

**EXAMINING CULTURALLY RESPONSIVE EDUCATION IN THE CONTEXT
OF AN ELEMENTARY SCHOOL SCIENCE UNIT**

by

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A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in

The Faculty of Graduate Studies
(Curriculum Studies)

THE UNIVERSITY OF BRITISH COLUMBIA
(Vancouver)

October 2010

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Abstract

This study is a reflective examination of my practice as an educator in which I explore how aspects of culturally responsive curriculum and pedagogy are enacted in the classroom. Specifically, it is the story of how I endeavored to make sense of the pedagogical decisions and actions that I made while preparing and teaching a science unit in my grade two classroom. I examine the ways in which I held high expectations for each student, developed learning activities that were meaningful, relevant, useful and important to each student, valued and built upon the students' strengths, incorporated community interests and social justice, and built reciprocal relationships with the students and their families. I also examine how my thinking and knowledge was enriched and deepened by the experience of intentionally taking up cultural responsiveness as something I wanted not only to enact, but also study.

The main data source for this study was a research journal. Other sources of data included samples of newsletters, blog posts and instructional planning notes as well as a parent/guardian questionnaire, transcripts from a student feedback session and samples of student work. A detailed, thick description and analysis with direct quotations captures my own perspective and experience as a teacher, as well as that of my students and their families.

Preface

This research was approved by:

The University of British Columbia
Office of Research Services
Behavioural Research Ethics Board

Certificate Number: H09-02216 (see Appendix A)

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Acknowledgements

I thank my students and their families for their contributions to this research. I also thank my research supervisor Dr. Cynthia Nicol and committee members Dr. Linda Farr Darling and Dr. Samson Nashon for their guidance and my family for their support and encouragement.

Chapter 1: Introduction

When students enter the classroom they do not arrive as “blank slates” or “empty vessels.” “They enter as persons with language, with thoughts about how the world is working and with ideas about how to behave. In addition, they have developed their own unique ways of thinking and learning” (Shade, Kelly, & Oberg, 1997, p. 19). Each student comes to the classroom as a cultural being with a wealth of experience, knowledge and values. In Canada, where cultural diversity is an official part of society, there are a “multitude of multiethnic and multi-varied peoples, contributions and influences” (Gay, 2000, p. 208). This diversity is reflected in the students who attend the school where I teach, who have a variety of cultural identities, ways of knowing, values and interests as well as a variety of family situations and academic skills.

Unfortunately, education in Canada has traditionally been focused around a “one size fits all” approach, which neglects the needs and interests of students who are not part of the dominant culture. As a teacher of diverse students, I recognize that such an approach is highly problematic and socially unjust. Instead, I desire to teach in a way that is responsive to the students’ cultures and attentive to their needs and interests. We know from the literature that culturally responsive education is an approach that can be used to engage all students in meaningful learning. It involves recognizing and respecting the diversity of the students and teaching in a way that is appropriate for the educational context. Shade et al. (1997) describe this approach as being “rich and meaningful because it take into consideration the experiences, realities, and interests of the students” (p. 112). Rather than ignoring the students’ ways of knowing, teachers seek to build on the students’ and families’ experiences and knowledge by learning what they

already know from their home and community and using that as a foundation for helping them develop new ideas, concepts and understanding (Amatea, 2009; Shade et al., 1997).

One of the main goals of culturally responsive education is to attend to prominent educational issues in order to bring about social transformation, justice and equity (Egbo, 2009; Baker, Nicol and Archibald, 2009). An emphasis is placed on the development of reciprocal relationships that are fostered in the educational community in order to respond to the specific needs of the students, their families and their communities. The students, families and community members are all involved in the decision making process and power and responsibility is shared through a collaboration paradigm.

Culturally responsive education also focuses on making learning meaningful, relevant, useful and important for the students. For example, learning can be more meaningful when there is a purpose for learning and when it is applicable to real life. In addition, we know from the literature that students are more successful in their learning when high expectations are held for them. In culturally responsive education there is an underlying belief and recognition that all children can be successful and that all students have strengths. These strengths need to be identified and built upon in the curriculum. Furthermore, the students need opportunities to learn in ways that are preferred by them. Each student's strengths and ways of learning are viewed as being useful learning resources. It has also been shown that it is beneficial to use a variety of teaching methods and materials since there is "no single best teaching method that will effectively reach all students at all times" (Protheroe, 1991, p. 21).

Although there is a large research base on culturally relevant, culturally sensitive, culturally compatible and culturally responsive education (for example, Ladson-Billings, 2001, 1994; Irvine, 2002; Gay, 2010; Shade et al., 1997; Villegas, 1991; Protheroe, 1991), there are few examples or case studies of how this could be enacted in a primary classroom. A number of studies have focused on culturally responsive education in the context of secondary schools (for example, Adkins-Coleman, 2010; Gordon, Iwamoto, Ward, Potts, & Boyd, 2009; Serpell, Hayling, Stevenson, & Kern, 2009; Garza, 2009; Rodriguez, Jones, Pang, & Park, 2004), in preschool education (for example, Souto-Manning & Mitchell, 2010) and in pre-service teacher education programs (for example, Averill, Anderson, Easton, Te Maro, Smith, & Hynds, 2009; Lim, Maxwell, Able-Boone, & Zimmer, 2009; Culp, Chepyator-Thomson, & Hsu, 2009; Xin, & Gang, 2009; Zhao, Meyers, & Meyers, 2009; Kidd, Sánchez, & Thorp, 2008; Siwatu, 2007; Barnes, 2006; Duarte & Reed, 2004; Escamilla, & Nathenson-Mejía, 2003; Townsend, 2002). Nevertheless, there is much that we do not know in terms of what culturally responsive education “looks” like in a primary classroom, particularly from the perspective of the “significant actors” in the classroom. This study provides an examination of culturally responsive education in a primary classroom setting and tells the story of this experience from the perspective of those who are directly involved: from my perspective as the teacher, who has professional responsibility for what goes on in the classroom, and from that of my students and their families.

1.1 Purpose

The purpose of this study is to examine how aspects of culturally responsive pedagogy and curriculum were enacted in my classroom. I worked to make sense of the

pedagogical decisions and actions that I made during a three month science unit for grade two students and studied in detail how I used this approach to teaching. I also examine how my thinking and knowledge was changed by the experience of intentionally taking up cultural responsiveness as something I wanted not only to enact, but also study.

1.2 Research Question

How will my understanding of teaching practice change when I explicitly bring the principles of culturally responsive teaching into a grade two science unit?

Chapter 2: Literature Review

Given that each student who enters the classroom is unique in regards to his or her cultural identity, way of knowing, values and interests, it follows that a “one size fits all” curriculum and pedagogy is not suitable. Curriculum can be described as being “the organized environment for learning what is thought to be important knowledge” (Nieto, 2000, p. 96). However, since only a tiny amount of the knowledge that is available ends up in textbooks and teachers’ guides, the curriculum is never neutral. Rather, it represents what is considered to be important and necessary knowledge by those who are dominant in a society (Nieto, 2000). The curriculum in many schools is used as a form of social control in order to maintain the status of those who dominate society and often excludes the experiences and perspectives of all but a few dominant groups (Ellsworth, 1994). Amatea (2009) argues that “one size fits all curricula do little to support the unique and rich backgrounds of children . . . they send implicit messages to children that their home language and culture are not valued or of use in school” (p. 250).

Eurocentric values and ways of knowing have become the dominant culture in Canadian society with mainstream ethnocentrism and hegemony being so deeply embedded in “the structures, ethos, programs, and etiquette of schools that it is considered the ‘normal’ and right thing to do” (Gay, 2000, p. 9). This has led to values, ways of knowing and cultural identities that deviate from the dominant ones being considered different, deviant or “other.” Hoover, Klingner, Baca and Patton (2008) argue that “those in power demonstrate a historical and natural inclination to support and perpetuate *their* dominance by reinforcing cultural, class and language norms, conventions, and traditions in a way that best suits them and their class” (p. 30).

There is a history of institutionalized and systemic racism in Canada, which has been perpetuated to the present causing people of European-descent or those who fit into the socially constructed white race to be considered to be superior. Lipsitz (2005) explains that there is a history of “conscious and deliberate actions” which have created advantages for European Canadians and Americans. Members of this dominant group receive “rewards, resources, and opportunities” because of this identity and the power that goes along with being a member of a dominant group (Lipsitz, 2005, p. 83). Certain life chances and opportunities are given to members of this group. Wildman and David (2005) suggest that “members of the privileged group gain many benefits by their affiliation with the dominant side of the power system” (p. 99). Johnson (2005) explains, “regardless of which group we’re talking about, privilege generally allows people to assume a certain level of acceptance, inclusion, and respect in the world, to operate within a relatively wide comfort zone” (p. 103).

McIntosh (1998) describes her white privilege as being an invisible knapsack. Members of the dominant culture have been given many privileges including, but not limited to, getting into college easily, getting a job easily and being employed by people who have similar personal histories, finding a home to rent or purchase with ease, seeing people of the same race widely represented on television and in magazines and newspapers, being oblivious of the language and customs of others without feeling any penalty, having representatives in government and even being able to find hair products in any store and having band-aids that are “flesh colour.” Additionally, Kendall (2006) suggests,

white people are presented in all forms of media as being the decision makers, the history creators, the ones who are, in the main, valuable individuals; we are the standards of beauty - with rare exceptions, mannequins in store windows have our skin color, people in commercials look like us, dolls look like us, and Miss America, the supposed paragon of beauty, is almost always white (p.110).

The privileges and benefits that are given to certain members of society are bestowed in an impersonal and systematic way. As argued by Kendall (2006), they cannot be earned or given back. “Our choice is to use them in such a way as to dismantle the systems that keep the superiority of whiteness in place” (p. 62).

Pierre Bourdieu’s theory of *cultural capital*, which refers to the knowledge or skills that a person obtains to enable him or her to achieve a certain status in society, is helpful in describing how schools validate and reinforce the knowledge of students from dominant cultural groups. This validation takes place through the decisions to include certain knowledge in the curriculum, thereby reflecting the knowledge and values of such groups (Bland & Atweh, 2007; Nieto, 2000).

The cultural model held up for all is not within easy reach of all, and only token numbers of students from less valued groups can achieve it. If those from dominated groups learn and take on this cultural capital – along the way losing their own culture, language, and values – they may succeed. In this way, the myth of a meritocracy is maintained while few students from dominated groups are permitted to succeed (Nieto, 2000, p. 284).

Nieto argues that the validation of knowledge and values of the dominant culture represents a symbolic violence against groups that are devalued. Egbo (2009) argues that, with the *Canadian Charter of Rights and Freedoms* in mind, the dominance of Eurocentric knowledge in schools in many parts of Canada can be considered to be institutional discrimination and racism and a violation of the principles of social justice.

The ethnocentric assumptions, expectations, protocols and practices that are prevalent in school are socially constructed and therefore can be changed. Spencer and Vavra (2009) argue that “teachers have resorted to less effective measures in attempts to meet the needs of their diverse students. Often their efforts consist of minimal, fragmented content such as discussing holidays, reading multicultural literature, or having international food fairs” (p. 10). It is not enough to simply include “ethnic content” in the curriculum, which can take on a superficial meaning with the focus being mainly on “foods, festivals and fairs” or “saris, somosas and steel drums.” Delgado-Gaitan (2006) explains,

Music, dance, cuisine, and holidays are integral to all cultures because they unite people; they are rooted in the meaning of people’s real culture. However, when only the visible, ideal culture is spotlighted, it results in stereotyping, making exotic and minimizing people’s real-life, complex experience (p. viii).

In order to bring about change, it is necessary to go beyond a superficial understanding of culture.

2.1 Defining Culture

Edward Hall (1989) suggests that culture is a set of invisible patterns that become normal ways of acting, feeling and being. Shade et al. (1997) define culture as “a social system that represents an accumulation of beliefs, attitudes, habits, values and practices that serve as a filter through which a group of people view and respond to the world in which they live” (p. 18). This includes, for example, communication styles, attitudes, values and family relationships. “Culture does *not* determine a child’s ability or intelligence, but it can produce different ways of knowing and learning” (Protheroe, 1991, p. 8).

Weaver's (1986) iceberg metaphor illustrates the many layers of culture and language associated with culture. The three parts of the "iceberg" or culture are described as surface, folk and deep culture.

As one views an iceberg, one will notice that the majority of the iceberg is out of view of the observer, not apparent and out of consciousness . . . elements of 'surface' or 'folk' culture that are usually readily apparent in an iceberg or 'culture' provide the foci of most cultural exchanges, even though these elements represent limited manifestations of deeper structures of cultural existence (Hoover et al., 2008, p. 33-34).

When students come to school they bring their home cultures, developed through interaction with family and community members (Chan, 2007). If students do not have ways to ground new learning in their experiences and cultures "they may become further alienated from education and 'made to feel mistrustful of their own voices, their own ways of making sense'" (Greene, 1995, p. 110, as cited in Bland and Atweh, 2007, p. 338). The school may become distanced from the home and the teacher may become distanced from the parents. "The family's informal teaching becomes, in the sense of advancing in the education system, 'irrelevant if not downright harmful'" (Bernstein, 1997, p. 69, as cited in Bland and Atweh, 2007, p. 338). Bergeron (2008) describes this as a mismatch between home and school expectations. "It can be suggested that those students who are not members of the dominant ethnic group can be at risk when the social and cultural context of learning is foreign, uncomfortable, or confusing" (Pransky & Baily, 2002, as cited in Bergeron, 2008, p. 6). Gay (2000) warns that if educators ignore the values, ways of knowing and cultural identities of students "they will persist in imposing cultural hegemony, personal denigration, educational inequality, and academic underachievement upon them" (p. 25).

2.2 Culturally Responsive Education

A number of scholars (for example, Ladson-Billings, 2001, 1994; Irvine, 2002; Gay, 2010; Shade, Kelly and Oberg, 1997; Villegas, 1991; Protheroe and Barsdate, 1991) have examined the connection between culture and education and have used a variety of terms to describe their approaches including “culturally relevant, sensitive, centered, congruent, reflective, mediated, contextualized, synchronized and responsive” (Gay, 2000, p. 29). Ladson-Billings (2001) uses the term “culturally relevant” and explains the difference between culturally relevant teaching and “assimilationist” teaching: “juxtaposed to ‘assimilationist’ teaching that is designed to help students fit into the existing social order, culturally relevant teaching is a pedagogy of opposition that recognizes and celebrates student culture” (p. 202). She argues,

The primary goal of culturally relevant teaching is to empower students to critically examine the society in which they live and to work for social change. In order to do this, students must possess a variety of literacies: language-based, mathematical, scientific, artistic, musical, historical, cultural, economic, social, civic, and political (p. 202).

In her study of culturally relevant education, Ladson-Billings (1994) observed and interviewed eight teachers who were successful in teaching students in low-socioeconomic, mostly African American neighbourhoods. She found that the teachers had high expectations for their students’ learning and believed that all children can be successful. They also developed “intellectually rigorous and challenging classrooms” (p. x). Additionally, the teachers developed good relationships with their students and shared responsibility for the students’ learning with the parents, community members and the students themselves and encouraged the students to learn collaboratively. Furthermore, the teachers recognized that their students came to school with prior knowledge and they

used the students' knowledge as a way to help them make sense of the world and to develop new knowledge and skills.

Another scholar, Irvine (2002), focused her study on African American teachers' culturally *specific* pedagogy and how their ethnic identity, classroom practices, and beliefs are related to the achievement of their African American students. She describes how the teachers "not only viewed teaching as telling, guiding, and facilitating mastery of mandated content standards, but they also defined teaching as: caring, 'other mothering,' believing, disciplining, demanding the best, and as a calling" (p. 8). The teachers developed caring relationships with their students and "had strong beliefs about their students' ability to achieve despite widely publicized data, such as the black-white achievement gap, that could have convinced them otherwise" (p. 142). They had confidence in their ability to teach and believed that their students could learn. Irvine posits that the teachers' high expectations, along with their culturally specific teaching styles led to the success and achievement of the African American students they taught.

Gay (2010) describes culturally responsive pedagogy as a way to bring about necessary changes to the way that "African, Asian, Latino and Native American students are taught in U.S. schools" (p. xvii). She gathered observations, experiences and memories ideas from colleagues, graduate students, friends and family members and combined them with ideas from scholars, researchers and practitioners about teaching modes that work best in addition to sharing her own experience of culturally responsive teaching as a university professor. She argues that it is important for teachers to be genuinely caring, to have high expectations for the learning of all students and to put forth "relentless efforts in helping them meet high academic demands" (p. 75). She also

recommends that culturally responsive teaching include the needs, knowledge and participation of students in all aspects of education and be sensitive to students' communication and learning styles. Additionally, she suggests that curriculum content that is meaningful and relevant for students improves their learning and should start with the students' existing knowledge, connecting new knowledge to prior knowledge.

Shade et al. (1997) identify ways to structure a culturally *compatible* classroom and examine the impact of culture on learning. They argue that teachers need to consider the strengths and perspectives of the students in order to motivate students' learning and should develop a learning community in their classrooms. "If teachers help students learn in ways that are familiar and preferred by them, they can produce classrooms in which harmony and achievement exists" (p. 12). They also emphasize that the information that is being learned must be meaningful to the students, "fit with their current lifestyle and reality" and have "potential for helping them in the future" (p. 42). They suggest that teachers start from the students' own experiences and knowledge and build on this to help students understand new concepts.

Similarly, Villegas (1991) examines the achievement gap between minority and majority students and describes culturally responsive educational initiatives, including culturally responsive pedagogy for elementary school students in Hawaii and for African American students. She argues that teachers need to take a critical look at their teaching practices and recognize that all students are capable of learning. She also suggests that teachers implement an "enriched curriculum" for all students, establish links to their experiences and vary instructional strategies.

And finally, Protheroe (1991) argues that “teachers who maintain high academic standards and expectations for all their students, who view each child’s strengths and ways of learning as useful learning resources, and who use a variety of effective instructional strategies can successfully improve student learning” (p. 40) She recommends that teachers have a goal of educational excellence and incorporate the students’ diverse ways of learning in order to achieve that goal.

