assist them. For the student participants, a major benefit is the opportunity to have individualized attention from SFU faculty who will mentor them as they “try out” scholarly research in a field of interest to them, as well as the opportunity to visit the SFU campus regularly and learn about various aspects of university life.

Statement of confidentiality: The data of this study will maintain confidentiality of your name and the contributions you have made to the extent allowed by the law. However, you should be aware that due to the small number of participants, complete anonymity may not be assured.

Interview of employees about their company or agency: Not applicable.

Inclusion of names of participants in reports of the study: Pseudonyms will be used in reporting this study; your name will not appear in the reports.

Contact of participants at a future time or use of the data in other studies: The information you contribute may be used in future studies that may be similar (or dissimilar) and may require future contact with you. Do you agree to future contact? If so please initial the box on the signature form.

I understand that I may withdraw my participation at any time. I also understand that I may register any complaint with the Director of the Office of Research Ethics.

Director, Office of Research Ethics
8888 University Drive
Simon Fraser University

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I may obtain copies of the results of this study, upon its completion by contacting:

Kristi Lauridsen
c/o SFU Faculty of Education
Simon Fraser University
Burnaby, British Columbia Canada
V5A 1S6

I understand the risks and contributions of my participation in this study and agree to participate:

The participant shall fill in this area. Please print legibly

Participant Last Name:

Participant First Name:

Participant Contact Information:

Participant Signature:

Date (use format MM/DD/YYYY):

Contact at a future time / use of data in other studies: (initial)
In addition to providing your consent to participate in this study on Form 2A, your specific consent is required for the following. Please indicate separately whether you consent to the following:

I hereby give my consent for the researcher to use any and all information from school district files to gain background information about me. This information is not a major focus of the study and will not be reported in detail; however, it will be used to form profiles of the participants in the study. The information may include: report cards, history of schools attended and school performance, test scores and interpretations, courses taken and activities the student has participated in, disciplinary reports, anecdotal comments from teachers, parents, or the students themselves, and information about the student's family context (e.g., number of siblings, parents' occupations). I understand that the confidentiality of this information will be preserved to the extent allowed by the law. However, I am aware that due to the small number of participants in the study, complete anonymity may not be assured.

Student Signature: ___________________________ Date: ______

I hereby give my consent to be audiotaped during the interviews (for purposes of transcription) and videotaped during one working session with my faculty mentor (for the researcher's observation purposes; the videotapes will not be shown to anyone else without seeking my further consent).

Student Signature: ___________________________ Date: ______

I hereby give my consent to receive email correspondence from my faculty mentor. If I choose to engage in email correspondence with my faculty mentor, the faculty member will first provide me with her/his email address, and she/he will obtain my email address only if I choose to email her/him. The researcher will not view the contents of these emails except at my or a faculty member's request.

Student Signature: ___________________________ Date: ______

I hereby consent to participate in an online discussion forum through an SFU server (FirstClass). I understand that I will be given a username and password and that it will be my responsibility to follow the guidelines for acceptable use of these (to be provided to participants by SFU Academic Computing).

Student Signature: ___________________________ Date: ______

I hereby accept responsibility for my own transportation to the SFU Burnaby campus. I acknowledge that the researcher and/or the school district are not liable for any accident or personal harm that may occur as a result of the method of transportation I choose. If I notify the researcher that I require assistance with arranging transportation, I will sign any appropriate documents that the school district requires to participate in such an arrangement.

Student Signature: ___________________________ Date: ______
I hereby acknowledge that I am prepared to fulfill the commitments of participating in this study, by attending all on-campus sessions and scheduled interview dates. I understand that if I become unable to fulfill these commitments, for any reason, the researcher reserves the right to withdraw me from the study and replace me with another participant.

Student Signature: ______________________ Date: _______
Appendix H.

Consent Form
(Faculty Participants)

FORM 2A (SFU Department of Research Ethics)
Informed Consent by Participants in a Research Study

The University and those conducting this research study subscribe to the ethical conduct of research and to the protection at all times of the interests, comfort, and safety of participants. This research is being conducted under permission of the Simon Fraser Research Ethics Board. The chief concern of the Board is for the health, safety and psychological well-being of research participants.

Should you wish to obtain information about your rights as a participant in research, or about the responsibilities of researchers, or if you have any questions, concerns or complaints about the manner in which you were treated in this study, please contact the Director, Office of Research Ethics by email at [email protected] or phone at [please provide phone number].

