

# Canadian Journal of Education Revue canadienne de l'éducation

Volume 31                      Number / Numéro 2                      2008

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We gratefully acknowledge the financial assistance of the Social Sciences and Humanities Research Council of Canada and the support of the University of Alberta, the Université du Québec à Chicoutimi, and the University of Saskatchewan in the publication of this journal.

Nous tenons à remercier vivement le Conseil de recherches en sciences humaines du Canada pour son aide financière ainsi que l'University of Alberta, l'Université du Québec à Chicoutimi, et l'University of Saskatchewan qui nous assurent leur soutien.

We also acknowledge the financial support of the Government of Canada, through the Publications Assistance Program (PAP), towards our mailing costs.

Nous reconnaissons l'aide financière du gouvernement du Canada, par l'entremise du Programme d'aide aux publications (PAP), pour nos dépenses d'envoi postal.

**Canada**

© Canadian Society for the Study of Education/Société canadienne pour l'étude de l'éducation

ISSN 0380-2361

Numéro d'enregistrement pour la TPS/GST Registration No. R 106866874

Poste-publications enregistrement no 09699/ Publications Mail Registration No. 09699

April / avril 2008

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The Canadian Journal of Education is indexed in/  
La Revue canadienne de l'éducation est répertoriée dans

Répertoire canadien sur l'éducation/Canadian Education Index, Canadian Magazine Index, Index des périodiques canadiens/Canadian Periodical Index, Canadian Women's Periodicals Index, Contents Pages in Education, Current Index to Journals in Education, Education Index, Educational Technology Abstracts, Linguistic and Language Behavior Abstracts, PAIS Bulletin, Public Affairs Information Service, Psychological Abstracts, Research into Higher Education Abstracts, Sociology of Education Abstracts, Special Education Needs Abstracts, Studies in Women Abstracts.

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DO YOUTH LEARN LIFE SKILLS THROUGH  
THEIR INVOLVEMENT IN HIGH SCHOOL  
SPORT? A CASE STUDY

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In this study we examined whether and how youth learned life skills through their involvement on a high school soccer team. We collected data from fieldwork and interviews with 12 male student-athletes and the head coach from one team. Results showed that the coach's philosophy involved building relationships and involving student-athletes in decision making. Issues relating to three life skills (initiative, respect, and teamwork/leadership) were identified. Although we observed little direct teaching of these life skills, we saw that players generally were producers of their own experiences that supported the development of these skills.

Key words: ecological systems, positive development

Les auteurs ont cherché à savoir si et comment les jeunes acquièrent certaines compétences de la vie courante en étant membres d'une équipe de soccer au secondaire. Les chercheurs ont colligé des données sur le terrain et interviewé 12 élèves-athlètes de sexe masculin ainsi que l'entraîneur principal d'une équipe. Les résultats indiquent que l'entraîneur avait pour philosophie de favoriser l'établissement de relations et d'impliquer les élèves-athlètes dans les prises de décision. Des problèmes reliés à trois compétences de la vie courante (l'initiative, le respect et l'esprit d'équipe/le leadership) ont été identifiés. Bien que les auteurs aient observé que ces compétences sont peu enseignées comme telles, ils ont constaté que

observé que ces compétences sont peu enseignées comme telles, ils ont constaté que les joueurs étaient les producteurs de leurs propres expériences, qui favorisaient effectivement le développement de ces compétences.

Mots clés : systèmes écologiques, développement positif

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The World Health Organization (1999) has suggested that life skills are important for healthy development and preparing adolescents for the future. Sport psychologists have argued that life skills can be taught in combination with athletic skills in sport contexts (Danish & Nellen, 1997). From this perspective, life skills have been defined as the skills that are required to deal with the demands and challenges of everyday life (Hodge & Danish, 1999). They can be physical, behavioural, or cognitive, and may be transferable to other life domains (Papacharisis, Goudas, Danish, & Theodorakis, 2005). Furthermore, sport is being viewed on a global level as a vehicle for promoting healthy development (Sport for Development and Peace International Working Group, 2006).

Sport-based life skills programs have gathered momentum in the USA since the mid-1990s (e.g., Danish, Nellen, & Owens, 1996; Danish, Petitpas, & Hale, 1995). Danish (2002) created the Sports United to Promote Education and Recreation (SUPER) program, a sport-based intervention intended to teach youth life skills. Workshops are taught like sport clinics and include sport-specific skills as well as more general life skills. Although there has been little evaluation of the effectiveness of the SUPER program, recently Papacharisis et al. (2005) used a quasi-experimental design to evaluate a modified version of SUPER with Greek children. Children who received the intervention reported higher goal setting, problem solving, positive thinking, and sport skills compared to children in the control group. Another US sport-based life skills intervention program is the Teaching Personal and Social Responsibility (TPSR) model (Hellison, 2003). This model was developed to instruct teachers and coaches how to teach individual responsibility through sport and other types of physical activities. Case studies depicting the emergence of youth leaders have been reported (Martinek, Schilling, & Hellison, 2006), and the approach is growing in popularity across the USA, but formal evaluation research has been limited. Similar types of