One of the main goals of “culturally relevant,” “culturally sensitive,” “culturally compatible” and “culturally responsive” education is social transformation (Egbo, 2009; Baker et al., 2009). It is not enough to simply add information into the curriculum about various cultures. Rather, it is necessary to change the structure of how education happens (Gay, 2000). Although the terms “culturally relevant,” “culturally sensitive,” “culturally compatible” and “culturally responsive” are often used interchangeably, there is a difference between them in regards to the approach that is used (Baker et al., 2009). For example, while the focus of culturally *relevant* education is to relieve an education problem (as determined by a teacher or researcher), culturally *responsive* education emphasizes the reciprocal relationships that are fostered in the educational community. “CRE is means of both attending to prominent educational issues, and a pledge to respond to the specific needs of students, their families, and their communities” (Baker et al., 2009, p. 8). The students, families and community members are involved in the decision making process as part of a democratic educational community.

2.2.1 Principles of Culturally Responsive Education

A number of the scholars previously mentioned (for example, Irvine and Armento, 2001; Gay, 2000, Ladson-Billings, 2001, 1994; Pewewardy, 1999; Protheroe, 1991; Villegas, 1991) have described what they consider to be principles of culturally responsive education:

- ❖ High academic and personal expectations are held for each student. Armento (2001) explains that “holding high expectations implies having a high level of confidence in each child, believing that each child has great human potential, and believing that each child wants to learn and to be successful” (p. 20). There is a positive learning environment, where there is an attitude of optimism and hope, recognizing that all of the students have the potential for maximum growth.
- ❖ The learning outcomes are meaningful, relevant, useful and important to each student (Irvine & Armento, 2001; Protheroe, 1991). Students feel as though what they are learning has a purpose and is applicable to real life.
- ❖ The students’ strengths are valued and built upon in the classroom activities. Protheroe (1991) argues that “the idea is to capitalize on each child’s strengths, viewing cultural ways of learning as resources to be used, rather than deficits to be remediated” (p. 20). The teacher is able to recognize and build upon the students strengths.
- ❖ A wide variety of teaching strategies are used that address different learning preferences. “Responsive teachers do not blindly follow one teaching method or use the same teaching methods and materials for all students” (Irvine, 2001, p. 4). Protheroe (1991) argues that “there is no single best teaching method that will

effectively reach all students at all times. Therefore, effective teachers always diversify their instruction in response to individual students' interests, personalities, and abilities" (p. 21). Taylor and Whittaker (2009) agree that it is helpful to all students when the teacher uses various approaches that are appropriate for different learning preferences.

- ❖ The classroom climate is based on social justice, democracy and equity (Armento, 2001; Villegas, 1991). Students are provided with equitable access to necessary learning resources and sufficient opportunities to learn. Students also have opportunities to play critical roles in developing the classroom community. They are encouraged to make choices and decisions in their learning, to discuss problems that arise and to work together to determine solutions.
- ❖ A reciprocal relationship is nurtured between the students' families and the school. Amatea (2009) argues that "viewing parents and families as co-experts challenges the established way in which power has been distributed in most schools in the past" (p. 38). Rather than viewing families as passive audience members or supporters of the learning process, power and responsibility is shared with families through a collaboration paradigm.

2.3 Teachers Researching their Own Classrooms

There is an increasing amount of written research by teachers who are researching their own classrooms. Zeichner (2001) suggests that there are a number of benefits to this form of research: not only does it provide a means for teachers to improve their practice, better understand a particular aspect of their practice and better understand one's practice in general, it can also create greater equity and social justice in schooling and

society. Heron and Reason (2001) argue that “the outcome of good research is not just books and academic papers, but is also the creative action of people to address matters that are important to them. Of course, it is concerned too with revisioning our understanding of the world, as well as transforming practice within it” (p. 179).

Additionally, teachers researching their own classrooms can produce knowledge that will be useful to others, either in the same setting or other settings. When research takes place in real classroom settings it allows for theories to be grounded in practice. Traditionally, research has focused mainly on theoretical knowledge and has made “very little connection between the researcher’s thinking and the concerns and experiences of people who are actually involved” (Heron & Reason, 2001, p. 179). Hobson (1996) suggests that research conducted by teachers “has gained greater value, not only in the educational research community, but also among classroom teachers who realize that investigations conceived, implemented, and evaluated by actual teachers in real classrooms among live school children promise to stand the tests of practicality and personal relevance” (p. 1).

Furthermore, Cochran-Smith and Lytle (1999) argue that the concept of teachers researching their own classrooms can “interrupt traditional views about the relationships of knowledge and practice and the roles of teachers in educational change, blurring the boundaries between teachers and researchers, knowers and doers, and experts and novices” (p. 22). It is important for teachers to conduct research in classroom settings because, as Hobson (1996) argues, “the teacher-researcher is not just standing back and observing some pristine phenomena from a distance. No, the teacher is in the midst of a group of children, and is doing: taking action, making things happen” (p. 2). Teachers

are “knowers” and “agents” in the classroom and in larger educational contexts.

Therefore, it is imperative that teachers be empowered to research their own classrooms, contribute to the greater body of knowledge and work to bring about social change.

Stenhouse (1985) describes “democratizing research” as a way to emancipate practitioners and genuinely improve curriculum (p. 1), while Carr and Kemmis (1986) challenge the “conformist” nature of education through teachers’ active participation in research (as cited in Cochran-Smith & Lytle, 1999). Additionally, participating in research activities can help teachers “to become more confidence in their ability to promote students learning, to become more proactive in dealing with difficult issues that arise in teaching, and to acquire habits and skills of inquiry that they use beyond the research experience” (Zeichner, 2001, p. 279).

Altrichter, Feldman, Posch and Somekh (2008) provide a number of examples of teachers who research their own classrooms and explain that “these teachers are ‘normal’ teachers, who reflect on their practice to strengthen and develop its positive features. They are not prepared to blindly accept the problems they face day to day, but instead reflect upon them and search for solutions and improvements” (p. 6). While there already exists a great deal of research written by teachers, there is very little that focuses on teachers researching their efforts at culturally responsive education in primary classrooms. In particular, there are very few studies that focus on what culturally responsive education looks like in a primary classroom from the teacher’s, students’ and families’ perspective. This study provides a valuable glimpse into a grade two classroom where culturally responsive education is enacted and tells the story of how I, as an

educator, made sense of my pedagogical decisions and actions and how the students and families responded.

Chapter 3: Research Methods

3.1 A Qualitative Action Research Approach

I chose to study culturally responsive education in my classroom using a qualitative action research approach. It was the most appropriate approach to answer the research question, “How will my understanding of teaching practice change when I explicitly bring the principles of culturally responsive teaching into a grade two science unit?” because this approach is based on a reflective process that works towards the development of an enriched, deepened, challenged, refined and/or modified understanding of the current situation. Action research also has the potential to bring about change and transformation. Altrichter, Kemmis, McTaggart and Zuber-Skerritt (1991) describe action research as something that happens “when people reflect on and improve their own work and their own situations by tightly linking their reflection with action and by making their experience public, not only to other participants, but also to other persons interested in the work and situation” (p. 8). It is carried out by people who are directly concerned with a social situation and in this case, the social situation is a classroom and the person who has professional responsibility for what goes on in the classroom is me, the teacher (Altrichter et al., 2008). The teacher takes action and makes things happen in the classroom, while also being intentional about reflecting on what is happening. Reflection is essential because it is the “process of making sense of one’s experience and telling the story of one’s journey” (p. 2).

The research described in this study is a “critical” or “emancipatory” form of action research because it is not only aimed at gaining a better understanding of what is happening in the classroom, but it is also aimed at transforming and changing the practice

of teaching towards more equity. Carr and Kemmis (1986) argue that in critical or emancipatory action research the researcher seeks to create conditions for a socially just society. This form of action research is particularly suitable for studying culturally responsive education because it aims to bring about greater equity and social justice through an approach that attends to the specific needs of the participants and focuses on developing respectful and reciprocal relationships with the students and their families.

One of the main features of this study is that it was participatory and collaborative: it involved working *with* and *for* the grade two students and their families at the school where I teach. Reason and Bradbury (2006) argue that “action research is only possible *with, for, and by* persons and communities, ideally involving all stakeholders in the questioning and sensemaking that informs the research, *and* in the action which is its focus” (p. 2). For teachers researching their own practice, an important objective of action research is “to develop and improve practice through research in the interests of all those concerned (Altrichter, Posch and Somekh, 1993, p. 74). Collins (2004) describes this approach as being ecological, “in the sense that it includes all the significant actors in a classroom research setting, including the children” (p. 349).

3.2 Context of the Research

The research project took place in my grade two classroom from mid-January to April 2010, with a two week break from school in March. It took place at an independent school that is operated by an association of parents whose children are enrolled in the school. The school was started in the mid-1970s by group of parents, mainly immigrants or descendents of immigrants from the Netherlands, who wanted their children to be

taught by Christian teachers at a school where the students are able to study the wonder of creation, develop their gifts and talents, serve others and care for the world in which they live. As the city where the school is located grew in population and became more diverse, the makeup of the school population also changed and became increasingly diverse. During the 2009-2010 school year there were approximately nine hundred students with diverse ethnic backgrounds and socio-economic statuses in pre-kindergarten to grade twelve.

The class that I taught during the research project was comprised of twenty-one students, twelve girls and nine boys. The students in my class and their families spoke a variety of languages including English, Korean, Mandarin, Tagalog, Russian, Norwegian and Dutch. I taught this class five days a week from Monday to Friday from 8:45 a.m. to 2:50 p.m. I taught all subject areas, except for music, which was taught by a music specialist in a separate music classroom. One of the science topics that the students were expected to learn about in grade two, as prescribed by British Columbia's Ministry of Education, was "Animal Growth and Changes." I developed this topic into an instructional unit in order to help the students learn new ideas, concepts and skills over a time period of approximately three months. The following table provides an overview of the main topics and questions of the unit as well as the activities and experiences that took place (Table 1).

| | Topic and Questions | Activities and Experiences |
|---|--|--|
| 1 | Accessing prior knowledge: What do we know about animals? How did we learn this? | Students used graphic organizers, wrote or drew what they knew. They also participated in discussions about their prior knowledge. Parents responded to questions in a newsletter. |
| 2 | Purpose for learning: Why learn about animals? | The students brainstormed reasons for learning about animals. |
| 3 | Asking questions about animals: What is a question? What are we wondering? | Students worked in groups and recorded their questions about animals. |
| 4 | Animal research projects: What do we want to learn? How can we find out? | Students chose an animal they were interested in learning about, wrote questions and researched for possible answers to their questions. The students shared their knowledge by creating research posters and by discussing what they learned. |
| 5 | Importance of Animals How are animals important? | The students' family members shared their knowledge about animals and how they are important to them. A community member (aboriginal cultural facilitator) visited the class to share a perspective about the importance of animals in aboriginal cultures. The students visited classical Chinese gardens to learn about the importance of animals in Chinese cultures. |
| 6 | Life cycles of pets: What is a life cycle? | Students brought their pets to school. The class visited a student's house to observe rabbits. Students created diagrams to show the life cycles of their pets. |

| | Topic and Questions | Activities and Experiences |
|----|--|---|
| 7 | Life cycle of a darkling beetle: How do beetles grow and change during their life cycle? | The students used their senses to observe a number of mealworms grow and change into pupae and then into adult beetles. The students recorded their observations by drawing and writing in their science journals. They watched a video about insects. |
| 8 | Life cycle of a chicken: How do chickens grow and change during their life cycle? | The students used their senses to observe chickens hatch from eggs and then grow and change. They recorded their observations by drawing and writing in their science journals. |
| 9 | Life cycle of a butterfly: How do butterflies grow and change during their life cycle? | The students used their senses to observe caterpillars grow and change into chrysalis and then into butterflies. They recorded their observations by drawing and writing in their science journals. |
| 10 | Lifecycle of salmon: How do salmon grow and change during their life cycle? | The students visited another class in the school to learn about the salmon life cycle and observe a tank for hatching salmon eggs. |
| 11 | Worms and Composting: What do we notice about worms? Why are they important? | Students recorded their observations of worms. |
| 12 | Hibernation and migration: What happens to animals in winter? | Students watched videos about hibernation and migration. They also participated in a mapping activity about butterfly migration and played a board game about salmon migration. |
| 13 | Accessing prior knowledge about endangered and extinct animals: What do we know about endangered and extinct | Students drew and wrote what they knew about endangered and extinct animals. |

| | Topic and Questions | Activities and Experiences |
|----|--|---|
| | animals? | |
| 14 | Endangered animal books: What do we want to learn? How can we find out? | Students chose an endangered animal they were interested in learning about, wrote questions and researched for possible answers to their questions. The students shared their knowledge by creating books and by discussing what they learned. |
| 15 | Endangered and extinct animals: How can we work for change in our community? | Students visited a local wildlife rescue association to learn about the effects humans have on animals. Students visited a nearby salmon hatchery and released salmon into a local river. A community member visited the class and students participated in a storm drain marking program in the school neighbourhood. Students created a mural project. |
| 16 | Unit Review: What did we learn? | The students watched a slideshow presentation of the unit activities. They also reviewed their work that they had collected in portfolios. They reflected on what they learned and shared their feedback on the unit in a class discussion. |

Table 1: Science Unit Overview

3.3 Description of the Teacher-Researcher

As the teacher and researcher in this project I was in the position of both an insider and an outsider. As a teacher in the classroom and as a member of the school community, I was an insider. I was familiar with the school context and already had contact and connections with the students and families. However, Tillman (2002) reminds us that “even when the researcher is a member of the same community, other factors may present an insider-outsider dilemma” (p. 9). While I was an insider in the

classroom and school community, I was, at times, also an outsider to the students' and families' cultural knowledge, experiences and interests.

I recognize that there are privileges and oppressions that come with my identity, not because of who I am as a person, but because of the history of racism and oppression in Canada and around the world. I have and continue to benefit from a history of institutionalized and systemic racism in Canada, which has been perpetuated to the present causing people of European-descent or those who fit into the socially constructed white race to be considered to be superior. I have received benefits, resources, and opportunities because of my identity and the power that goes along with being a member of a dominant group.

Growing up I attended schools with people who shared a similar culture, which brought about a certain comfort level due to shared way of viewing the world. As a child, I also attended an independent school operated by an association of parents whose children are enrolled in the school. The teachers encouraged "academic excellence" and taught a variety of subject areas. I was positively affected by my grade one teacher who I remember as being particularly gentle and kind, who made me feel at ease at school and interested in learning. She also taught art when I was in grade seven and took the class outdoors for drawing activities. Other good memories include making a button blanket when studying the indigenous nations of the West Coast of Canada in grade four and being able to choose to study the country of Nigeria for part of grade seven and creating a project to share what I learned.

My identity has benefited me and caused me to have privileges by giving me certain life chance and opportunities. For example, I have received all of the benefits of white privilege that McIntosh (1998) describes as her invisible knapsack. This includes, but is not limited to, getting into college easily, getting a job easily and being employed by people who have similar personal histories, having representatives in government, having vacation time on traditionally Christian holidays and even being able to find hair products that are designed for my hair in any store and having band-aids that are “flesh colour,” which means my skin colour. In addition to recognizing the privileges that come with my identity, I also know that there are oppressions that come with my identity as a woman in a society where males are considered to be dominant and have more power.

I became particularly interested in teaching in a way that is meaningful and relevant for students while I was in an undergraduate program in university. My first pre-service teaching experience was in a grade five classroom. My cooperating teacher taught social studies and language arts. I was disheartened by his approach to teaching which mostly included reading aloud from a textbook, having the students copy notes from the chalkboard and giving tests. I noticed that some of the students’ learning needs were not being addressed. This motivated me to make learning more interesting for the students. Some of the learning activities that I created included an interactive bulletin board for students to see and to move around labels of the thirteen colonies, a newspaper project in which students wrote articles about happenings in the thirteen colonies from the perspective of people who live in the past, as well as a letter writing activity to the government representatives about issues that were important to the students. During my second pre-service experience I taught a grade three class. I continued to work towards

making learning more interesting for the students such as by organizing science experiments and bringing in a local scientist to demonstrate and involve the students in experiments. I graduated from university with a Bachelors degree in elementary education and minors in music and art.

After graduating from university I began teaching at the school where I this research project took place. I was happy to be able to work with additional teachers who were teaching the same grade level as me, who shared teaching ideas with me from their own experiences and helped me to learn more about integrating the subject areas and developing curriculum. They worked with me, but also gave me the freedom to try out my own ideas. As I was teaching, I became more aware of the specific needs of my students and I worked to make learning more responsive to them. I strived to establish a positive and caring learning environment and to listen closely to them, noticing what they were interested in and what was happening in their lives. Meanwhile, I became more aware of the privileges and oppressions that come with my identity and more conscious of the fact that certain students are disempowered by the school system. This motivated me to reject meritocratic educational ideologies that blame the students and their families for struggles or discontinuities that occur between the home and school and to work for change in the way education happens.

3.4 Data Sources

The main data source for this study was a research journal. Other sources of data included samples of newsletters, blog posts and instructional planning notes as well as transcripts from a student feedback session, samples of student work and a

parent/guardian questionnaire. The research journal was used to record reflections about my practice as an educator. Irvine (2001) argues that “because there are no quick and simple solutions, no single program or packaged intervention to train teachers to teach culturally diverse students, the issue of reflection becomes critically important” (p. 11). I used journal writing to document the questions that I had about teaching in a way that is culturally responsive and to reflect on the pedagogical decisions and actions that I made while preparing and teaching the science unit. The principles of culturally responsive education guided my teaching and I reflected and wrote about these principles in my journal (see Appendix B for journal excerpts). Hobson (1996) suggests that “such writing is especially helpful when it comes to reading the journals because the entries form a written record of practice over a period of time that teachers can use to evaluate their experiences” (p. 11).