Your signature on this form will signify that you have received a document which describes the procedures, whether there are possible risks, and benefits of this research study, that you have received an adequate opportunity to consider the information in the documents describing the study, and that you voluntarily agree to participate in the study.

Title: Interpreting gifted students' experiences of transition between high school and university from a sociocultural perspective: A case study

Investigator Name: Kristi Lauridsen

Investigator Department: Faculty of Education

Having been asked to participate in the research study named above, I certify that I have read the procedures specified in the Study Information Document (FORM 5) describing the study. I understand the procedures to be used in this study and the personal risks to me in taking part in the study as described below.

Purpose and goals of this study: This study is designed to investigate gifted high school students' perceptions and understandings of the process of transition between high school and university, while they are participating in a set of experiences designed to orient them to university life on a specific campus: SFU Burnaby. The researcher’s goal is to gain insight into how best to support gifted students as they make this transition.
What the participants will be required to do – Faculty participants:
Faculty participants will be required to commit one half-day per month, from September 2007 – April 2008, to mentor a Grade 11 gifted student, allowing the student to participate to the greatest extent possible in a research project or scholarly investigation the faculty member is currently working on. One of these working sessions will be observed by the researcher and videotaped. Faculty will be required to attend an opening session in September with the entire group of student and faculty participants and to attend a closing session in April at which each student-mentor pair will present on some aspect of their work together. As well, faculty will be asked to respond if students choose to email them; to this end, faculty will be requested to provide students with their email addresses. These emails will not constitute a source of data and the researcher will not view their contents unless requested to by one of the participants. Faculty participants will be interviewed four times (two formal interviews, with brief follow-ups to each) over the course of the study; the interviews will be audiotaped.

Risks to the participant, third parties or society: This study will not pose any risk to the participants. Should students refuse to participate, or their parents/guardians refuse to allow them to participate, in any or all aspects of the study, there will be no adverse consequences for their academic grades or evaluation.

Benefits of study to the development of new knowledge: Very little research exists regarding gifted learners’ perspectives on transition between high school and university. A benefit of this study is that it will involve gifted students in a process of examining their own perceptions during transition and articulating how they experience this process, thus helping the researcher and other educators to better understand these students’ perspectives when attempting to support and assist them. For the student participants, a major benefit is the opportunity to have individualized attention from SFU faculty who will mentor them as they “try out” scholarly research in a field of interest to them, as well as the opportunity to visit the SFU campus regularly and learn about various aspects of university life.

Statement of confidentiality: The data of this study will maintain confidentiality of your name and the contributions you have made to the extent allowed by the law. However, you should be aware that due to the small number of participants, complete anonymity may not be assured.

Interview of employees about their company or agency: Not applicable.

Inclusion of names of participants in reports of the study: Pseudonyms will be used in reporting this study; your name will not appear in the reports.

Contact of participants at a future time or use of the data in other studies: The information you contribute may be used in future studies that may be similar (or dissimilar) and may require future contact with you. Do you agree to future contact? If so please initial the box on the signature form.

I understand that I may withdraw my participation at any time. I also understand that I may register any complaint with the Director of the Office of Research Ethics.

Director, Office of Research Ethics
8888 University Drive
Simon Fraser University
Burnaby, British Columbia Canada
V5A 1S6
I may obtain copies of the results of this study, upon its completion by contacting:

Kristi Lauridsen  
c/o SFU Faculty of Education  
Simon Fraser University  
Burnaby, British Columbia Canada  
V5A 1S6

I understand the risks and contributions of my participation in this study and agree to participate:

The participant shall fill in this area. Please print legibly

Participant Last Name:

Participant First Name:

Participant Contact Information:

Participant Signature:

Date (use format MM/DD/YYYY):  

Contact at a future time / use of data in other studies: (initial)
Appendix I.

Member Check Protocol
(Student and Faculty Interviews)

Preamble: The purpose of this conversation is for me to “play back” to you what I have understood from what you told me during our recent interview and for you to let me know how accurately you think I have interpreted your responses to my questions. This is my opportunity to check whether I am listening effectively to what you are telling me, so you should tell me if you think I've misunderstood. You can also tell me if you’ve changed your mind since you first responded to the question.

Emic questions arising from the previous interview:
Appendix J.

Conversation Guides for Student Interviews

Interview 1

How / in what ways do you expect your life as a university student to be different from your life as a high school student?