sport-based, life skills intervention programs have been developed in the USA for golf and football (Petitpas, Cornelius, Van Raalte, & Jones, 2005), but evaluations of adolescents' learning experiences through these programs have yet to be published. Overall then, a number of sport-based life skills programs have mainly originated in the USA, but few evaluations of the efficacy and effectiveness of these programs have been published. Thus, there is a need for further examinations of what and how youth might learn through sport (Holt & Jones, 2007).

Danish, Forneris, and Wallace (2005) suggested that high-school sport may be an appropriate context for teaching youth life skills in addition to athletic skills while simultaneously contributing to the educational mission of schools. Supportive evidence from studies of US youth have revealed associations between high-school sport participation and higher academic performance, greater likelihood of attending college, and greater autonomy and satisfaction in one's first job (Barber, Eccles, & Stone, 2001), along with higher levels of self-knowledge, emotional regulation, problem solving, goal attainment, team work, and skill development (Hansen, Larson, & Dworkin, 2003; Marsh & Kleitman, 2003). On the other hand, researchers have also associated negative outcomes with sport participation, including increased use of alcohol (Eccles & Barber, 1999, Eccles, Barber, Stone, & Hunt, 2003), use of smokeless tobacco (Melnick, Miller, Sabo, Farrell, & Barnes, 2001), and adults modeling inappropriate behaviours (Hansen et al., 2003). Furthermore, it has been suggested that socialization processes in sport may legitimize aggressive action (Shields & Bredemeier, 1995). Researchers have questioned the popular view that *sport builds character* (e.g., Fullinwider, 2006; Miracle & Roger Rees, 1994). Based on a recent review of this literature, Morris, Sallybanks, and Willis (2003) concluded that there is a lack of robust evidence for the direct, sustained impact of sport participation on positive developmental outcomes.

To summarize, whereas there is some evidence linking sport participation with positive outcomes, researchers have also shown that sport can produce negative outcomes. In seeking to advance the literature in this area, researchers have called for more investigations that go inside sport contexts to establish whether, what, and how youth learn (Holt & Jones, 2007). Mahoney, Eccles, and Larson (2004) argued that the struc-



ture and context of the activity were important in determining whether participation led to positive or negative outcomes. Furthermore, in a discussion of research on youth involvement in after-school activities, developmental psychologists (Larson et al., 2004) suggested that researchers must assess “what goes on within programs; what youth experience, how development occurs, or what effective youth practitioners do to support development” (p. 541). Similarly, with reference to life skills and school sport, sport psychologists (Danish et al., 2005) suggested that researchers must establish “what sport can teach, how it can be taught, and where it best can be taught” (p. 48). Following these suggestions, the purpose of this study was to examine whether and how youth learned life skills through their involvement on a high school soccer team.

#### CONCEPTUAL CONTEXT

We approached this study from an ecological systems perspective (Bronfenbrenner, 1977, 2001, 2005; Bronfenbrenner & Morris, 1998). The theory is based on four main concepts and dynamic relationships between the concepts (the person-process-context-time model): individual characteristics, proximal process, contextual variables, and the temporally evolving nature of relations between people and different levels of their environment. People interact with several different levels of human ecological systems, ranging from more proximal *microsystems* to more distal *macrosystems*. In the present study, we pursued an in-depth examination of the microsystem of a youth soccer team to understand whether and how youth learned life skills. Microsystems, the most proximal human ecological system, are considered to be the patterned activities, roles, and interpersonal relations a person experiences in a setting (Bronfenbrenner & Morris, 1998). A youth sport team can be regarded as a microsystem (García Bengoechea, 2002). Behaviours in microsystems are also indirectly influenced by more distal levels of human ecology, such as macrosystems of public policy, governments, and economic systems. Thus, in addition to specifically examining the microsystem of a youth sport team, we were also interested in some more distal policy influences.

Although it was beyond the scope of the present article to review the

history of the discipline, ecological systems theory represents an important cornerstone of modern developmental science (Lerner, 2005). Indeed, modern conceptualizations of Positive Youth Development (PYD) are historically grounded in an ecological systems perspective. Briefly, proponents of PYD view adolescents as having the potential for positive developmental change, regarding youth as resources to be developed rather than problems to be solved (e.g., Lerner, 2005). Thus, researchers can examine how people engage in various contexts to gain a better understanding of how to promote positive development. Two modern conceptions include Lerner and colleagues (2005) 5Cs of PYD (competence, confidence, connection, character, and caring/compassion), and Larson and colleagues (Dworkin, Larson, & Hansen, 2003; Hansen et al., 2003) "domains of learning experiences" that may be associated with PYD. These domains relate to exploration and identity work, development of initiative, emotional self-regulation, developing peer relationships and knowledge, teamwork and social skills, and acquiring adult networks and social capital. In designing the present study, we were open to the possibility that some of the 5Cs or domains of learning may represent the types of developmental experiences and/or life skills reported by the adolescents we studied.