Through journal writing, I examined the ways in which my practice embodied aspects of culturally responsive education, including how and in which contexts I: 1) had high expectations for students; 2) made instruction meaningful, relevant and useful for students; 3) built instructional foundations that valued students' strengths; 4) incorporated community interests and social justice; and 5) built reciprocal relationships with students, their families and the school. The following question was used to focus my daily reflective thinking: How did I teach in ways that met the needs and interests of my diverse students in class and how do I know? The content of the journal did not focus on individual students but on my general pedagogical decisions and how these were generally taken up in the class. Throughout the study I also collected samples of

communication with families (e.g., newsletters and blog posts that I wrote to families) and copies of my instructional planning notes.

At the beginning of the science unit the students' families received by mail an envelope with: 1) a letter of initial contact that explained the study; and 2) a letter of consent requesting parents for consent to make copies/photographs of student work during the unit and to audio record and transcribe the students' feedback upon completion of the unit. At the end of the unit and as part of normal classroom procedures, students gathered to share their thoughts and ideas about the unit. The following questions guided the unit feedback session:

- ❖ What did you learn during this unit?
- ❖ What did you like best about this unit?
- ❖ Which learning activities did you enjoy participating in?
- ❖ What did you not like about this unit?
- ❖ If you were teaching this unit, what would you do differently?

As this feedback session was part of normal practice it occurred during class time and took about thirty minutes. It was important that I asked the discussion questions because I was most familiar with the science unit and therefore was better able to ask follow-up questions to deepen and clarify the responses given to questions. In addition to audio-recording the students' responses to the unit, I collected copies and photographs of their work. From a class of twenty-one, eleven students with parental consent agreed to have their work copied or photographed and ten agreed to have their feedback transcribed. The responses of students who chose not to participate in the study were not transcribed. Collins (2004) argues that we are ethically, logically, and professionally obliged to invite students to participate in the research. "If we value the research benefits that could result

from reflections on learning by the students themselves, we must value their participation in research” (p. 353). Furthermore, by including students in the research, the voices of students that may have been previously silenced or devalued had an opportunity to be heard.

Following the teaching of the science unit parents were sent a consent cover sheet inviting them to complete a questionnaire on their views of the science unit and how it may have engaged their child. Egbo (2009) suggests that one authentic way of determining the success of changes implemented is to solicit feedback from students and parents. The students’ families were invited to provide their feedback on the science unit through an anonymous questionnaire (see Appendix C) as a way to share their perspective on how the science unit was meaningful, relevant, useful and important for their children. Six out of twenty-one parents or guardians participated in the questionnaire.

3.5 Ethical Issues

In conducting this research it was important to consider any ethical issues that may arise. Jones and Stanley (2008) refer to it as a “complicated balancing act: compliance with legal and institutional requirements, respect for education professionals’ autonomy and integrity, protection of the vulnerable and minority groups, safeguarding children’s entitlement to express their views and ensuring the trustworthiness of research” (p. 36). Collins (2004) and Flinders (1992) suggest that an ecological approach to ethics be used with collaborative action research. “An ecological approach simply reminds us that the processes of informed consent – giving information, reciprocating or collaborating with others – require a special sensitivity to otherwise taken-for-granted

aspects of our social and professional lives” (Flinders, 1992, p. 110). An ecological approach is well-suited to the participatory aspect of the research.

In addition to this, ethical considerations needed to be informed by a caring attitude towards others. Flinders (1992) argues that “caring in research honors the trust on which the researcher’s access to information is predicated and out of which develops a sense of collaborative labor” (p. 107). Participants were not to be treated as a means, but as ends in themselves. Participatory action research also “does not allow for the concept of people as subjects in research. That is, the traditional practice of the university researcher doing research on people in the field does not constitute participation” (Collins, 2004, p. 35). In this study, I sought to develop and maintain relationships with the parents and students that are non-exploitive and that enhanced the lives of all of the participants (Stringer, 2007).

Since the research involved student and parent/guardian participants, it was necessary to obtain consent from the parents for them and for their children to participate in the research. Prospective research participants were given the opportunity to provide free and informed consent before the research began. Since some of the research participants were students who are children, their parents or legal guardians were asked to provide free and informed consent. The students were invited to provide verbal assent. Written information about the research, including the initial letter of contact, consent form and parent/guardian questionnaire were available in English, Korean and Mandarin. The participants were informed that they were free not to participate and had the right to stop participating at any time.

Nolen and Vander Putten (2007) caution that when students are asked to decide whether to participate in research being conducted by their teacher, they may not “possess the maturity or independence necessary to decline participation in studies conducted by researchers on whom they are dependent for their grades, access to resources, and enriching experiences while in school” (p. 402). However, Collins (2004) argues that “including children in research does not compromise their role as students or coerce them into an adult agenda. Their role is still that of learners” (p. 353). It was important to make known that a student’s or parent’s decision not to participate would be fully respected and that they would not be penalized in any way. Consent and assent documents clearly stated that there was no penalty for refusing to participate and that the students’ report cards would not be affected by the decision to participate. The documents indicated to the parents/guardians that I was aware that they may feel pressure to agree to their child’s participation because I was both the researcher and teacher and I assured them in the consent form that this is not the case.

Informed consent is an interesting ethical issue to consider in qualitative inquiry. Flinders (1992) suggests that reciprocity can be thought of as a concept that goes beyond informed consent, by focusing on mutual benefit and support. For me as a researcher, this meant that I needed to develop a partnership with the people with whom I conducted action research. Flinders suggests that I would protect my own interests by acting in the best interests of the research participants. The research relationship should also be one of care and collaboration. It involved respect for the people that I was working with and required me to be sensitive to cultural differences in terms of communication and patterns of understanding. Nolen and Van Putten (2007) make a helpful suggestion to “establish a

relationship between the researcher and participants that is as democratic as possible. In doing so, the participants become part of the decision-making process in all phases of the action research” (p. 405).

Confidentiality was also an important ethical issue to consider. Anonymity was guaranteed by ensuring that the research participants are not identified by name in any reports of the completed study. A locked cabinet was used for the storage of data. Data was also stored on a non-networked computer protected by a password. When the information that was collected was shared or made public, research participants are anonymous.

3.6 Data Analysis

Following the teaching of the unit, I gathered the data that I collected from my reflections in the research journal, my instructional planning notes, the classroom newsletters and blog entries that I wrote to families, copies and photographs of student work, transcripts from the student feedback session and responses to the parent/guardian questionnaire. The process of interpreting the data required me to use a reflexive frame. Eyre (2001) describes a reflexive frame as something that “foregrounds the researcher’s political position, while recognizing the shifting, changing, multiple character of that position. It brings to light the researcher’s role in the study, and the complex ethical issues (beyond university ethics guidelines) that arise for the researcher in interpreting others’ stories” (p. 197).

The initial reading of the data helped me get an overall picture of the research. During the second, third and fourth readings of the data I used deductive analysis and

looked for ways that my practice embodied the principles of culturally responsive education. I categorized the data based on the following principles: holding high expectations for the students' learning, making instruction meaningful, relevant, important and useful for students, building instructional foundations that valued students' strengths, incorporating community interests and social justice, and building reciprocal relationships with students, their families and the school. I made notes in which I highlighted examples of culturally responsive education in my practice.

I then realized that I needed to move beyond simply listing the ways that my practice embodied the principles of culturally responsive education and move towards thinking about the research data as a story of how culturally responsive education was enacted in this particular context. I used inductive analysis, which means that categories, themes and patterns emerged from the data. I organized the data based on six main themes that reveal my approach to culturally responsive education during the science unit: accessing prior knowledge, using inquiry as an approach to learning, introducing multiple perspectives, learning about life cycles in a meaningful way, creating artwork (multiple ways of experiencing the curriculum) and working for change in the community.

Chapter 4: Results

Through a process of action and reflection I sought to make sense of my experience, my students' experience and their families' experience of culturally responsive education. It is through narrative that I tell the story of our journey. Hobson (1996) explains that "one way our mind makes sense of the world is through narrative. Our narratives include our insights, searches for meaning, and the connectedness we find in the world" (p. 6).

The story takes place in a large and spacious grade two classroom where the students' desks are arranged in groups of three or four so that the students can interact easily, ask each other questions and work together on learning activities. One part of the classroom contains couches, an armchair and a number of comfortable cushions and pillows along with bookshelves displaying a wide variety of books and magazines from the school library. The bookshelves are overflowing with information books about animals as well as an array of fictional stories in multiple languages. Colourful examples of the students' work are displayed on the classroom walls, including artwork, writing samples, questions and graphic organizers. There is a large window that looks out onto a small patch of forest, one of the small remaining areas of the natural landscape in what is now a busy urban area.

4.1 Accessing Prior Knowledge

Three students sat around a blue hexagon-shaped table where they created web diagrams about animals. They started to record some of the insect names they knew, but one of the students was unsure if they should be including insects at all. "Insects are not animals," he suggested. He got a quick reaction from his classmates who responded,

“Yes they are. They’re not a plant!” The group decided to write down a few more ideas about insects. “I know one . . . spiders,” stated one of the boys. His classmate disagreed, “No! Spiders are not insects because they have eight legs.” So they decided that spiders should not be grouped with the other insects. They continued recording what they knew about animals and recalled their own experiences. The rest of the class was scattered around the classroom. Some of the students worked alone by desks, on couches or in a small tent that is setup in the classroom while others lay on the carpeted floor or worked in small groups by clusters of desks and tables.

We were beginning a new science unit in grade two and I wanted to find out more about students’ knowledge and experiences with animals. What do they know that could ground our lessons on animal characteristics and life cycles? I could start the science unit with a predetermined list of information that I was going to impart onto them, but from spending time with them during the school year, listening to them and noticing what they were interested in, I knew that their minds are not blank slates waiting to be filled with information. I wanted to build on the students’ and families’ experiences and knowledge by learning what they already knew from their homes and community and use that as a foundation for helping them to develop new ideas, concepts and understanding. By starting with what they already knew and experienced, I would be able to design learning activities that connected to the students’ lives and “build bridges” between their prior knowledge and new knowledge.

My first thought was to have a class discussion in which the students verbally shared their ideas about animals, but I change my mind and decided that it would be a more meaningful activity for them if they were able to show their knowledge in a variety

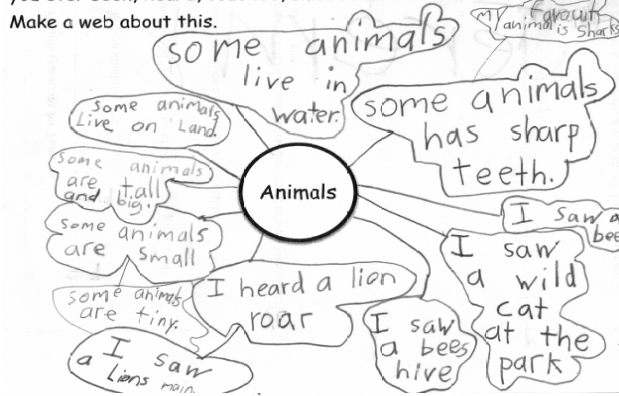
of ways. I created a number of templates that the students could choose from, which provided them with the options of writing sentences, making a list, making a web, drawing a picture or making a chart and I ask the class, “What do you know about animals? How did you learn this? Have you ever seen, heard, touched, smelled and/or tasted an animal?” The students seemed interested in the topic of animals and were eager to show what they knew. They hurried to find a place to work and began recording their ideas, talking amongst each other and sharing their ideas with me. As I circulated around the classroom and interacted with the students one of them told me, “My dad used to bring frogs and a water snake into the bathtub at his house when he was about six years old. We have a lot of pets at our house including dogs, cats, rabbits and a hamster.”

There were a few students in my class for whom writing and spelling was challenging so I decided to work one-to-one with a student to create a web of what he knew. He named the animals he knew and then gave details about those animals, which I recorded for him as a web. Later, I worked together with a student who recently started learning English to find out more about her knowledge and experiences with animals. She shared her knowledge and experiences in Korean, another student translated what she said and I acted as the recorder. She also drew small pictures next to each sentence or phrase to remind her of what it said. I realized that another option would have been for her to record her ideas on paper in Korean and then to work with a classmate to translate it.

I originally thought that the students would each choose one of the formats to show their knowledge, but some of them wanted to use more than one format such as drawing a picture about animals and completing a chart or making a list. I also thought

that this activity would take about thirty to forty minutes, but since the students were actively engaged in recording their knowledge and wanted to keep working (they had many ideas!) we continued for a couple of days before displaying their work in the classroom. The students' enthusiasm for and engagement in the activity confirmed for me that I was meeting their needs and interests. The following examples of student work reveal their prior knowledge about both domestic and wild animals (Figure 1). Many of the students had experiences around pets and some of them had seen animals in nature or in a zoo. They had also learned about animals from their families, from books, television, movies or from other places. While some of the students shared similar knowledge and experiences as others in the class, there was also a great deal of variety in terms of what they knew and how they came to develop their knowledge.

What do you know about animals? How did you learn this? Have you ever seen, heard, touched, smelled and/or tasted an animal? Make a web about this.



- I know that dogs have very good sense of smell
- Rabbits can jump very far because of their legs
- Squirrels hibernate in the winter
- Cat's eyes glow when it is dark.
- Elephants have soft pads on their feet
- Cats sprang their tails up when they're angry
- Male peacocks have beautiful feathers to give attention from female peacocks
- Parrots squak really loudly
- Male Lions have golden manes
- Octopuses have eight arms
- Dolphins look like fish but they're mammals

Animals give food
 Some animals are extinct
 because hunters are killing
 them. I have a bird I named him
 cracker. He is cute. His food are seeds.
 Sometimes my dad gives him some bread.
 I am sad for those animals because their family
 will be sad. I am happy God made animals. Thank you



Figure 1: Samples of Student Prior Knowledge

In addition to wanting to find out more about the *students'* knowledge and experiences with animals, I wanted to find out more about the *families'* knowledge of animals and what *they* desired for their children to learn during the science unit. By doing this I would be able to develop reciprocal relationships with the families and have an opportunity to hear their perspectives about animals and what and how they wanted their children to learn. I included a few questions in the class newsletter such as, "What knowledge do you have about animals? How are animals important to you? What do you want your child to learn about animals? What kinds of learning activities would you like to see your child doing during this unit?" I encouraged the students to talk with their family members about what they knew about animals and how animals were important to their families. Quite a few of the students' families responded by sending me their answers in notes or by email, which I shared with the class so that the students would recognize the importance of their families' knowledge and experiences. Additionally, the families' responses influenced the instructional decisions that I made during the science unit. The following examples of responses from the families reveal that a number of family members had experiences around domestic animals (Figure 2). A few of the family members also had experiences caring for animals such as chickens, rabbits and cows. Animals were considered to be important for a variety of reasons including companionship, comfort, as pets, for food and for protection and some families expressed the need to be harmonious with nature and a concern for wild animals that are endangered due to over-hunting and pollution.

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|---|
| <p>Animals are living creatures that we see in our environment and are called God's creation. They could be scary at times especially the wild animals or be a man's friend such as a dog. Grizzly bears – they could be in extinction if they will not stop killing or hunting these bears. Animals are important because I believe they have the same interests in continuing to exist like I do. And some animals are important because we use some of them as our food and pets.</p> <p>My parents bred German Shepherds when I was young. Then we switched to Golden Retrievers later on. We trained our dogs and it was always a pleasure to be around them.</p> <p>I was born in the country and I have experience of feeding rabbits and cows. It was very exciting, but hard! I am interested in chickens. Right after they lay their eggs, I tended to take them with my hands. Fresh eggs were somewhat warm. Without animals, we will have more difficulties because animals are important parts of the ecosystem. God created animals as well as humans. Humans need to be harmonious with nature including animals.</p> |
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Figure 2: Examples of Family Responses

4.2 Using Inquiry as an Approach to Learning

Now that the students and their families had shared their knowledge and experiences with animals, I wanted to find out what the students were interested in learning. I explained to the class that by asking questions about animals we would be able to find out what they were interested in and what they would like to learn. I chose to use an inquiry approach to learning in this science unit because it would allow the students to take an active role in exploring their own questions and would make the learning more meaningful and relevant to their lives. By now they had some experience with asking questions because they learned about different types of sentences during previous writing activities and about asking questions as a reading comprehension strategy.

I arranged the students into groups of four and gave each group a large piece of paper and colourful felt pens. At first, some of them were hesitant and were not sure what to ask or write. I modeled the question writing process by writing some of my own questions about animals on another piece of paper and a few of the students shared their ideas as well. Little by little, one question triggered another and after a while they generated a large list of questions, which we taped to a wall in the classroom. They wrote questions about an assortment of animals, although they focused mainly on wild animals (Figure 3).