When and how did you decide that you wanted to go to university? Who has influenced/contributed to your decision-making process?

What have you done so far to begin the transition process between high school and university? What experiences have you had that have begun to prepare you for transition into university?

What are you currently thinking that you would like to study at university? (this could include departments/ faculties where you might like to do your major, specific topics or areas of interest that you’d like to explore, career paths you’re considering following) Why do you want to study this?

What is your current understanding about “how things work” in these departments/ faculties/ areas of interest? What are your impressions about how experts in this field go about their work? What kinds of experiences have you had that have helped shape your understanding?

You were invited to participate in this study because you are identified as a gifted learner in your school district. What has being “gifted” meant for you in your school experiences so far? How do you think being “gifted” will affect you in university?

What are you most looking forward to as a participant in this study?

Is there anything you are concerned or worried about going into the study?

Interview 2

Tell me about how this experience is going for you so far.
Prompt questions/conversation starters if needed:

What are you enjoying most about the experience so far?
What are you enjoying the least?
What have you learned about university life?
What have you learned about the field/department/faculty you are working within for this project?
What have you learned about yourself?
How would you describe your relationship with your faculty partner?
How would you describe your relationship with the other participants?
How has the experience compared with what you expected it would be like?
Is there anything you would change about the experience?
In the first interview, you mentioned that you were concerned about xxx. Is this still a concern?

Interview 3

Note: Participants will be asked to bring to this interview a representation, in a mode of their choice, of the significance of the transition experience for them

Tell me about the representation you have brought with you.

Reflecting on this experience, how are you feeling now about transition between high school and university?

Have any of your plans for university (e.g. where to attend, what to study) changed while participating in this study?

Have any of your expectations about university life changed while participating in this study?

What are some things you have learned about university life while participating in this study?

What are some things you have learned about (the field of interest/faculty area) while participating in this study?

How would you describe your relationship with your faculty partner?
How important has it been to you to share this experience with the other (student) participants?

What else would you like to say about this experience?
Appendix K.

Conversation Guides for Faculty Interviews

Interview 1

What are some of the important ‘practices’ of your discipline? What would be some modes of research, ways of doing things, ‘insider information’ that you would think it important to pass on to someone who was ‘apprenticing’ with you?

In your view/experience, how are newcomers to your discipline ‘initiated’? What does a person typically have to do in the process of gaining full membership in the discipline?

What would you most like to share with the student you will be partnered with? How do you think you could be the most helpful to her/him as she/he attempts a scholarly investigation in your field?

Have you had any relationships you would describe as mentoring relationships, within your field? How would you describe your role in these relationships?

What do you think you can offer specifically to a “gifted” high school student during this opportunity?

What are you most looking forward to in participating in this study? Why did you want to participate?

Is there anything you are concerned or worried about going into the study?

Interview 2

In your view, what are some important things your student partner has learned during your time working together?

Reflecting on the important practices of your discipline that you described in our first interview, to what extent do you feel that the student has been initiated into the discipline?

Tell me about something you learned through participating in this experience with your student partner.

How would you describe your relationship with your student partner?

Reflecting on this study and the opportunities provided to the students, how would you evaluate the experience? What feedback could you offer?
Appendix L.

Emic Questions Added to Faculty Interview 2 Conversation Guide

In the first round of interviews last summer, a couple of faculty members observed that sometimes students participate in programs like this for pragmatic reasons like wanting to have something to put on their resumes or ‘filling up their CV’s’ rather than because they are highly motivated to learn. I grew curious about this and I’m wondering, what impressions did you have of the student you worked with, in this regard?

In the first round, a couple of faculty members talked about previous projects they’d been involved in, working with high school students, and said that they often noticed a declining interest level by the students after an initial burst of enthusiasm. What could you say about the student you worked with, in this regard? To what extent would you say that the student seemed to sustain interest or lose interest over the course of these few months?

Many faculty participants talked in the first interview about hoping that the students would take initiative to learn, to ask questions, and to speak up if they did not understand something or wanted to learn more. What could you say about your student partner’s level of initiative?

Initially, many faculty expressed concern about your own ability to meet the student at the right level – challenging them without going over their heads. To what extent do you think you have met the student you worked with at the ‘right’ level?

People define giftedness many different ways. These students were here by virtue of meeting a set of criteria used by one school district in conformance with the Ministry of Education’s definition of a gifted learner. After working with this student, what is your perspective on the degree to which you would consider them ‘gifted’?