## METHOD

### *Context and Participants*

We purposefully sampled a school with a good reputation for athletics and a coach who was regarded as an effective youth leader. Metro High (a pseudonym) was located in a Canadian city of approximately 1 million residents. Catering to grades 10 to 12, Metro was a large school that provided programs for students from diverse ethnic backgrounds (which are reflected by the demographics reported below). Data were collected from 12 male student-athletes and the head coach of the senior men's soccer team at the school. The average age of the participants was 17.1 years ( $SD = 1.00$ ), and they had an average playing experience of 11.3 years ( $SD = 2.1$ ). Mean self-reported GPA was 78 per cent ( $SD = 7.0\%$ ). The student-athletes self-reported a variety of ethnic/racial backgrounds: Caucasian (4), East Indian (2), Slovakian (1), Italian (1), Japanese (1), Afghanistani (1), Kenyan (1), Moroccan (1). The team head coach

(to whom we assigned the pseudonym *coach*) was a 31 year-old male. He had been a full-time teacher for four years, and held a position with Metro High for two years. The coach had also played soccer at the highest amateur level and possessed several soccer coaching qualifications.

#### *Data Collection*

We collected data over the course of a single season, which ran from April to June. The team held two practices and one game per week throughout the season. Research Ethics Board approval was obtained, along with ethical permission from the school board, the school principal, athletics director, head coach, and all participants (and their parents /guardians), who provided signed informed consent.

*Fieldwork.* This study was based on an ethnographic approach (Wolcott, 1994). Two researchers engaged in fieldwork. The lead fieldworker was a 33 year-old Caucasian male who had been a university and high performance soccer player and coach. He attended training sessions, occasionally helped the coach to organize drills (e.g., putting out the pylons), and generally helped out without specifically coaching the team. He stood with the coach during games and sometimes acted as a sounding board for the coach's ideas. The lead researcher had no involvement in team selection and did not make any strategic decisions. But, whereas the lead researcher was not formally a team coach, it was likely that he became viewed by the student-athletes as a full participant in the setting, and was probably regarded more as an assistant coach than a researcher per se.

The co-fieldworker was a 22 year-old Caucasian female who had received training in ethnography, observation, and interviewing. She attended training sessions and games, but she had fewer direct interactions with the student-athletes and coach than the lead researcher. Rather, she took a back-seat and her main role involved making notes about salient interactions among team members and specific incidents that occurred, and later conducting the interviews. Thus, whereas the lead researcher was more of a participant-observer (an insider) the co-researcher was more of a non-participant observer (an outsider), which helped to balance each researcher's individual biases and maintain the

type of analytic distance often associated with realist ethnographic accounts (Holt & Sparkes, 2001).

In total the researchers attended 10 practices and 10 games during the season, representing approximately 60 hours of direct observation. Information obtained during fieldwork included notes from direct observations, informal and formal conversations, and documents (i.e., national, provincial, and school policy documents). All data were recorded in a fieldwork log. Notes were initially made in notebooks immediately following games and practices, and the co-researcher made notes during games. After each game or practice the fieldworkers discussed their initial interpretations, then recorded fuller notes (electronically using laptop computers) the following morning.

As Wolcott (1999) explained, the observation process initially involves taking a broad look at everything before taking a closer look at some things. In the present study, the process initially involved describing all aspects of the situation (including diagrams of the physical layout of school, soccer fields, signs, profiles of each player, and descriptions of team interactions) before more closely exploring certain issues relating to the main research questions (i.e., specific incidents that appeared to be related to learning life skills). We focused on the coach's behaviours during practices and games as well as interactions between the coach and the student-athletes and among the student-athletes themselves. These data were useful for identifying psychosocial processes, interpersonal interactions, and participants' behaviours in detail over time (Wolcott, 1994).

*Interviews.* The co-fieldworker completed formal interviews during a two-week period at the end of the season. The interviews, lasting between 30 minutes and one hour, were audio-recorded. After completing a brief demographic questionnaire, participants were read the following explanation (based on Hodge & Danish, 1999):

We want to know about life skills you learned through sport. Life skills are the skills that are required to deal with the demands and challenges of everyday life. They can be physical (e.g., taking the right posture), behavioural (e.g., communicating effectively), cognitive (e.g., making effective decisions), social (e.g., teamwork), or emotional (e.g., coping with anxiety). The life skills you learned may be different to the examples we have provided. There are no right or

wrong answers. We are interested in your own experiences. (directions for interview protocol)

They were then asked a series of questions about the life skills they learned through their involvement on the team (e.g., "What life skills have you learned through your involvement on this team?" "How have you learned these skills?" "Do these skills transfer to other areas of your life?"). These questions were modified for the interviews with the coach.