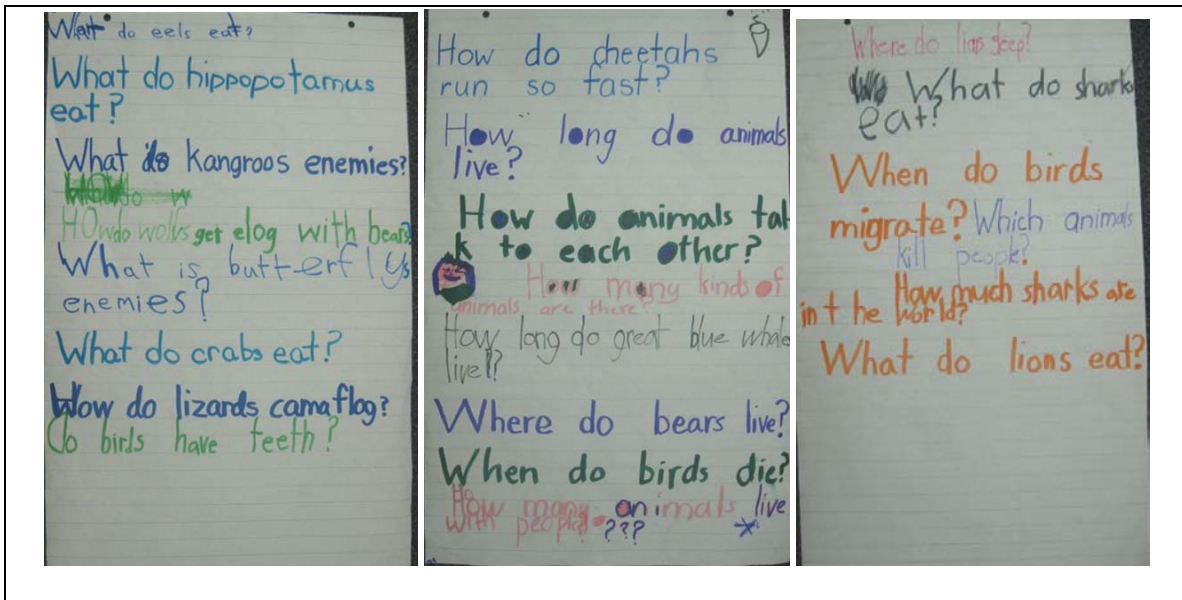
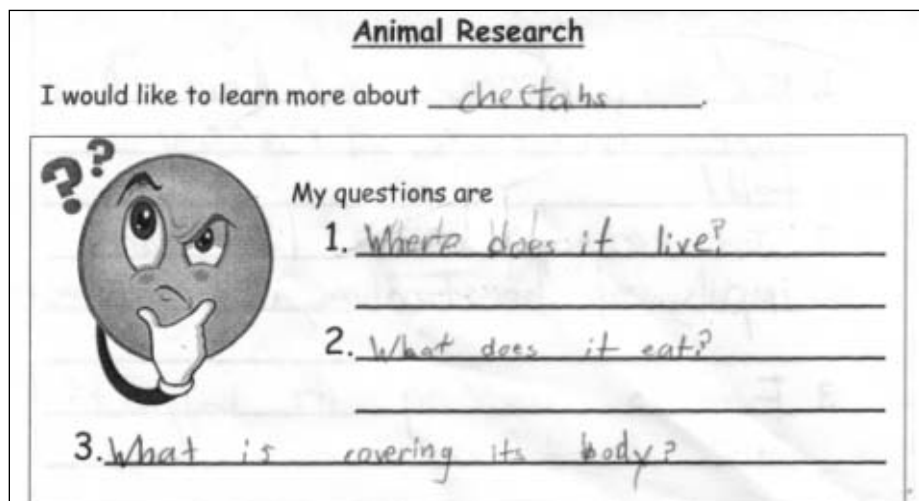


Figure 3: Samples of Student Questions

Some of the students were surprised when I did not supply them with immediate answers to their questions, but instead replied, “They are excellent questions! What could we do to find out?” They came up with the following ideas as a class: “We can read books, look for information on the computer, watch videos, watch real animals, ask people in our community who know about animals and ask our families.” I was excited to see that they recognized all these sources of knowledge, including their families, but at

the same time I was wondering how to approach such a wide and varied list of questions with a group of seven year old children.

Since the class had questions about a variety of animals, I decided to have each of the students choose an animal that she/he was interested in researching. One of the aims of the science unit was for students to recognize how the characteristics of animals help the animals live in their environment, so I had them begin with three questions to get them started on their own research projects. The questions were: 1) Where does the animal live? 2) What does it eat? And 3) what is covering its body? (Figure 4).



Animal Research

I would like to learn more about cheetahs.

My questions are

1. Where does it live?
2. What does it eat?
3. What is covering its body?

Figure 4: Student Questions for Animal Research Project

By having them inquire into these three questions about a variety of animals, they were able to compare the animals' habitats, food and appearances and recognize how the characteristics of the animals are interconnected and help the animals live in their environment.

They selected books, encyclopedias and educational websites on the internet to find answers to their questions. The school where I teach has a class set of laptop

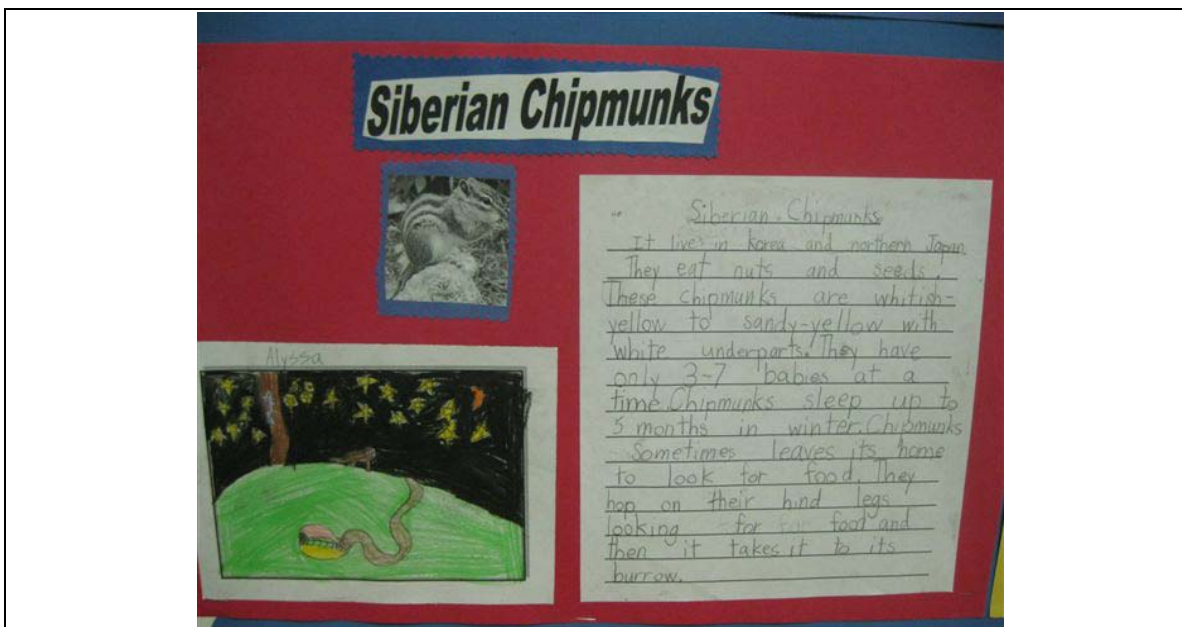
computers on a rolling cart, making it a mobile and useful learning tool. I decided to incorporate the use of the computers into the science unit because many of the students showed strengths and interests in computers and in using the internet. Most of them were already familiar with accessing the internet and with finding the class blog website online. While they were searching for information for their animal research posters and endangered animal books, I posted links on the class blog, which they accessed and used to connect to educational websites.

They recorded the information they found from books and the internet on a template that I created for them and then used the information to create a research poster. They wrote paragraphs about the animals, drew pictures, printed images from the internet and created computer “word art.” I taught the students how to use the “word art” feature in Microsoft Office Word 2007, which they used to create titles for their posters. I noticed that many of them really enjoyed the process of cutting, gluing and creating and also enjoyed seeing each others’ ideas, so I had them compile their writing, drawings, images from the internet and word art onto a piece of 12x18 inch construction paper and had them use additional paper to decorate their posters and make borders, frames and backgrounds for their projects.

I made an intentional effort to provide positive and encouraging feedback to the students as they were working on their animal research projects and continuously demonstrated enthusiasm for their questions and discoveries as a way to motivate them to continue learning. I met with each student individually as they were finishing their writing and illustrations about animals as a way to help them proofread their writing and to discuss with them what they learned. I gave them suggestions for how they could

improve their writing and posed questions to encourage them to think more deeply about what they were writing. I wanted to maintain high expectations for their learning and help them improve as well as provide encouragement and enthusiasm for what they had discovered. When the students finished their posters, they shared them with the class through a discussion and question time and displayed them in the school hallway for family members and other students in the school to see.

The following examples of the student work reveal that each research poster was unique, not only in terms of the animals that the students chose to research, but also in terms of the information they discovered (Figure 5). All of the students searched for answers to the questions: 1) Where does the animal live? 2) What does it eat? And 3) what is covering its body? However, they also found additional information that they had not anticipated and which they wanted to share with others. Their research posters were creative and were not only a way for them to share what they learned, but also a way for them to learn from each other.



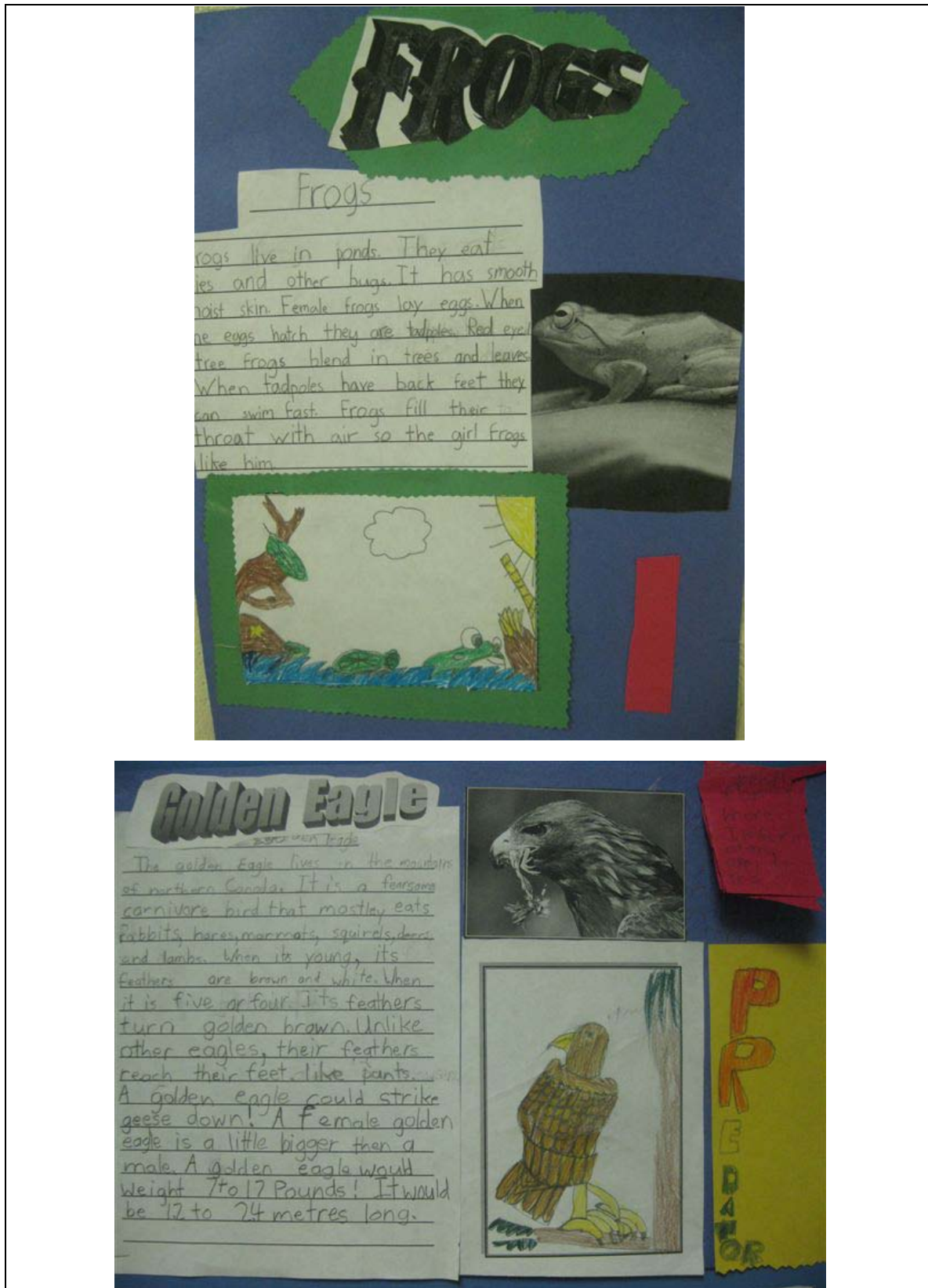
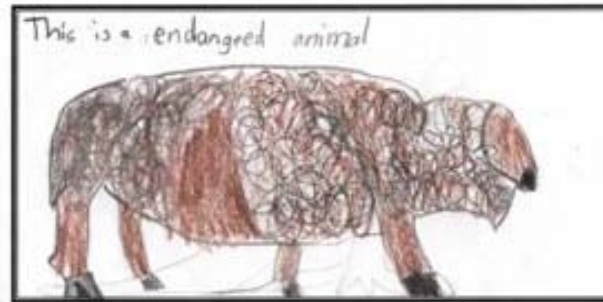


Figure 5: Student Research Posters

In keeping with the idea of using an inquiry approach to learning, I had the students participate in another research project. While sharing their prior knowledge at the beginning of the science unit and after reading books in the classroom, a number of students brought up the topic of endangered and extinct animals and talked about how they cared for animals and desired to protect them. I also knew from written responses to questions in a class newsletter that several of their families were concerned about the decline of animal populations. I wanted to find out more about the students' knowledge of endangered and extinct animals as a starting place for the upcoming lessons. I decided to have them share what they knew about endangered and extinct animals in a writing activity in which they recorded their knowledge as well as their questions to express what they were wondering. One of the students wrote, "I wonder how many extinct animals there are? I know two. Dinosaurs and Do-do bird. What can we do to help?" The following examples of student work reveal that many of them had heard or read about extinct animals such as the do-do bird or dinosaurs and some of them had heard about ice melting at the earth's poles from watching television news (Figure 6).



Some animals are Extinct
and some are Endangered.
Extinct means that there are
no more of that kind of animal.
Endangered means that there
almost no more of that kind
animal. I wonder how many extinct
animals there are? I know two. Dinosaurs
and Do-Do bird. What can we do
to help?



Some animals are extinct and endangered.
Extinct means there is no more left
they're gone forever. Endangered means there
is only a few left. I wonder how the
dinosaurs got extinct. I'm wondering how
can we make the South Pole and the
North Pole stop melting. How did the
Do-Do bird get extinct? Why does the
blue whale get endangered? I'm wondering
how can we stop the wild blue lupine
vanishing so the Karner blue butterfly can
stop vanishing. How can we stop causes that
make animals get endangered?

Figure 6: Student Prior Knowledge and Questions about Extinct/Endangered Animals

I wanted to extend the students' knowledge and have them learn more about other endangered animals and the effects that humans are having on animals, a topic that was relevant and important in their lives, so I had each of them choose a specific endangered animal that they cared about and that they were interested in learning more about. They wrote questions about these endangered animals, such as: Where do they live? What does it eat? What do they look like? How did it become endangered? How can I help it? (Figure 7).

Endangered Animal
Burrowing owl

Questions:

1. Where do they live?
2. How did it become endangered?
3. What does it eat?
4. What do they look like?
5. How can I help it?

Figure 7: Student Questions about an Endangered Animal

I had the students search for information to answer their questions about endangered animals. Some of the students read books from the classroom and the library while others accessed educational websites to find more information. When I asked them about the types of learning activities they were interested in doing, a number of them express an interest in making a book, which would be a way for them to share with others what they learned about an endangered animal. The following examples of the student-made books reveal that they developed new knowledge about endangered animals and the effects humans have on them (Figure 8).

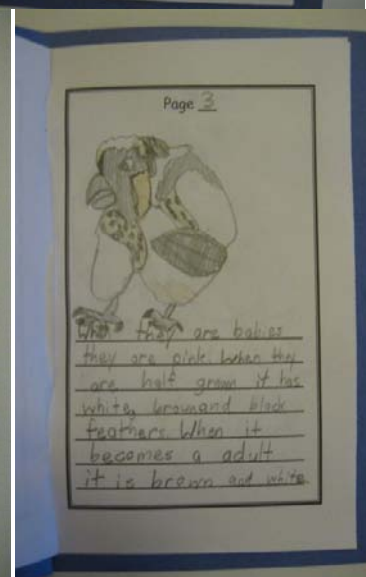
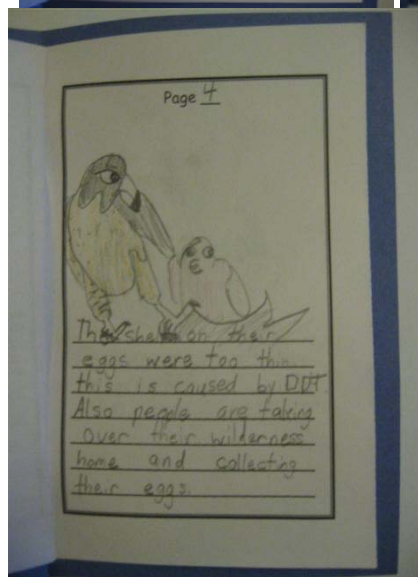
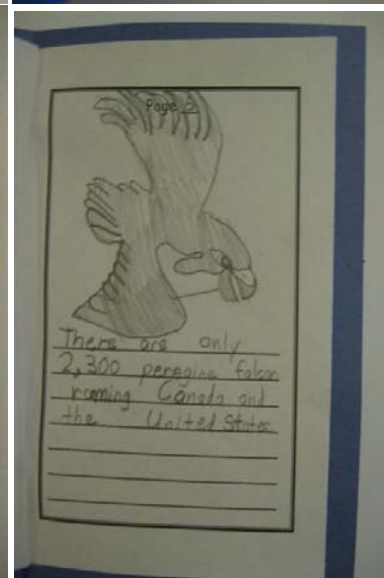
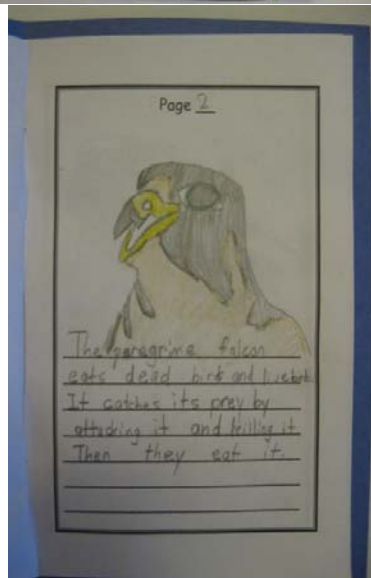
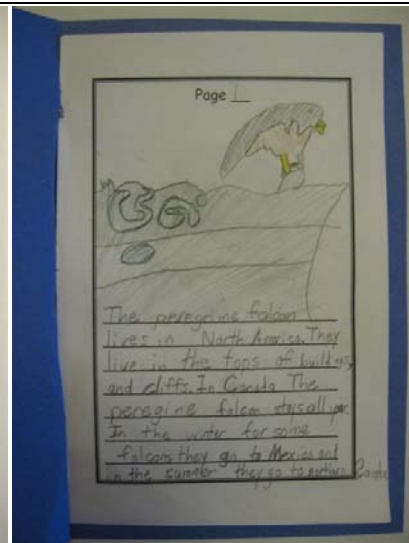




Figure 8: Student Books about Endangered Animals

In the unit feedback session a number of the students recalled their experience of learning about endangered animals. Their comments revealed to me that their knowledge of this topic had grown, which suggested to me that the learning activities had met their needs. When they began the unit, they knew of a small number of animals that are endangered or extinct, but by the end of the unit their understanding of the number of animals that are endangered had expanded and they were more aware of how humans have an impact on ecosystems. “If one animal gets endangered then the whole food chain

gets mixed up,” explained one student. They recognized that there are reasons for animals becoming endangered and that humans have a role in this process. “Some animals are endangered,” commented another student, “An example is the Karner Blue butterfly . . . It’s endangered because the butterfly’s larva eats leaves and people put pollutions on the leaves like pesticides and then the butterfly’s larva eats the leaves and then dies.” Another student shared that, “Gorillas are endangered because people are cutting the trees down where they live and people put traps out for smaller animals, but sometimes gorillas get stuck in them.”

It was important to me that the science unit meet the needs and interests of the students, which is one of the reasons for why I chose to have them conduct research projects on topics they were interested in learning. I also wanted their families to be involved in the unit, which is why I asked them to share with me how and what they wanted their children to learn as well as provide their feedback. Some of the families shared how the science unit met the needs and interests of their children: “A variety of animals were studied, researched and written about. Also, the kids were invited to bring in and talk about their own animals,” explained one family member. Another family expressed how they felt the unit met the needs and interest of their child: “He learned through various media . . . he learned about animals with hands-on experiences, learned about nearly extinct animals and learned through researching and writing his own projects.” The comments made by the families indicate that the diverse needs and interests of the students were met through an approach that was meaningful and relevant to them. However, I found that it was, at times, a challenge to involve all of the families rather than just some who chose to send in their written responses. In addition to have

families share their ideas through writing, I wanted to invite the families to come to the classroom in person and talk about the importance of animals.

4.3 Introducing Multiple Perspectives

A class discussion revealed that the students already had some knowledge about how animals are important such as being a food source and as pets, but why and how animals are important can differ depending on who you talk to. I wanted the students to be introduced to multiple perspectives because we live in a society where there are a “multitude of multiethnic and multi-varied peoples, contributions, and influences” (Gay, 2000, p. 208). How can I introduce the students to these perspectives when I come to the classroom with my own history, assumptions and point of view and am, at times, also an outsider to the students’ and families’ cultural knowledge and experiences? I decided to look for ways to involve the students’ families in the teaching of the science unit. I had included a few questions in the class newsletter asking the families to respond and quite a few of them sent in written comments through notes or email describing what they knew about animals and why animals were important to them. Their perspectives were read to the class and were displayed on the class bulletin board. I wanted the students to recognize that their families have significant knowledge about animals. However, I wondered if simply sharing this information with the students was enough so I decided to invite family members to come to the classroom and speak with the students in person. Some of the parents had already come to the classroom to teach the students words and phrases in Mandarin, Korean, Dutch, Tagalog, Norwegian and Russian, but getting the parents to come the classroom during the science unit turned out to be a challenge. Several of the families that I invited were reluctant to speak with the students, citing that

they felt uncomfortable speaking in front of a group of people or that their work schedules made it too difficult for them to come to the classroom during the school day.

I knew that there were people in the community who were willing to help, so I invited a guest speaker, an aboriginal cultural facilitator, to come to the class to speak with the students about the importance of animals in aboriginal cultures. I hoped that having the guest speaker share her perspective with the class would be one way for the students to learn to respect and appreciate aboriginal cultures, which have historically been devalued and oppressed in Canada since the arrival of Europeans. When the guest speaker arrived in the classroom, she first provided students with some background information about the word “aboriginal,” about how diverse Canada’s aboriginal cultures are and about the arrival of Europeans. She showed the students a number of objects such as deer skin slippers and antlers and pictures of animals such as hummingbirds, bison, frogs, eagles, deer and ravens and talked about how these animals are important. The students were able to interact with her, talk and ask questions, view and touch objects and pictures and participate in a drama activity. They wrote about what they learned from the guest speaker, created an art project and read books such as *Frog Girl* (Lewis, 1999) and *Little Water and the Gift of the Animals* (Taylor, 1992). The following examples of student work reveal some of what they learned from the aboriginal cultural facilitator (Figures 9 and 10).



Figure 9: Student Artwork



Figure 10: Student Writing about the Importance of Animals in Aboriginal Cultures

I also decided to take the students on a field trip to the classical Chinese gardens where a program called “Creature Quest” was offered. The students heard about the significance of a number of animals, such as bats, turtles, fish, seahorses, elephants, butterflies, dragons and phoenixes in Chinese cultures. They went into the gardens on a “creature quest” to find animals that could be located in the architecture of the garden walls and roof and in the garden details such as stone tiles, gates, decorations and sculptures. I chose to take the students on a field trip to the classical Chinese gardens because it was important for them to hear multiple perspectives regarding the value and significance of animals. Some of the students told me that they were disappointed that they did not see real animals at the gardens, however, as they would have liked to see live animals in addition to the animals that were integrated into the art and architecture. Nevertheless, they were able to participate in hands-on learning activities and interact with people in the community. It was also meaningful to have a number of the students’ family members share in the learning experience by joining us on the field trip. Some of the family members expressed how they had never been to the Chinese gardens before and looked forward to returning with their families again at a later time.

4.4 Learning about Life Cycles in a Meaningful Way

It was lunch time and one of the students put some orange peels into the classroom compost pail. He exclaimed, “Ms. Van Ooyen! I realized that it’s like a life cycle when you put fruit peels in the compost. They turn into soil and then they help a new seed grow, which turns into a new plant, which grows new fruit!” The student’s remark revealed to me that he was able to make connections between the class discussions about life cycles and his daily life. When I first started the lessons on the

topic of animal life cycles, I knew that many of the students had experiences around pets such as cats, dogs, fish, birds or rabbits. I wanted to find out more about their experiences with pets so that I could ground the lessons about life cycles in what they already knew by making connections to their prior experiences and daily lives.

I decided to have them create a survey in which they asked each other about their pets. They asked each other, “Which kinds of pets do you have at your home?” and recorded their classmates’ responses with tallies and in graphs. I was amazed to learn that the class had a total of sixty pets at their homes and had not realized that one of the students had over twenty pet rabbits in his backyard. The students already had some knowledge about their pets so I asked them to choose one of their own pets or that of a friend and create a diagram to show the pet’s life cycle. Some of them were able to draw the lifecycle of their pet from memory, while others needed to use books or images on the internet for ideas. They used terms such as “newborn kitten” or “adult cat” to search for images on the internet as a way to help them draw the stages a pet’s life cycle. They drew four stages of the pet’s life cycle, labeling their pictures with key words: *born*, *grow*, *adult* and *have babies (reproduce)* (Figure 11).



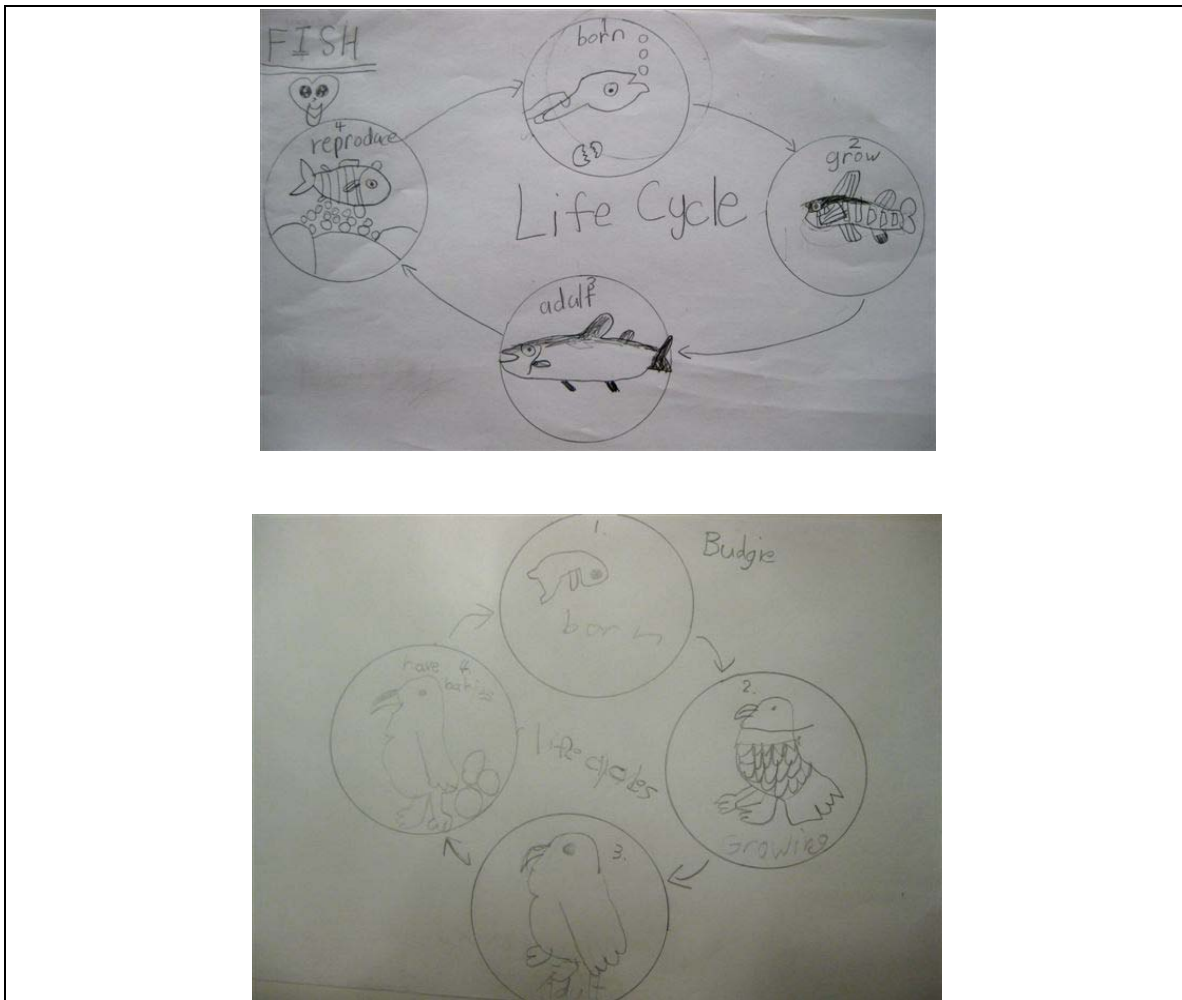


Figure 11: Student Drawings of Pet Life Cycles

In addition to having the students draw the life cycle of a pet, I invited them to bring their pets to school. Three students brought their pet hamsters, which was an opportunity for them to share their knowledge with the class and an opportunity for the rest of the class to have more hands-on experiences with animals. In the unit feedback session a student commented, “I liked the three hamsters that visited our classroom because I got to hold them.” Observing live animals in the classroom helped to make the lessons more interesting and exciting for them because they eagerly watched and held the hamsters and talked with each other about what they were noticing. This indicated to me that I was meeting their diverse needs and interests.

After discovering that one of my students had over twenty pet rabbits in his families' backyard, I asked his parents if the class could visit their home. They agreed. The class and I walked a short distance from the school to their home, where the students scattered around the yard, watching, holding and feeding the rabbits. "I liked seeing the animals at the house because they were fun to hold," commented a student. There were rabbits in various stages of the life cycle for them to observe. This experience generated questions that they asked, which extended and motivated their learning. They also interacted with the family, asking questions and discussing what they noticed.

Upon returning to the school, the students recorded their observations of the rabbits by writing and drawing in their science journals. Some of them needed more support so we worked collaboratively on the writing. I had them share their ideas, which we discussed as a class and used to develop sentences. After a little while, they worked independently or in small groups to continue writing their observations of the hamsters and rabbits (Figure 12). I also wrote key words on the chalkboard that the students could use in their writing. Providing this support seemed to make the writing process easier and more enjoyable for them as it reduced their worry about spelling words that they were unfamiliar with and provided guidance for them as they developed their writing skills.

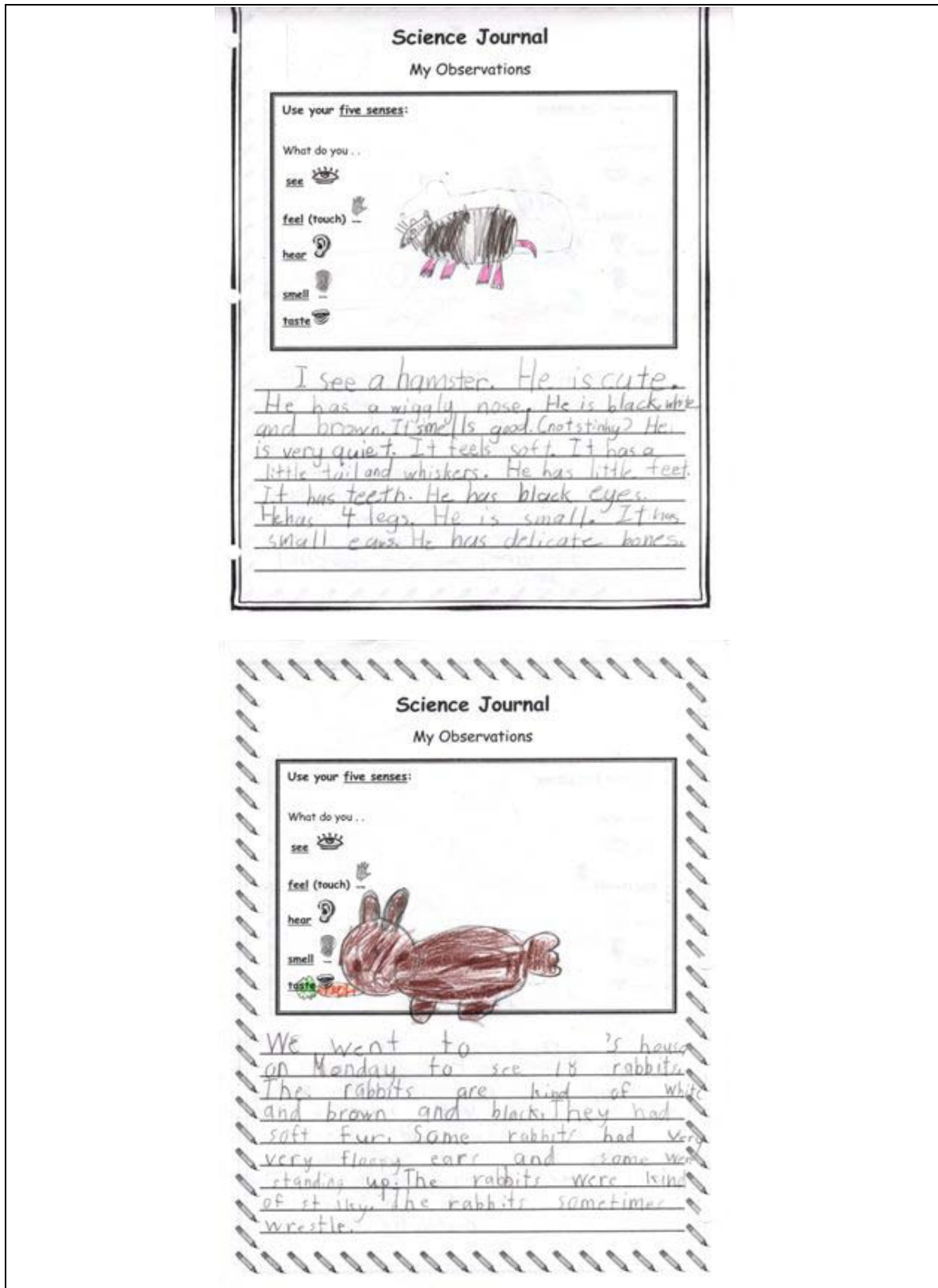


Figure 12: Student Observations of Pets

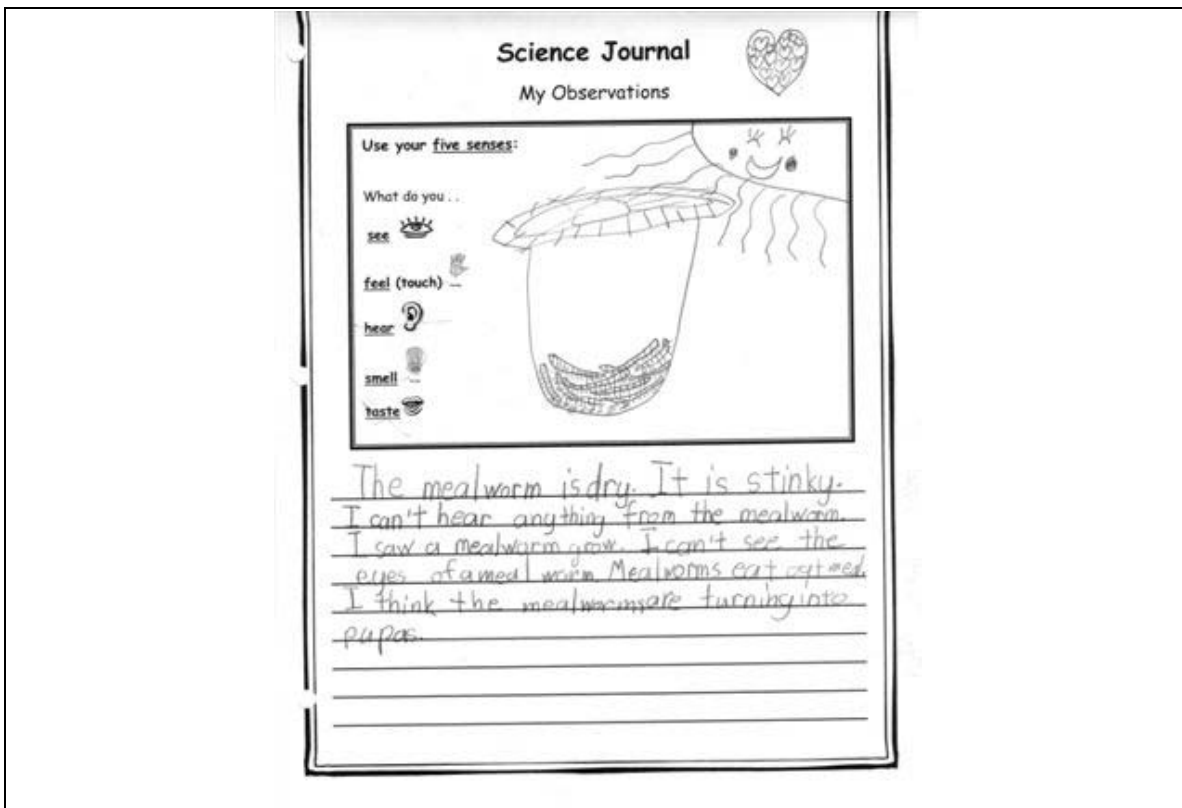
I wanted to build on the students' knowledge of pets in order to help them learn about the life cycles of other animals. I also wanted them to be able to observe the changes and growth of *real* animals so that they could come up with their own conclusions and questions, rather than having me simply telling them what to think or know about life cycles. I knew that observing real animals was something that several of their families desired based on their responses to questions I posed in the class newsletter such as: "What kinds of learning activities do you want your child to be doing during this science unit?"