#### *Data Analysis*

The original interviewer transcribed interview tapes verbatim, assigning each participant a code (P1 through P12). Data were analyzed using the *Description-Analysis-Interpretation* approach described by Wolcott (1994). Qualitative methodologists (e.g., Patton, 2002) argue that analysis normally involves a mixture of induction and deduction, and it is naive to assume that pure induction is possible because every study is guided by certain concepts. In the present study we were neither purely inductive nor purely deductive – rather, we were guided by certain principles (i.e., the work of Bronfenbrenner, 2005; Larson, 2000; Lerner et al., 2005), but sought to be sensitive to unanticipated issues that arose from conducting research in a naturally occurring setting.

According to Wolcott (1994), *Description* addresses the question "What is going on here?" and it provides the foundation for the subsequent analyses. To obtain a complete description of the life skills reported during the interviews, we used content analysis to understand these data according to the steps provided by Tesch (1990, pp. 142-145). Once these themes had been identified, we created a data matrix to summarize the data and facilitate the comparison and further analysis of the findings (Miles & Huberman, 1994).

Analysis involves the identification of essential features and patterned regularities in the data and the systematic explication of interrelationships among them. Analysis involves answering the question: "How do things work in this setting?" Interpretation involves asking questions about the meaning and context of the data. Whereas analysis is concerned with specific features and exploration of the data transformation process, interpretation is how we construed the transformed data. The key question during the interpretation was: *What does it all mean?*

*Trustworthiness*

A typical concern in this type of research is that the fieldworkers' entrance into a sub-culture may influence participants in an unanticipated manner (Patton, 2002). This problem made it important that we conduct the research in a responsive and critically reflective manner. Accordingly, both fieldworkers maintained reflexive journals and regularly de-briefed with each other to help monitor how our personal biases may have been influencing the research process (Holt & Sparkes, 2001). The triangulation of data sources (i.e., student-athletes' and the coach's perspectives) and data collection techniques (i.e., observation and interview) helped to establish the trustworthiness of the analysis and findings (Patton, 2002). An on-going member-checking process with the head coach was also completed. During these member-checking discussions the lead investigator discussed his interpretations and understanding of the data with the coach throughout the study (including at least eight specific conversations that were recorded in the fieldwork log). The head coach also received a full, written copy of the results, which he discussed with the lead researcher. These member-checking interviews helped establish the accuracy of our interpretations (Lincoln & Guba, 1985).

We produced a realist account of our findings (Sparkes, 2002). Accordingly, following Holt and Sparkes (2001), readers are invited to ask some of the following questions of a text: Is enough evidence presented to enable the reader to judge the researchers' interpretations? Are interpretations made in a fair and balanced manner? Does the account represent a coherent and meaningful picture about participating on the team? Do the findings of the study meaningfully connect to previous research and theory?

**RESULTS AND DISCUSSION**

Framing our findings from an ecological perspective (Bronfenbrenner, 2005), we begin with more distal issues before discussing more proximal issues. Accordingly, we first present policies related to school athletics on a national, provincial, and school-level. We then describe the coach's philosophy and some salient aspects of his coaching approach. Finally, we present data relating to three life skills (initiative, respect, and team-

work), and discuss the extent to which these skills were learned through soccer and may have transferred to other life domains.

### *Athletics Policies*

Documents obtained during fieldwork revealed that high school sport in Canada is promoted as an extension of the classroom. At a national level, the Canadian School Sport Federation (n. d.) has embedded values such as friendly relationships, good sportsmanship, citizenship, cross-cultural understanding, and respect as part of their *Code of Ethics* for all members of a school community involved with school sport. Provincial school sport organizations reflect similar values. For example, the Alberta Schools' Athletic Association (ASAA, 2006-2007), a non-profit voluntary organization governing high school sport in the province, promotes the following mission statement: "To advocate involvement in school sport as an integral part of education and to provide governance of interschool sport activities for high school students through fair play and equal opportunity" (n. p.) Some of the ASAA's specific objectives include maintaining good sportsmanship, integrity, and goodwill within and between high schools participating in interschool athletics, and promoting awareness among students that the primary aim of school is education, but athletics provide significant physical, social, cultural, and emotional values. Beyond this rhetoric, it seemed that the main function of the ASAA was to organize provincial championships for various sports (which was actually the reason why the organization was first established in 1956).

The athletics program at Metro High was consistent with these national and provincial policies. The mission of the Metro High Athletics program (which will be referred to as 'the Cougars') was to provide opportunities for student-athletes to learn life skills and become responsible citizens. Some of these life skills included respect, responsibility, and integrity.