The first life cycle that the class was able to observe was that of a darkling beetle. After talking with a colleague about her experience of bringing mealworms into her classroom, I found that I could purchase some mealworms from a local pet store. I wanted to provide a meaningful way for the students to see and learn how an insect grows and changes, to learn about the insect's body and other interesting facts about beetles. As they observed the mealworms change into pupae and then into beetles over a number of weeks, they asked questions, which provided opportunities for me to teach new vocabulary such as metamorphosis, exoskeleton, shed, molt, egg, larva, pupa, and adult (Figure 13). "I liked the beetles because they were crawling all over me and they tickled a lot," explained a student during the unit feedback session. "I liked the bugs, the beetles," commented another. The students drew pictures and wrote in their science journals about what they were observing (Figure 14). Some of them brought their parents, grandparents, siblings and friends into the classroom as well to show them the mealworms and beetles and explained to them the different stages of the beetle's life

cycle, which provided them with an opportunity for them to share their learning with the broader school community.



Figure 13: Mealworms in the Classroom



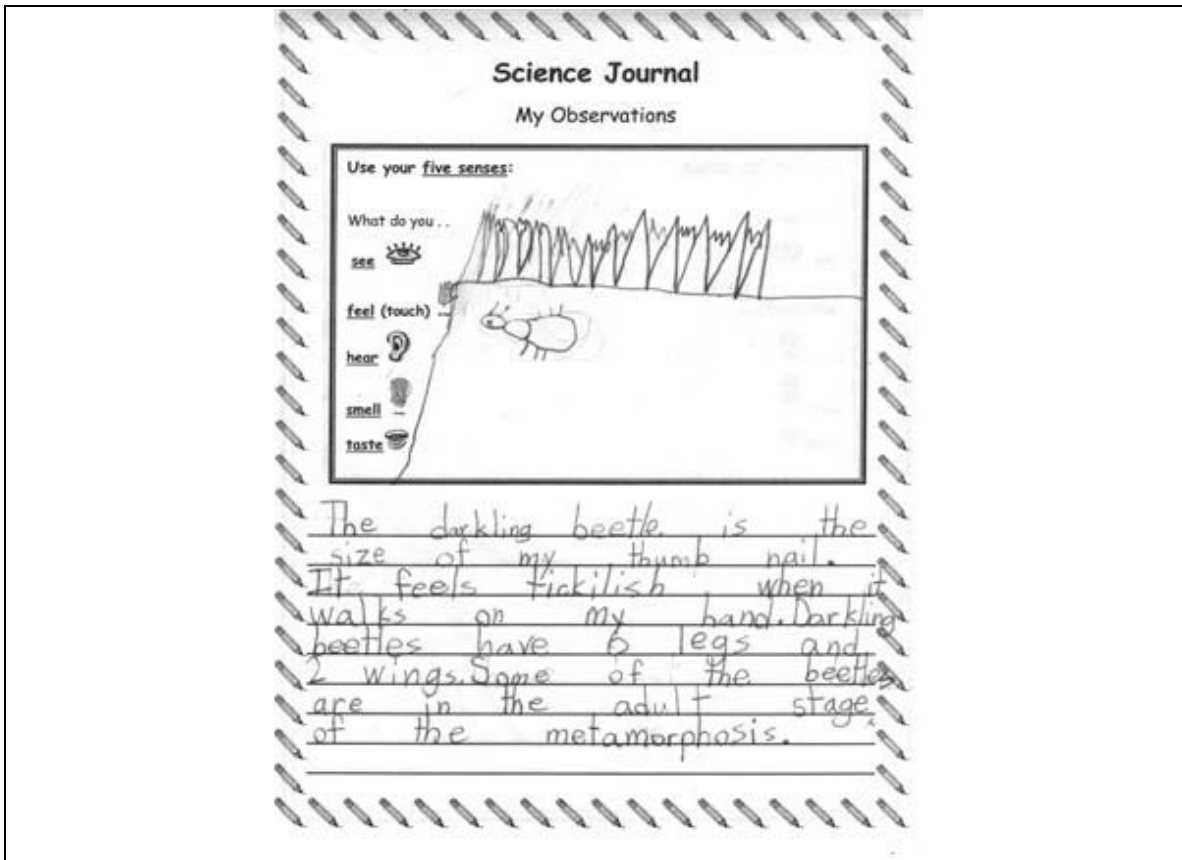


Figure 14: Student Observations of Mealworms and Beetles in the Classroom

The second life cycle that the class was able to observe was that of a chicken. I was able to borrow a chicken egg incubator from a family in the school community that provided fertilized chicken eggs. The intention of having the eggs in the classroom was to provide a meaningful context for students to learn about the life cycle of a bird (Figure 15). Most of them already had the experience of eating chicken meat and eggs that were purchased from a grocery store, but since they lived in an urban area, the majority had not been around live chickens before. They spent a lot of time watching the eggs in the incubator, touching them, smelling them and listening for any sounds that they might be able to hear. They recorded their observations by writing and drawing in their science journals (Figure 16). As a class we discussed how the eggs were in the artificial setting of an incubator and how this differed from birds hatching in nature. There was great

excitement in the classroom as the chicks hatched from the eggs. Students from other classes and family members regularly came into the classroom to see the progress and to ask questions about what was happening. One of the parents wrote about how the experience of watching the chicks hatch in the classroom was not only meaningful for her child, but also for the parents.

It also touched us parents. For example, a flock of baby chickens in the incubator in the classroom. The children could see how life gestates and grows. Although it needed patience, everyone was so excited at the moment when the baby chickens broke the egg shells. Thereafter, the kids spent some time with the chicks and looked after the chicks until they were sent to the farm. And the kids had the opportunity to visit the chickens. This is a really good story, interesting, full of the vigor of life and full of love.

I posted pictures, videos and information on the class blog, which families could view at home if they were not able to come to the classroom in person. I knew that some of the families had work schedules that made it difficult for them to come to school during the day, but I still wanted to share what their children were learning with them. Their positive comments and feedback about what they viewed on the blog indicated that I was meeting their children's needs and interests as well as building reciprocal relationships.



Figure 15: Chickens in the Classroom


Science Journal
My Observations


Use your five senses:


What do you ...

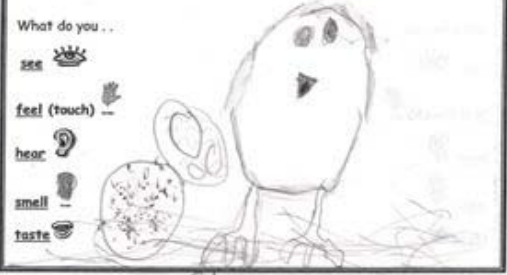
see 

feel (touch) 

hear 

smell 

taste 



Chicks


We have 3 chicks in our class room. Two are dark brown the other is yellow. One of them is 4g, 3g and 35g. They sound like chirp, chirp, chirp. 10 cm tall, 8cm tall, 8cm tall.

Science Journal
My Observations

Use your five senses:

What do you ...

see 

feel (touch) 

hear 

smell 

taste 



The chick has soft feather down feathers. They feel very soft. The chicks are dark brown and yellow. They have an egg tooth at the end of its beak. And to crack its egg. They have 3 toes and their feet looks weird. They are squished when they are in the eggs.

Figure 16: Student Observations of Chickens in the Classroom

The third life cycle that the class was able to observe was that of a butterfly. There were twenty-five caterpillars in the classroom to observe, which grew and changed into chrysalis and then emerged as painted lady butterflies (Figure 17). Many students appeared to be enthusiastic about the animals and often went up close to them throughout the school day and asked questions as they observed, either to me or to each other. As they talked to each other about what they observed, they used vocabulary that they learned in regards to animal characteristics and life cycle stages. They also drew pictures of the caterpillars and butterflies and wrote their observations in their science journals (Figure 18).




Figure 17: Caterpillars and Butterflies in the Classroom


Science Journal
My Observations


Use your five senses:


What do you...


see 

feel (touch) 

hear 

smell 

taste 



I see a caterpillar. We had them for 6 days. How many more days before it turns into a crystal? The caterpillar has 16 legs. The first 6 legs are called true legs. And the other 10 legs are called prolegs.

Science Journal
My Observations

Use your five senses:

What do you...

see 

feel (touch) 

hear 

smell 

taste 



Hmm. What do I see? I see a caterpillar. It looks like a spiky worm but it isn't. Soon it will turn into a beautiful butterfly called a painted lady. It is in the insect family. They have 16 legs.

Figure 18: Student Observations of Caterpillars in the Classroom

Furthermore, the students were also able to have hands-on learning experiences with red wiggler worms, which were brought into the school from a local compost pile. A number of the students had prior knowledge and experiences around worms, which enabled me to build on this knowledge and introduce them to the importance of worms in the ecosystem and how worms can help people reduce waste through composting. They drew pictures of the worms and wrote their observations (Figure 19). They used their mathematical skills to measure the worms and make comparisons between different sizes of worms. It was interesting to see their enthusiasm and hear their statements such as, “Wow! Worms are so amazing!” This was also a way for them to learn more about the life cycle, anatomy and characteristics of worms as well as a relevant way to introduce new vocabulary to them. I wanted to meet their needs and interests by having them participate in active and hands-on activities and by providing them with a meaningful and interesting context for them to develop their writing, artistic and mathematical skills.

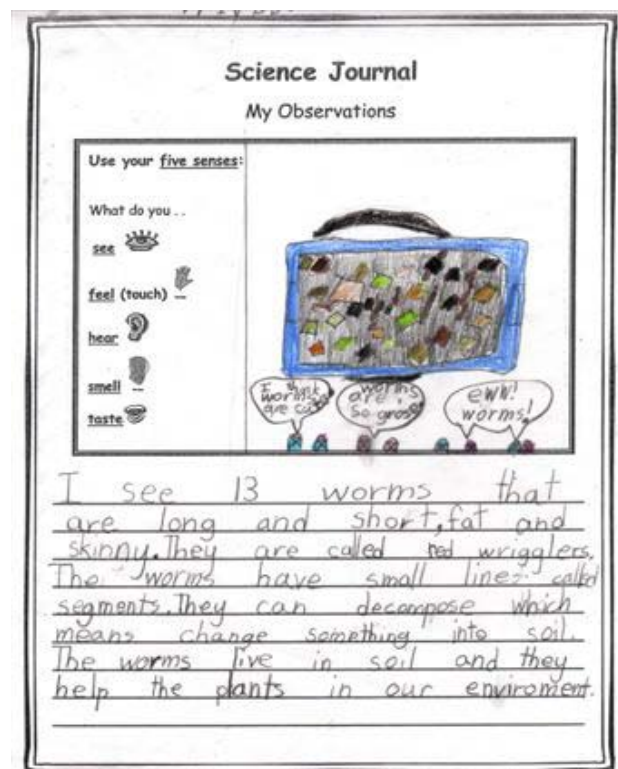
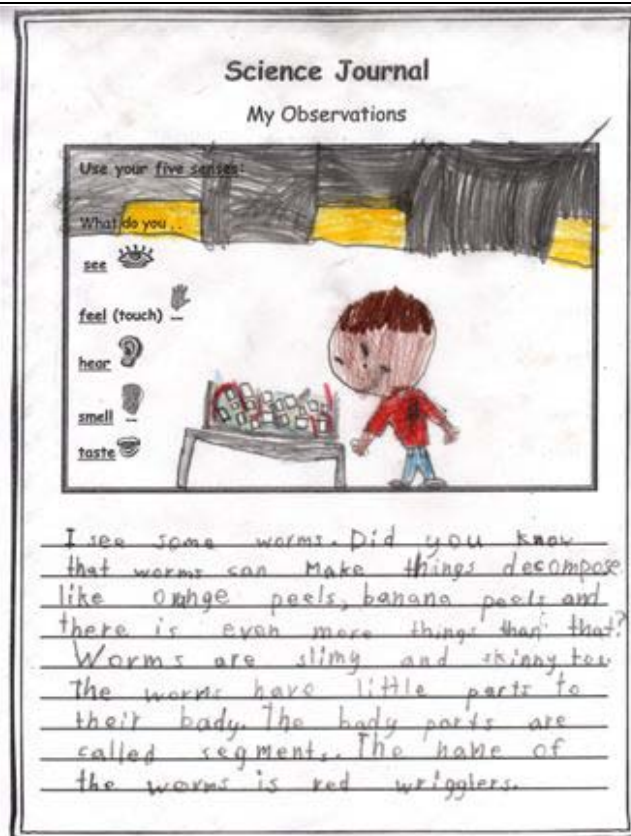


Figure 19: Student Observations of Worms in the Classroom

A number of families responded positively to my decision to bring live animals into the classroom for their children to observe. They noticed that their children were interested in and motivated by the learning activities, which indicated to me that I was meeting the students' needs and interests. "It was very impressive for my child to see the procedure of eggs hatching and larvae growing to become butterflies instead of seeing it from a picture," commented one family member. Another family member agreed, "[My son's] teacher has performed practical and creative classes for students by showing real animals and equipments to students. This is why my son has been motivated by these teaching strategies and has been interested in those classes." Another family member, who had recently moved to Canada, shared how the experiences at school with real animals helped learning to become more relevant for her child.

Actually, Korean school-education system has rarely given to students real experiences. Most students learn from only books. [My child] has read so many books about animals. Real experiences (field trips, observations in the classroom) gave her special relevance between books and experiences. It gave her joy about studying!

4.5 Creating Artwork: Multiple Ways of Experiencing the Curriculum

"It was fun making the sculptures of animals and painting the animals and drawing them too," commented a student. I had noticed that many of my students had interests and strengths in creating artwork. "I liked mostly everything because it was fun," shared another student. "I liked the art the most." In response to questions in the class newsletter about how they would like their children to learn about animals, some of the families expressed that they would like to have their children draw animals. I wanted the students to be able to experience the curriculum in multiple ways so I integrated art

activities throughout the science unit. They created two-dimensional artwork such as drawings, paintings and paper weaving as well as three-dimensional sculptures to represent the animals that they were learning about and animal masks for a drama activity. I wanted to value and build upon the students' artistic strengths as a meaningful way for them to learn more about animal characteristics and life cycles. "I liked writing, drawing and making sculptures and also I liked reading about animals," commented a student during the unit feedback session.

Some of them enjoyed creating three-dimensional art using colourful modeling clay (Figure 20). "I liked making the animal sculptures," commented a student in the unit feedback session. Another explained, "I liked making animal sculptures because it was soft and gooey and it feels good. And you can make cool stuff with it."



Figure 20: Student Sculptures

Later in the unit I found out about a program that was being offered at a local art school that connected to learning activities about the effects of humans on animals. The program focused on the ecological struggles our oceans face through a theatre workshop and visual arts workshops. In a sculpture workshop the students created three-dimensional masks of animals, which they used during the theatre workshop (Figure 21). The theatre workshop included character exploration and movement activities. Some of the students also attended a digital arts workshop where they explored the use of

computers and digital images to create their own art. I chose to take the class on this field trip because I wanted them to be able to experience the curriculum in multiple ways and because they were interested in art.

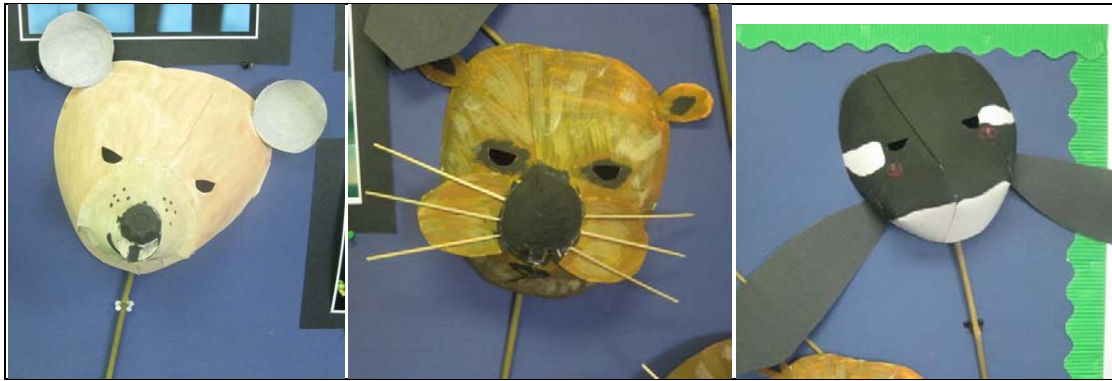


Figure 21: Animal Masks for a Drama Activity

“In order to abstract my child’s curiosity, my son was asked to draw something relevant to class topics and issues. In particular drawing about natural eco-system or animals [had] significant charm,” commented one of the parents. During the art activities in the classroom, I gave students a lot of freedom in terms of what they could choose to create or represent. I wanted them to use their own ideas and creativity, while making connections to what they were learning about animals. One student, who had been researching frogs, chose to create a drawing of a frog, which included details to show the frog’s surroundings. After our field trip to the fish hatchery, some of the students chose to paint images of salmon in their habitat, recalling how the colour of the salmon changes when they return to the streams and rivers for spawning. Others were inspired by images they had seen in books they were reading or in an assortment of videos about animals that we had watched in class (Figure 22).



Figure 22: Student Artwork

4.6 Working for Change in the Community

I wanted to give the students an opportunity to work towards real and meaningful change in the community and I knew from the families' responses to questions in the newsletter that a number of them were concerned about the effects that humans are having on animals. I asked myself how I might get the students involved in bringing about change and did some research on the internet to find out about local concerns. I also contacted some community members to ask for their ideas. Based on what I learned, I decided to take the class on a field trip to a local wildlife rescue association because it offered a program for children to learn about wildlife issues in the urban environment. The students were able to find out what it is like to be a wildlife rehabber, about local animals and how to help them. They listened to a presentation and watched a slide show about local animals and some of the common ways that they become injured such as by cars, by pets, by plastic such as "six-pack" holders and by chemical pollution. In addition, they learned that fishing lines, windmills and oil spills are all things that can hurt birds and mammals. A volunteer at the rescue association talked about how they treat and rehabilitate injured and orphaned birds and mammals until they can be released back into their natural habitats. The students were able to ask questions, touch bird feathers, nests and animal bones. They also had the opportunity to use binoculars to see birds, beaver dams and nests by the lake, which was a way to help the students understand the importance of caring for their local environment. One of the parents responded in the parent/guardian questionnaire by writing, "The wildlife rescue association clearly demonstrated the relationship between humans and animals. Friends

or enemies? Human beings are obligated to protect nature and only this way can people enjoy nature.”

Even though the students learned a lot about the effects of humans on animals in urban environments and about the work of the wildlife rescue association, I noticed that some of them were disappointed that they were not able to touch, hold and see the animals that were being rehabilitated. I also noticed that while they learned about the work of the rescue association, they did not have an opportunity to make a personal contribution or difference for the animals. I decided to look for ways that the students could be more actively involved in bringing about change and awareness in the community and decided that it would most effective if we started by focusing our efforts on the decline of *one* of the local animal populations.

I contacted some community members to ask them about their knowledge of local animal populations that were in decline. Everyone that I spoke with mentioned the salmon population. The area where the school is located has undergone a lot of change over the past few decades with the construction of homes, roads, shopping malls and parking lots, and this has had a big impact on the salmon population and its habitat. I took the students and some of their families to the nearby park and river where there is a hatchery so that they could learn more about the effects of humans on the salmon and their habitat from a local expert. At the hatchery the students were able to ask questions and participate in a discussion about the reasons for the decline in salmon population. They were also able to release salmon into the stream, which gave them an opportunity to make a positive contribution to the local environment. A number of students shared their positive feedback about the experience, “I liked that we got to go to the fish hatchery

because we got to feed the salmon and also we got to release the salmon,” stated one of the students. “The salmon hatchery was so much fun! We got to release the fry and we got to learn more about salmon,” exclaimed another. Some of them also felt that they were making a meaningful contribution to the environment, “I liked letting the salmon go because it was helping the salmon so they don’t get extinct.” The students and their family members were able to participate together in a learning experience about an importance issue in the community.

After visiting the nearby river and releasing salmon by the hatchery, the students were motivated to protect the salmon and their habitat. They expressed that they wanted to tell others in the community about protecting the salmon because they cared about the impact of pollution on the salmon and their habitat. I spoke with some community members about ways that the students might bring about positive change and awareness to the community regarding the effects of humans on the salmon population. It was suggested that one of the ways that they could bring about awareness was through a storm drain marking program. I contacted the city government, which is responsible for organizing the program and arranged for a guest speaker to come to the classroom. The guest speaker talked to the students about the purpose of storm drains in the community and shared a computer presentation with the class about how the runoff from paved roads goes down the storm drains and into the local streams and rivers. She explained that people sometimes mistakenly pour liquids down the storm drains that contain toxic substances, causing damage to the habitat of fish and other animals. While the guest speaker was visiting the classroom the students were able to ask questions and view

pictures and other visual aids about salmon, storm drains and the storm drain marking program.

We were then supplied with storm drain marking kits by the city, which enabled the students to paint yellow fish symbols next to the storm drains in the school neighbourhood. They donned reflective safety vests and gloves, were organized into groups, and worked together to sweep away debris by the storm drains, to place a fish stencil on the pavement and to paint the fish symbols (Figure 23). By the time we were finished, they had painted fish symbols by over twenty-five storm drains. “I liked when we painted the salmon by the storm drains because it was fun,” exclaimed a student during the unit feedback session. “I liked painting the yellow salmon close to the storm drains because I liked painting,” commented another. They also recorded the drain locations on a map and on a list for the city to keep track of the marked storm drains. Additionally, the class hung informative door hangers on the doors of homes in the neighbourhood as a way to educate and bring awareness to people in the school neighbourhood about the decline of the salmon population. The door hangers explained how runoff from roads goes directly to local streams and rivers and has an impact on the salmon population. They encouraged people to avoid pouring any substances other than water down the drains.



Figure 23: Storm Drain Marking Program

Participating in the storm drain marking program was one way for students to work for change and share their knowledge with others. It was also a way to meet their learning needs because they were able to be active and to work together as a group. The activity was meaningful, relevant, useful and important because the class had a real impact on the community and was able to take action to bring awareness to others. It was also a way for the students to discover where the water goes in the community and to develop a better understanding of the impact of pollution on animal populations.

In addition to marking the local storm drains with yellow fish symbols to bring awareness to the community, the students participated in a mural project. The school's outdoor fence displays a mural of hundreds of brightly coloured wooden fish as a way to remind the community that fish live nearby and to represent hope for a future with healthy streams. I shared the story of the mural with the students, who then wanted to add more wooden fish to the fence. Since a number of students had artistic strengths, we decided to make a smaller version of the mural, which we displayed in the school hallway

as a way to remind the school community about the importance of caring for the local streams and the salmon that live there (Figure 24).



Figure 24: Student Mural Project

Chapter 5: Discussion and Conclusion

5.1 An Enriched Understanding of Culturally Responsive Education

In this study I ask, “How will my understanding of teaching practice change when I explicitly bring the principles of culturally responsive teaching into a grade two science unit?” Even before beginning the journey of examining my practice as a culturally responsive teacher I had a passion and commitment towards full inclusion and welcomed students with all cultures and backgrounds into my classroom. However, the extensive and careful examination of my practice led me to an enriched understanding about what it means to teach in a way that is culturally responsive. My thinking and understanding was deepened through the process of taking up cultural responsiveness as something I wanted not only to enact, but also study.

I was careful to keep the principles of culturally responsive education in the forefront of my mind as I was preparing and teaching the science unit, which helped me to develop insights into what these principles might “look” like in a primary classroom setting. I came away from the research process with the ability to develop stronger reciprocal relationships with students, their families and community members, as well as a better understanding of what it means to hold high expectations for student learning, more meaningful, relevant, important and useful instruction, a greater appreciation for learning preferences and how instruction can be built upon the students’ strengths, as well as a higher regard for the incorporation of community interests and social justice into the curriculum. Furthermore, I developed a deeper understanding of the nature of culturally responsive education and a new perspective on what it means to be both a teacher and a researcher.

5.1.1 Stronger Reciprocal Relationships with the Students and Their Families

During the science unit I developed stronger reciprocal relationships with my students and their families by learning more about their experiences and interests, by valuing the families' expertise and ways of knowing, by involving families as participants in their children's learning and by sharing the students' achievements with their families. My understanding of teaching practice was enriched as I recognized that reciprocity can occur in multiple ways.

I was intentional about getting to know the students and learning more about their cultures, experiences and interests. I talked with them regularly about how they were doing and what was happening in their lives. I also had them share their prior knowledge and experiences, write and talk about their interests and discuss the types of learning activities that they preferred. In addition to getting to know the students, I sought to develop reciprocal relationships with their families. I recognized that the parents and families of the students should have the opportunity to be co-experts in their children's learning rather than passive audience members or supporters. This view of families challenges the way power has been distributed in schools in the past.

I used class newsletters as a way to encourage families to share their experiences, knowledge and interests related to the topic of animals. The purpose of this was to access the families' "funds of knowledge" in order to make the unit more responsive to them (Moll & Amanti, 1992). This greatly enriched the science unit as multiple experiences and perspectives were shared and included. Amatea (2009) suggests that "parental roles are culturally embedded and, as such, are linked to parents' hopes and dreams of what

and whom they wish their children to become” (p. 160). Hoover et al. (2008) suggest that teachers “should become familiar with the rich cultural capital of the parents of the children they teach . . . all parents have a great deal of knowledge that is culturally specific” (p. 301). Delgado-Gaitan (2006) advises that “whether parents believe it or not, they know information about how their children learn, such as their interests and their abilities” (p. 69). Villegas (1991) agrees that teachers need to communicate with families in order to develop an understanding of the students’ home culture.

I also built reciprocal relationships with the students’ families by providing opportunities for them to participate in their children’s learning. In the newsletters I expressed how their involvement in their children’s learning is valued and I included photos of parents and their children in the classroom. I focused on emphasizing that their participation is welcomed and how they have valuable knowledge that could help us improve what we do at school. I made an intentional effort to involve the students’ families in the decisions about the teaching and learning that took place at school.

Additionally, I reached out and shared the students’ achievements with their families by displaying the students’ work in the classroom and in the school hallways and by posting information on the class blog website. I posted information on the blog about what the students were learning, the types of learning activities they were doing as well as photos and slideshows. I also shared the students’ achievements with the families in newsletters, in email messages and through conversations with the family members in person and on the telephone. Furthermore, I encouraged them to look at their child’s

work in the student portfolios throughout the school year and especially at student-led conferences.

Through this study I learned that teaching in a culturally responsive way involves a certain disposition towards learners and a response to their specific needs and interests. It was necessary for me to know and care for the students in my class, to hold affirming views of their diverse cultures and to develop reciprocal and respectful relationships with them and their families. Gay (2000) describes teachers who care for their students as those who demonstrate concern for students' emotional, physical, economic and interpersonal conditions. She also suggests that "caring teachers are distinguished by their high performance expectations, advocacy, and empowerment of students as well as by their use of pedagogical practices that facilitate school success" (p. 62).

The process of studying my practice also revealed to me that developing reciprocal relationships with students and families is not a simple process, especially in a setting where there are multiple perspectives and interests. The families' desires for their children's learning have the potential to differ at times and addressing these differences in the classroom can be complicated. For reciprocal relationships to be developed, the families need to be willing to participate and be involved. I responded to this challenge by reaching out to all of the students' family members in order to receive their input and ideas for the unit and by sharing their children's achievements with them. I also shared the families' written responses and multiple perspectives with the students and invited family members and community members to come to the school to share their knowledge and perspectives with the class.

5.1.2 Better Understanding of What it Means to Hold High Expectations for Student

Learning

Armento (2001) explains that “holding high expectations implies having a high level of confidence in each child, believing that each child has great human potential, and believing that each child wants to learn and to be successful” (p. 20). I deliberately maintained high expectations for the students by creating a positive learning environment where there was an attitude of optimism of hope. My reflections on what it means to hold high expectations for student learning revealed that it is more than expecting high achievement on tests. Students have a variety of strengths and ways of knowing and should have opportunities to demonstrate their knowledge and learning in multiple ways.

It is also important for teachers to notice the *manner* in which they go about holding high expectations for the students. I recognized that my students had the potential for maximum growth and challenged them to work towards that high potential. I made an intentional effort to provide positive and encouraging feedback to the students about their learning and continuously demonstrated enthusiasm for their questions and discoveries as a way to motivate further learning. In their responses to the questionnaire, a number of families expressed how their children’s motivation to learn increased. One parent discussed how he initially had low expectations for his own child’s learning, but then noticed how his child became curious and interested in learning during the unit.

5.1.3 More Meaningful, Relevant, Important and Useful Instruction

Shade et al. (1997) describe culturally responsive education as being

rich and meaningful because it takes into consideration the experiences, realities, and interests of the students. All lessons must be relevant to the students’ lives. Teachers start from the students’ own experiences and build on them to help students understand new concepts (p. 112).

The careful examination of my practice during this unit revealed the importance and value of beginning with the students' existing knowledge, experiences and interests. Learning became meaningful, relevant, important and useful for students because their existing knowledge was the starting point for the introduction of new knowledge about animals. My intentional effort to build on the students' existing knowledge was one way that my practice during the unit differed from teaching that I usually engaged in. As Tharp, Estrada, Dalton and Yamauchi (2000) explain, "Effective instructional strategy invokes children's existing schema that has been developed in their own environment and experience and then relates it to the conceptual material being presented" (p. 28).

At the beginning of the unit I decided to find out what the students already knew about animals as a way to ground the lessons on animal characteristics and life cycles. I felt that rather than ignoring their ways of knowing, I should seek to build on the students' and families' experiences and knowledge by learning what they already knew from their home and community and use that as a foundation for helping the students develop new ideas, concepts and understanding. I also decided to start lessons about animal life cycles with what they were familiar with, their pets. Their prior knowledge about their pets was used to introduce new knowledge. At the same time, Gay (2000) argues that "it is not enough for teachers to know what the learner knows . . . They also need to understand how students come to know or to learn so that they can convey new knowledge to them through their own learning systems" (p. 149). In addition to finding out what the students already knew about animals, I sought to find out more about their prior experiences as a way to discover how they developed their prior knowledge and I

carefully observed the students throughout the school year in order to understand how they preferred to learn.

During the unit I gave the students opportunities to make choices in how they learned and what they learned. For example, they were able to choose where they worked: some sat by desks or tables, on couches or on the floor. They could also choose to work independently or collaboratively with another student in the class, which provided them with opportunities to verbalize their thinking, to share their ideas and to learn from each other. Moreover, they were able to make choices through a process of inquiry into topics they were interested in researching. By choosing to use an inquiry approach to learning during the unit the students were able to take an active role in exploring their own questions and learning about topics that were interesting and meaningful to them.

My reflections on making instruction meaningful, relevant, important and useful revealed to me the importance of noticing what the students are interested in and how they prefer to learn. A number of the students and their families expressed that they found the science unit to be meaningful, relevant, important and useful because it provided hands-on learning experiences with real animals and because it connected to the real world. At the beginning of the unit, I noticed that many of the students were interested in learning about animals through the observation of real animals. Their families had also articulated this as being a desired learning activity for their children. The students were able to witness the metamorphosis of darkling beetles as they changed from mealworms (beetle larvae) to pupae to adult beetles, the hatching of chicks from eggs in an incubator and the metamorphosis of painted lady butterflies as they changed

from caterpillars into chrysalis and then into butterflies. They were also able to witness the stages of a salmon life cycle by visiting another classroom in the school where there was a salmon tank and by going on a field trip to a local hatchery.

They used their senses to observe the animals and recorded their observations by writing and drawing in their science journals. The experience of observing live animals in the classroom for an extended period of time was one way that learning became more interesting and exciting for them as they enjoyed seeing and holding the animals and were able to develop their own understanding of the animals' life cycles by observing the growth and changes in the animals firsthand. Additionally, a community member visited the classroom and brought with him a stick bug, tarantula, scorpion, frog, salamander, lizard, parrot, snake and a dwarf hamster. They were able to hold, touch, smell, listen to and ask questions about these animals as well. This was an opportunity for them to learn about the characteristics of the animals and how humans affect animals through an experience that was interesting for them. Their enthusiasm for and engagement in the learning activities indicated that I was successful in meeting their needs and interests in this way.

5.1.4 Greater Appreciation for Learning Preferences and How Instruction Can Be Built Upon the Students' Strengths

One of my goals as I was preparing and teaching the unit was to develop instructional foundations that built on students' strengths and learning preferences. Protheroe (1991) argues that "the idea is to capitalize on each child's strengths, viewing cultural ways of learning as resources to be used, rather than deficits to be remediated" (p. 20). During the study I developed a greater appreciation for the diversity of the

students' learning preferences and strengths. While it was important to recognize and build instructional foundations on their strengths and learning preferences, it was also important for me to remember that each student is unique and to avoid using information about learning preferences to stereotype certain culture groups. Hoover et al. (2008) remind us that there is often "a high level of heterogeneity within a particular cultural group and, as educators, we must avoid the temptation to regard culturally different groups as monolithic entities" (p. 52).

I deliberately used a variety of teaching strategies in order to address their strengths and learning preferences. Irvine (2001) argues that "responsive teachers do not blindly follow one teaching method or use the same teaching methods and materials for all students" (p. 4). Protheroe (1991) also suggests that "there is no single best teaching method that will effectively reach all students at all times. Therefore, effective teachers always diversify their instruction in response to individual students' interests, personalities, and abilities" (p. 21). Taylor and Whittaker (2009) agree that it is helpful to all students when the teacher uses various approaches that are appropriate for different learning preferences.

During the student feedback session the students expressed how they enjoyed the learning activities such as reading books about animals, writing about animals and creating artwork. In particular, I noticed that many of them enjoyed participating in art activities. Recognizing that there are multiple ways to experience the curriculum, I provided the class with a variety of opportunities to experience the science unit through art activities such as painting, drawing, weaving, sculpture and mask-making. They also had opportunities to use their artistic strengths when creating posters and books about

animals they researched. When making posters about the characteristics of animals and books about endangered animals, the students used their creativity to design the posters and book covers, planning the layout of the information, creating borders, frames and backgrounds and thinking about the use of colours and shapes to make the projects aesthetically pleasing.

I sought to incorporate a variety of learning activities into the unit as a way to address the diverse interests and needs of the students, but also know that I will need to keep working to find new ways of meeting their individual needs. Since there was a diverse group of students in the same classroom, I found that it can be difficult to address all of their learning styles in all circumstance and it is not easy to value and build upon their strengths to the fullest extent. As Baker et al. (2009) suggest, “Navigating the multiple needs and interests of such diverse groups is never a simple process, and in some cases common ground may be difficult to achieve” (p. 17).