Our fieldwork showed that these character virtues were communicated through the semiotic system rather than through direct teaching. The semiotic system, part of a microsystem, represents people's interactions with the world of symbols and language (Bronfenbrenner & Morris, 1998). At Metro High, a wall of the school gym adjacent to the

soccer team room and visible from the main hallway was covered with large signs depicting the Cougar character virtues. These virtues included honesty, respect, responsibility, fairness, and integrity. Student-athletes would see these signs every day. Additionally, the athletics handbook was available to the students through the school website. We did not, however, observe any examples when these character virtues or the mission statement were verbalized to the student-athletes. The coach admitted that he was aware of the virtues but did not directly seek to reinforce them on a day-to-day basis. Furthermore, the last interview question asked of the student-athletes was "Can you list the Cougar character virtues?" Although all the student-athletes were able to recall a couple of the virtues, only one was able to list all of them.

Another policy issue was that the coach could enforce a variety of measures if student-athletes were performing poorly in school. For example, if student-athletes' marks were poor they could be placed on a probationary period, which initially involved having their class attendance recorded. If their academic performance did not improve, and/or their attendance was unsatisfactory, they could be suspended from the school team. Although no one was suspended for poor grades, one student was suspended during the season for one game because the coach learned he had been skipping classes. The student in question had a very high GPA, and the coach had been contacted by another teacher about the student's erratic attendance. The athlete was told that if he stopped skipping classes he could play soccer again. The coach told the researchers that this was an unwritten policy, which was not employed uniformly across the school or other local high schools (fieldwork log, May 20). Thus, sport participation was used as an indirect means of controlling students' academic achievement.

#### *Coach's Philosophy and Approach*

The coach's general philosophy was that "[Metro] is considered a sports school where excellence in athletics is at the core of the school's reputation. . . . My main focus is to have the players appreciate that they are part of a tradition of excellence and that they do their best to represent that tradition." In addition to his performance-orientation, Coach also believed that:



. . . soccer itself can teach many things. I tend to talk about the tools that we are given to complete tasks and I often refer to elements of adversity. My hope is that students can [get] better at accepting new challenges even if failure is a possible outcome. I want them to adopt an attitude of perseverance. Ultimately it goes back to a little quote by Victor Frankl [coach then read the following quotation]: “Everything can be taken from a man but one thing; the last of the human freedoms – to choose one’s attitude in any given circumstances, to choose one’s own way.” I do believe that if the freedom to choose [one’s attitude] is still there then a chance to fight and overcome still exists. (Coach’s interview)

The coach’s philosophy played out in soccer by his telling student-athletes that, although they could not change the situation (e.g., the referee’s call), they could change their attitude in that situation. He believed that this provided the student-athletes with a sense of freedom.

The first thing we noted about coach’s approach was that he went out of his way to develop relationships with each of the student-athletes on the team. Mostly, this involved interacting with student-athletes before or after games/practices, and (as he told us) during breaks throughout the school day. He would use humor, join in with the student-athletes’ banter, and often ask them about their lives outside of school. In particular, he would talk to student-athletes about their club teams, other coaches, and other student-athletes. Rarely did he talk to student-athletes about their schoolwork. However, we discovered that many of the student-athletes had chosen to take coach’s classes. He thought that this was due, in part, to the fact that they knew him from soccer.

We also paid attention to the behaviours coach displayed during practices and games. We described him as a “quiet sort of coach” who rarely raised his voice to the student-athletes. For practices he arrived early to set up drills and prepared his sessions thoroughly. He began practices by explaining what was going to happen. Although we did not systematically assess this, a feature of his coaching was that he consistently provided performance-contingent feedback. That is, after a player made a mistake, coach would provide corrective information. Coach also demonstrated the same types of behaviours during games. However, during games he was more animated, and he was mindful of this. During an informal conversation, he told the lead researcher that he tried

to make sure that he did not talk too much during games because he did not want to become a distraction to the student-athletes, and he tried to ensure that his comments were helpful rather than “just descriptive” (note from fieldwork log, June 3). Research has shown that coaches who provided more mistake-contingent technical instruction, less general (non-specific feedback), less punishment, and engaged in fewer controlling behaviours had athletes with higher levels of sport enjoyment, perceived competence, and interest in sport participation in the future (Smith, Smoll, & Curtis, 1979). Consequently, we thought that coach displayed many of the characteristics associated with effective youth sport coaches.

*Life Skills Associated with Participation on the Team*

*Initiative.* Nine student-athletes (75%) reported behaviours/attitudes that were consistent with the concept of initiative (Dworkin et al., 2003; Hansen et al., 2003; Larson, 2000), which involves learning to set realistic goals, learning to manage time, and taking responsibility for oneself. Student-athletes were not directly taught any of these skills in sport. Rather, our data were primarily about how the student-athletes demonstrated personal responsibility. P7 explained how student-athletes had learned to be responsible to adhere to the structure coach created:

You have to get there on time [to games/practices]. You have to be able to be prepared, ready to go. If you can't go you gotta let the coach know what's going on. If he tells you to put up the net you gotta go put up the net, it's your responsibility. If you gotta go pick up the balls it's your responsibility. And being on the team is a responsibility from yourself to the school. (Interview, Student P7)

These responsibilities were markedly different to the student-athletes' experiences with their club teams because all the club teams had several coaches/parents (often including an equipment manager) to take care of such details (fieldwork log entry, based on discussion with P10, May 17). By contrast, parents were rarely involved with the high-school soccer team.

Coach explained that he looked “for input from players, whether it's one on one or with the group. I hope that the way I do things will allow players to ask me questions.” Indeed, in one instance during the early part of the season, the opposition cancelled on the Thursday for a prac-

tice game scheduled for a Friday. Coach informed the student-athletes of the cancellation at the end of practice on the Thursday. This announcement prompted two grade-12 student-athletes to ask if instead of the game the team would have a practice session. Coach responded by saying, "I'll be here if you want me to be here, but it's up to you guys because there is no point running a session for a couple of guys" (fieldnote entry, April 20). At this point the two grade-12 student-athletes took a straw poll of the team and it was agreed that there would be a practice the next day. This example reflected a situation whereby the coach provided an opportunity for the students to show responsibility, but we would argue that he did not specifically teach the students about this life skill (or discuss how it may transfer to other domains).

No student-athletes reported that they learned initiative directly from playing on the soccer team. Rather, it seemed that they expressed initiative through soccer. However, we were unable to establish just how, why, and where the student-athletes did learn about initiative. We speculated that the idea of taking personal responsibility and working hard to achieve goals may have been prerequisites for soccer involvement at this level. We also thought that the coach created a structure for youth to display these qualities, rather than specifically teaching these qualities.

*Respect.* The second main life skill we identified reflected the Lerner et al. (2005) concept of Character, which involves learning respect for societal and cultural rules. However, we did not find examples of student-athletes demonstrating respect in the context of broader society. Rather, they talked about respect in regard to the sub-culture of soccer. Eleven student-athletes (91.7%) reported data consistent with this theme. P11 said that he had learned to "respect other student-athletes. . . . After the game when we go out and shake their hands even if we lost, we still have to shake their hands and be respectful." Interestingly, this behavioural manifestation of showing respect after games (i.e., shaking hands) has been a problem in some Canadian high-school soccer teams. In the Ottawa area, the athletics board actually banned post-game handshakes after males' games because it was causing too many fights (Egan, 2006).

P8 explained how coach modeled respect:

[H]e never ever like looks down at any other teams. He always shows them

respect . . . . He always teaches if like a ref is reffing a game, as poorly as he may be reffing, as poorly as he may be doing, regardless you're always respectful of him and you're never talking back. And the second you make a mistake and you do something that like affects the overall image of [Metro] High on the pitch he'll take you right off no matter who you are. (Interview, P8)

Despite interview data describing the coach modeling respect, our observations revealed some contradictions. During a game (which the Cougars won) against the team which eventually beat them in the city final, the following entry was made in the fieldwork log (May 8):

[Coach] was also getting frustrated, and yelled at the ref a couple of times. He didn't say anything rude. . . , [but] he yelled things like "what is the call?" and he walked about 15 yards down the touchline to ask the ref about an inconsistent yellow card he had just 'not given' for shirt pulling. (Fieldwork log, May 8)

Modeling is a powerful means of transmitting values and attitudes; learning can occur vicariously when adolescents observe models (Bandura, 1986). Thus, rather than the coach directly teaching the student-athletes about respect, he tended to model respectful behaviours. However, because the coach did not consistently demonstrate respect for the referee, the fact that the student-athletes were also inconsistent in this regard is not surprising.

We found that the student-athletes could be punished for failing to demonstrate respect. P6 recalled:

Last year in the City final game I got a yellow card and I got called down by the athletic person here, Ms. H. and she sat me down cause she said she was gonna suspend me from school cause she thought I swore but I explained the situation and she obviously forgave me but at the same time like those little things like that you have to watch when you're a [student]-athlete rather than just a flat out student so . . . . I mean they are not lenient I guess you could say. (Interview, P6)

Another example of student-athletes being reprimanded for failing to show respect was obtained during a game when one of the Cougars' star players was getting frustrated with the opponent's physical play and the referee's calls. Coach pulled the player to the touchline as play continued and sternly told him to calm down and stop arguing or he would be substituted. It is possible that other student-athletes learned through these examples that they should act with respect. But, we found no evid-

ence to show that respect was directly taught or positively reinforced (e.g., student-athletes being commended for showing respect). Furthermore, we found no evidence to show that respect transferred out of the immediate soccer context. Rather, respect was a policy valued by the school athletic program and students were reprimanded if they did not demonstrate respect in sporting situations.