5.1.5 Higher Regard for the Incorporation of Community Interests and Social Justice into the Curriculum

I purposely incorporated community interests and social justice into the science unit and consequently developed a higher regard for the inclusion of these aspects into the curriculum. I now recognize the great value and importance of including community interests and social justice in education. One of the ways that I did this during the science unit was to introduce students to multiple perspectives. I recognized that I came to the classroom with my own history, assumptions and point of view and was, at times, also an outsider to the students’ and families’ cultural knowledge and experiences. Since I wanted the students to be introduced to multiple perspectives I invited their families to

share with the class how animals were important to them. A community speaker also came to speak with the class about the importance of animals in aboriginal cultures and the students went on a field trip to learn about the significance of animals in Chinese cultures.

Furthermore, I incorporated community interests into the unit by helping students learn about the effects of humans on animals. The aim was for students to engage in various activities in order to learn more about this problem and to work for change. The learning activities included making books about endangered animals, going on field trips to a wildlife rescue association and a local fish hatchery, participating in a storm drain marking program and creating a mural. From the analysis of the students' responses, I found that having opportunities to work for change in their community was a meaningful and important learning experience for them. Many of the students shared how they enjoyed going to the fish hatchery to release salmon into the local river as a way to promote an increase in the salmon population. Some of the students also mentioned that they enjoyed participating in the storm drain marking program, which provided an opportunity for students to bring awareness to the community about how the run-off from roads goes into the local streams and rivers, causing damage to the salmon habitat.

5.1.6 Deeper Understanding of the Nature of Culturally Responsive Education

After having undertaken this journey of not only enacting, but also studying my practice as a culturally responsive educator, I realized that being a culturally responsive educator is more than adding on new teaching "strategies." It is a *way of being*. It is an approach that relies on a certain attitude about the role of the teacher, about the students, the students' families and other community members and about knowledge.

I have come to recognize that teaching in a culturally responsive way is a contextual and situational process because each student population, school and community is unique. Villegas (1991) explains that “given the uniqueness of each community and the individual differences found within each group, it is impossible to develop a general solution for the schooling problems experienced by minority children” (p. 33). Therefore, it is necessary to get to know each student, their families and community in order to attend to their specific needs and interests.

The process of examining my practice has emphasized to me the need for educators to adopt a humble attitude and be in the position of both teacher and learner, learning *with* and *from* students and their families. My deep reflections have helped to expose my own assumptions about learning as well as the privileges and oppressions that come with my identity. The fact that teachers enter the classroom with their own identities and assumptions highlights the need to share power and decision-making with students and their families as well as the need to incorporate multiple perspectives and experiences into the curriculum. Each group of students that I teach will be unique, which means that I will need to continuously learn from them, be intentional about getting to know them and their families and constantly modify and change the way education happens.

Armento (2001) asks us to image the following classroom:

. . . a classroom where all students and educators feel a sense of caring, security, trust, and genuine value; where each person is treated with a sense of dignity and an expectation for outstanding performance; where each person truly wants to be present and is excited about learning and teaching; where all persons feel proud of their growth, are curious about the world, are adventuresome and aggressive about their own learning (p. 19).

I have realized that bringing about a classroom such as the one described by Armento (2001) is not simple or quick. Coming to know my practice as “culturally responsive” has given me a direction in my journey as an educator. Being truly responsive to diverse children is a continuous process. As Villegas (2002) argues, teaching “demands thoughtful decision making in situations that are ever changing and characterized by uncertainty” (p. 25). However, having a name for my practice has given me a place to call home for now. It has also given me a number of scholars and theorists to align with and be challenged by as well as principles to continue to reflect and act upon.

Gay (2000) argues that “the greatest of all obstacles to culturally responsive teaching is mainstream ethnocentrism and hegemony” (p. 208). Having empathetic feelings and awareness was not enough to meet the needs of my diverse students. It was also necessary for me to take action to bring about improvement and change. “Good will must be accompanied by pedagogical knowledge and skills as well as the courage to dismantle the status quo” (Gay, 2000, p. 13). The recognition of the ethnocentrism and hegemony that is so prevalent in our society motivated me to work for change and transformation because, as argued by Kendall (2006), “if we do not work to change ourselves and our systems, we continue to be complicit in the oppression of others whether we mean to or not” (p. 23).

5.1.7 Being a Teacher and a Researcher

Engaging in this careful examination of my teaching practice helped me to develop habits and skills of inquiry, which I can carry forward into my future practice as a teacher and into other areas of my life. The experience of engaging in this study has empowered me to attend to educational issues and to be an agent for change. I have

developed a greater appreciation for the fact that I can work to bring about social change and can contribute to the greater body of knowledge. While I cannot give back the privileges that come with my identity, I can choose to work to dismantle the systems that keep them in place. As Kendall (2006) argues, “Our choice is to use them in such a way as to dismantle the systems that keep the superiority of whiteness in place” (p. 62). I have learned that I do not need to conform to the way education typically happens or to “business as usual.” Rather, I can be proactive in addressing problems and issues in collaboration with my students and their families.

I found that there were a few challenges to being both a teacher and a researcher. For example, it was somewhat challenging to involve the students’ parents as participants in the research. Extending the principles of culturally responsive education to the research process would mean that the parents would have opportunities to play a greater role in all aspects of the research. As the teacher and researcher in this study I was obligated by ethical guidelines to avoid making the parents feel pressured to participate in the research. This made it difficult at times for me to navigate between developing reciprocal relationships with the research participants while at the same time meeting the requirements of the behavioural research ethics board.

I also found that it can be difficult to develop the discipline of keeping a written account of what is happening in the classroom, particularly when you are not sure of what you are looking for (Zeichner, 2001). I had to be intentional about reflecting on my pedagogical decisions and be dedicated to writing about my experience on a regular basis. Moreover, Hobson (1996) suggests that “sometimes we are so close to a subject or an activity we can scarcely see it” (p. 1). In order to notice what was happening, I had to

“render the familiar a little strange . . . We want both things at once, to be close to the matter at hand, but also to develop the perspective that comes from a degree of distance” (*ibid*). I had to “step outside of myself” and view myself and my classroom from a distance, while at the same time being an insider immersed within the research setting.

5.2 Implications for Practice and Further Research

This study provides a glimpse into what culturally responsive education looked like in a primary classroom and reveals my own perspective, experience and understanding of culturally responsive education. Educators who are interested in teaching in a way that is culturally responsive could ask themselves a number of questions in order to assess their current practice as culturally responsive educators. These questions relate to the students, their families and the community members, the curriculum, and pedagogy (see Figure 25).

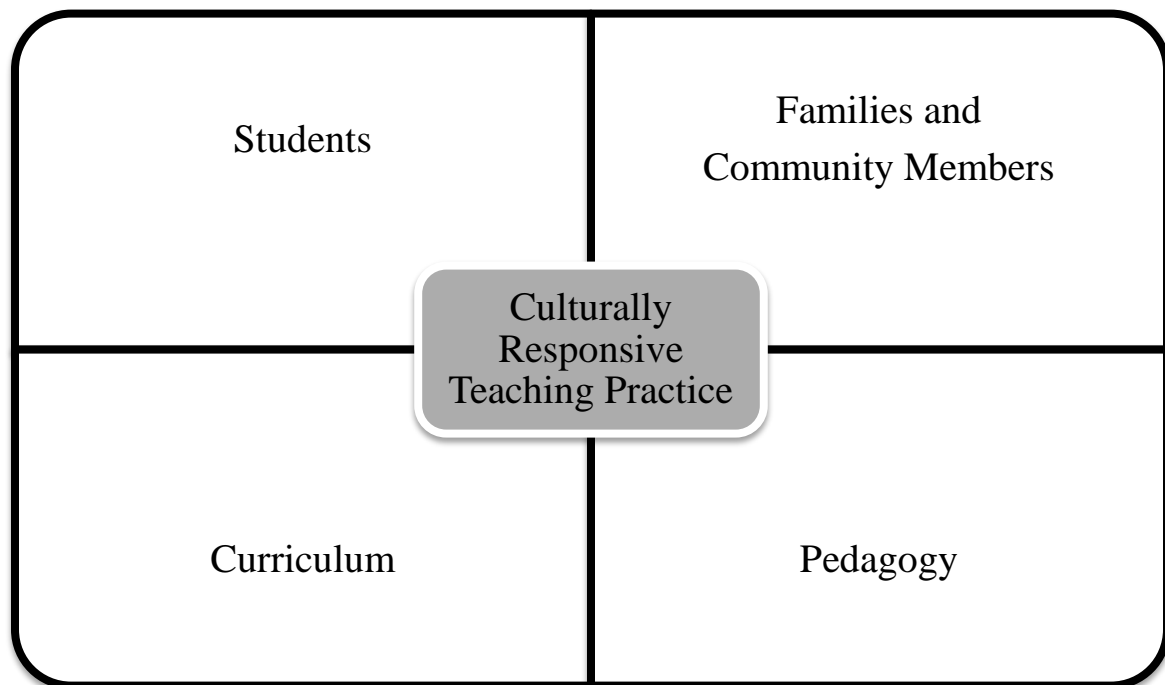


Figure 25: Assessing One’s Practice as a Culturally Responsive Educator

Students

- ❖ What do I know about the students' strengths?
- ❖ What do I know about how the students prefer to learn? How do I know this?
- ❖ Am I holding high academic and personal expectations for each student? How do I know?

Families and Community Members

- ❖ How am I nurturing reciprocal relationships between the students' families and the school? How are the relationships influencing how and what I teach?
- ❖ How am I nurturing reciprocal relationships between community members and the school?

Curriculum

- ❖ In what ways is the curriculum meaningful, relevant, useful and important to each student? Do the students feel as though what they are learning has a purpose and is applicable to real life? How do I know?

Pedagogy

- ❖ What is my approach to teaching? How is my approach related to my own history, background and experiences? In what ways does this approach serve the interests and needs of my diverse students?
- ❖ How do I value and build upon students' strengths? What more can I learn?
- ❖ What teaching strategies do I use that address the students' learning preferences?

- ❖ In what ways is the classroom climate based on social justice, democracy and equity? Are the students provided with equitable access to necessary learning resources and sufficient opportunities to learn? Do the students have opportunities to play critical roles in developing the classroom community?

Additionally, educators can use the following questions as a way to analyze their own educational assumptions and backgrounds (from Egbo, 2009, pp. 128-129):

- ❖ Who controls power in society and how do I feel about this?
- ❖ What are the privileges or oppressions that come with my identity?
- ❖ In what ways does my background facilitate or hinder my success in Canadian society?
- ❖ What are my basic assumptions about learning?
- ❖ What should Canadian students learn in school?
- ❖ In what ways do my personal history and worldviews affect my teaching practices?

At the end of the study I was left with questions that require additional research. These questions include:

- ❖ What might culturally responsive education look like in other content areas, grade levels and contexts?
- ❖ What are some new and meaningful ways in which families could be involved in their children's education?

- ❖ How else might students be involved in the decisions that are made regarding their learning and the classroom community?
- ❖ How might the principles of culturally responsive education be extended to the research process?

Although there is a significant amount of written research about culturally responsive education, there are few examples or case studies of what this looks like in classroom settings. A number of studies have focused on culturally responsive education in the context of secondary schools and in pre-service teacher education programs. What might culturally responsive education look like in other content areas, grade levels and contexts? It will be helpful for researchers to explore this question in a variety of contexts as a way to connect theory with practice.

Additionally, research that examines the involvement of families in their children's education and the involvement of students in decision-making is needed. How might students be involved in democratic decision-making regarding the classroom community and their learning? What are some new and meaningful ways in which families could be involved in their children's education? For reciprocal relationships to be developed, the families need to be willing to participate and be involved. However, it is necessary to explore further what family involvement in education means and how family participation can be meaningful, relevant, useful and important.

In addition to exploring what culturally responsive education looks like in a variety of content areas, grade levels and contexts, it is necessary to investigate how the principles of culturally responsive education can be extended to the research process. For

example, we need to examine how studies can be conducted in ways that are meaningful, relevant, important and useful for the students and their families and how responsive, reciprocal and respectful relationships might be developed with research participants. How might the principles of culturally responsive education be extended to the research process? How might researchers go about involving students and their families in all aspects of the research process, while at the same time meeting the requirements of the behavioural research ethics board? Studies that address these questions will be particularly helpful for research that is conducted by teacher-researchers who are both insiders and outsiders in the research process.

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Appendices

Appendix A: Copy of the UBC Behavioural Research Ethics Board Certificate of Approval



*The University of British Columbia
Office of Research Services
Behavioural Research Ethics Board
Suite 102, 6190 Agronomy Road,
Vancouver, B.C. V6T 1Z3*

CERTIFICATE OF APPROVAL - FULL BOARD

| | | |
|--|---|---|
| PRINCIPAL INVESTIGATOR: Cynthia Nicol | INSTITUTION / DEPARTMENT: UBC/Education/Curriculum and Pedagogy | UBC BREB NUMBER: H09-02216 |
| INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT: | | |
| Institution | Site | |
| N/A | N/A | |
| Other locations where the research will be conducted: , B.C. | | |
| CO-INVESTIGATOR(S): Heather Van Ooyen | | |
| SPONSORING AGENCIES: N/A | | |
| PROJECT TITLE: Studying Culturally Responsive Curriculum and Pedagogy with and for Students and Families | | |
| REB MEETING DATE: October 8, 2009 | CERTIFICATE EXPIRY DATE: October 8, 2010 | |
| DOCUMENTS INCLUDED IN THIS APPROVAL: | | DATE APPROVED: November 9, 2009 |
| Document Name | Version | Date |
| <u>Protocol:</u> | | |
| Research Proposal | N/A | September 21, 2009 |
| <u>Consent Forms:</u> | | |
| Consent Form for Parent Questionnaire | N/A | September 25, 2009 |
| Parent Informed Consent Form for Student Participation | N/A | October 18, 2009 |
| <u>Assent Forms:</u> | | |
| Verbal Assent Script for Students in Grade 2 | N/A | October 19, 2009 |
| <u>Questionnaire, Questionnaire Cover Letter, Tests:</u> | | |
| Questionnaire for Parents | N/A | October 19, 2009 |
| <u>Letter of Initial Contact:</u> | | |

| | | |
|---|-----|-----------------------|
| Letter of Initial Contact | N/A | September 25, 2009 |
| The application for ethical review and the document(s) listed above have been reviewed and the procedures were found to be acceptable on ethical grounds for research involving human subjects. | | |
| <p><i>Approval is issued on behalf of the Behavioural Research Ethics Board and signed electronically by one of the following:</i></p> <hr/> <p>Dr. M. Judith Lynam, Chair Dr. Ken Craig, Chair Dr. Jim Rupert, Associate Chair Dr. Laurie Ford, Associate Chair Dr. Anita Ho, Associate Chair</p> | | |

Appendix B: Excerpts from Research Journal

January 11, 2010

I want to find out what the students already know about animals in order to ground the lessons about animal characteristics and lifecycles in their prior knowledge and experiences. It might be helpful for the student to be able to choose how they show their prior knowledge. If I only use whole group discussions, some students who are shy might not say anything. Others may prefer writing over talking or drawing over writing. Perhaps a combination of strategies would be useful? I am going to provide students with a number of options for showing their knowledge because they have a variety of learning styles, preferences and strengths. I will create a number of handouts that the students can choose from with varying formats including: writing sentences or paragraph, making a list, making a web, drawing a picture or making a chart.

February 16, 2010

I invited a speaker to talk with the class. I think that it is important for students to hear multiple perspectives about animals and why they are important. Additionally, having the guest speaker visit the classroom may help students to recognize that aboriginal cultures need to be valued and included in the curriculum. Hearing this guest speakers' perspective may be a way to help students learn to respect and appreciate aboriginal cultures, which have historically been devalued and oppressed in Canada since the arrival of Europeans.

March 23, 2010

Having live animals in the classroom is one the way that I am meeting the needs and interests of my students. The students are able to touch, smell, hear and see real animals and observe the changes that take place over time in the animals' life cycles. Many of the students appear to be enthusiastic about the animals and often go up close to them throughout the school day. They are asking questions as they observe, either to me or to each other. As they talk to each other about what they are observing, they are using vocabulary that they have learned in regards to animal characteristics and life cycle stages. They are also drawing pictures of the animals and writing their observations in their science journals. We discussed in small groups and as a class what they noticed and observed. The students' enthusiasm for as well as their interaction and engagement with the topic indicates that the curriculum is meaningful and interesting for them.

March 30, 2010

I think that learning about the decline of the salmon population will connect to the students' lives and will provide the students with the opportunity to learn about the impact of humans on an animal and its habitat. It is an important community interest as a number of families have mentioned their concern for animal populations that are in decline. The area where our school is located has undergone a lot of change over the past few decades with the construction of homes, roads, shopping malls and parking lots. This has had a big impact on the salmon population and their habitat because there are rivers and number of streams that run through the city. Perhaps this will be a good opportunity for students to take action to bring about positive change and awareness in the community.

Appendix C: Parent/Guardian Questionnaire



Faculty of Education

2125 Main Mall

Vancouver, B.C. Canada V6T 1Z4

Studying Culturally Responsive Curriculum and Pedagogy *with and for Students and Families*

Questionnaire for Parents/Guardians of Students in Grade 2

A science unit on the topic “Animal Growth and Changes” has been taught to the students in Grade 2. Your responses to the following questions will help us learn more about your views on the science unit taught and how it engaged your child. You may choose to answer all, some, or none of the questions. Your name will not be attached to the feedback.

1. Did you find this science unit to be meaningful, relevant, important and/or useful for your child? Please explain.

2. Samples of your child’s work and photographs of learning activities have been displayed in the school hallway, in your child’s portfolio and on the class blog. Did the learning activities that took place in this unit meet the needs and interests of your child? Please explain.

3. Did you see high expectations being held for your child's learning in this unit? Please explain.
4. How might the teaching of this science unit be improved?
5. Would you like to be more involved in the decisions that are made for the teaching and learning that takes place at school? Please explain.
6. Additional comments:

Thank you for your time. Please return the questionnaire to the school office in the envelope provided.