*Teamwork/Leadership.* Our third theme related to how student-athletes learned to work together as a team, and learned about leadership and communication (Dworkin et al., 2003; Hansen et al., 2003). This theme also reflected the “C” of Connection (Lerner et al., 2005). Whereas Lerner et al. characterized connection as bidirectional exchanges between the individual and peers, family, school, and community, our data focused more on exchanges between student-athletes rather than connection to wider societal influences. Therefore, for this particular team, connection occurred at the peer level, rather than at wider institutional and community levels.

All 12 student-athletes reported that they had learned about teamwork and leadership through their involvement in the team. P6 said: “I know a lot of my teammates will listen to me so I try to kinda take that on my shoulders a bit and try to lead [and] lend a helping hand.” P12 said,

To make it in life you actually have to cooperate with other people sometimes, like maybe co-workers or like students in your class or whatever cause not everything is individual so helps out . . . in terms of learning to work together as a team. (P6 interview)

In fact, teamwork and leadership were the *only* concepts that student-athletes thought transferred to other areas of their lives. However, rather than the coach directly teaching the student-athletes about teamwork/leadership, they seemed to be producers of their own experiences in this respect (Larson, 2000).

These findings mirror results of a recent survey. Berrett (2006) found that 76.6 per cent of Alberta’s top 100 corporate Chief Executive Officers (CEOs) and 80 per cent of Members of the Legislative Assembly (MLAs) participated in high school sport. Fifty-four per cent of these individuals reported that their high school sport participation had a significant or extensive effect on their future career development, with teamwork

being the skill that they associated most with high-school sport participation. Teamwork and leadership skills may arise from sport involvement because of the unique demands of team sport. That is, individuals must learn to work together to achieve team and personal goals (cf. Hansen et al., 2003).

One particularly salient aspect of the team we studied was that the student-athletes were drawn from a range of ethnic and racial backgrounds. However, they did not talk about learning to bridge ethnic or racial differences through their involvement on the team. Rather, they talked about developing friendships with younger (or older) students. For example, P10 said,

I think soccer like bonds you . . . I don't think I'd interact a lot of the grade 12s I talk to now, but a lot of them are like more close friends now [because we are on the soccer team]. So it's like we have a common interest and common goal I guess. (P10 interview)

Other qualitative work of adolescents' experiences in ethnically diverse community programs has found that peer interactions provided youth with opportunities to bridge individual differences (Watkins, Larson, & Sullivan, 2007). The fact that we did not obtain data about youth learning to bridge ethnic differences may reflect the idea that it is not the presence of diverse peers in a setting but the conditions under which youth interact that influence their behaviour and attitudes (Hansen et al., 2003; Eccles & Gootman, 2002). That is, the coach did not create conditions that promoted understanding of individual differences.

## CONCLUSION

The purpose of this study was to examine whether and how youth learned life skills through their involvement on a high school soccer team. By adopting an ecological systems perspective (Bronfenbrenner, 2005), we were able to categorize data at more distal and proximal levels. Overall, we found that policy issues reflected the importance of student-athletes' learning life skills through their involvement in sport. The coach developed relationships with athletes and sought their input on decision making. We did not find evidence that the student-athletes were directly taught about the life skills that were reported (initiative, respect, and teamwork/leadership). Rather, the structure the coach created provided

opportunities for the students to demonstrate initiative. Students were punished or reprimanded for failing to demonstrate respect. Finally, youth appeared to be producers of their own teamwork/leadership experiences. They thought that only this skill transferred to other domains.

In developing our interpretations of these data, we were cognizant of two important limitations. The first related to the sample being a self-selected group of healthy youth for whom their involvement in soccer worked. There was no drop-out from the team, and the student-athletes had played in previous years. Thus, we may have studied an already resilient group of adolescents because they had been able to graduate to their current position as high school student-athletes. This concern limits the generalizability of any interpretations to contexts beyond similar types of high school soccer teams. Future research that assesses whether youth who dropped out of sport learned any life skills would be an important addition to the literature. Our second concern related to social desirability response bias. That is, the participants obviously liked coach and may have attempted to portray him in a positive light during the interviews. To this end, it was important to have observational data to establish the coherence between the student-athletes' words and their actions.

As Danish et al. (2005) have suggested, nothing magical about school sport will teach adolescents life skills. Rather, how sport programs are structured and delivered is likely to influence adolescents' experiences (Mahoney et al., 2004). The current findings provide some information about how one school sport team was structured and delivered, and how this experience related to students' acquisition of life skills.

We suspect that some policy level claims for the benefits of school sport may be overstated. If school sport programs are truly designed as an extension of the classroom, then it seems that sport programs should embrace direct instruction and curricula designed to teach life skills. To this end, intervention programs like SUPER (Danish, 2002) and TPSR (Hellison, 2003) may provide some useful guidelines. However, further evaluation work is required to establish the efficacy and effectiveness of these interventions (Holt & Jones, 2007). Additionally, our findings about how the coach developed relationships with the student-athletes may

provide useful information for other teachers or coaches.

Strengths of this study were that we examined a single team over the course of its entire season. We were able to assess some aspects of interactions between student-athletes and their context. We were able to provide a description of proximal and distal influences on the student-athletes' involvement in the microsystem of a youth sport team. As such, this study contributes to the literature by looking inside youth sport systems and assessing some characteristics of these systems that could be manipulated to promote PYD. However, adolescents engage in a range of microsystems in addition to school sport, including peers, family, and work. We were unable to show any connections between their involvement in these different contexts. To build on the present study, longer-term evaluations are required, and it is important to establish how sporting involvement fits into the wider social milieu that youth experience. We need to understand more about what adolescents learn from their parents, peers, and through interactions in different contexts. Such studies will enable researchers, practitioners, and policy-makers to obtain a better understanding of the role of high school sport in the lives of adolescents, and to assess if it helps some people become productive members of adult society.

#### ACKNOWLEDGEMENTS

Thanks to the student-athletes, staff, and Edmonton Public School Board for enabling us to conduct this study. This study was funded by a Social Sciences and Humanities Research Council operating grant awarded to Nick Holt, James Mandigo, and Ken Fox, and a Population Health Investigator Award from the Alberta Heritage Foundation for Medical Research held by Holt.

#### NOTES

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# SOURCES DE MATÉRIEL EN FRANÇAIS POUR L'ÉLABORATION D'ÉPREUVES DE COMPÉTENCES EN LECTURE ET EN ÉCRITURE

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L'élaboration d'une épreuve de compétences en lecture ou en écriture présente de nombreux défis. On doit assurer la représentativité des items par rapport au concept ciblé et prendre en compte les variables linguistiques susceptibles d'influencer le comportement mesuré. Les informations afférents à ces variables linguistiques proviennent typiquement des dictionnaires spécialisés ou des études normatives sur la langue. Le but du présent article est de rapporter les résultats d'une recension systématique des sources de matériel en français pouvant servir à l'élaboration d'épreuves de compétences en lecture et en écriture. Ce compte rendu est organisé selon une taxinomie hiérarchique dans laquelle nous opérons une différenciation progressive entre les unités segmentales de la langue, des unités supralexicales aux unités infralexicales. Les variables pertinentes sont définies et les sources de matériels ou de données normatives sont présentées.

Mots clés : évaluation des compétences en lecture et en écriture, ressources pour la construction des épreuves en français, données normatives sur le lexique du français

The development of tests for the assessment of reading or writing skills always is a challenging task. A representative sample of items for the theoretical construct of interest must be selected and the linguistic variables likely to influence the behavior being measured must be taken into account. The most useful information for this purpose is found in specialized dictionaries and normative data studies. The goal of the present article is to systematically review the sources of material in French that can serve in the assessment of reading and writing skills. This review is broken down

into the segmental units of the French language, from supra-lexical to sub-lexical units. The relevant variables are defined and the sources of material and normative data are presented.

Key words: assessment of reading and writing skills, resources for test construction in French, normative data on the French lexicon

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L'évaluation des compétences scolaires joue un rôle important en éducation. Elle permet, notamment, d'arrimer le niveau d'habileté ou de connaissances de l'élève à un programme particulier, d'assurer le pistage d'un apprentissage ou d'évaluer l'efficacité d'une intervention ou d'une méthode d'enseignement. Lorsqu'un élève présente un retard dans un apprentissage scolaire (ex. en lecture), une évaluation ciblée permet d'établir le profil de ses forces et de ses faiblesses et de guider l'élaboration d'une intervention corrective. Pour assurer une estimation juste des compétences de l'élève dans toutes ces situations, on doit disposer d'une échelle de mesure conforme à un ensemble de critères méthodologiques (ex. la fidélité et la validité de la mesure, la standardisation de la procédure d'évaluation; voir Laveault & Grégoire, 2002). Une partie importante de ces critères se rapporte aux caractéristiques des items choisis dans l'élaboration d'une échelle de mesure. Dans le présent article, nous traitons spécifiquement des renseignements disponibles sur les unités segmentales du français pour guider le choix ou la construction des items dans l'évaluation des habiletés langagières qui sous-tendent la lecture et l'écriture.

Plusieurs conditions doivent être réunies pour mesurer adéquatement une habileté langagière. D'abord, cette habileté doit être bien définie. La représentation que nous nous en faisons est typiquement guidée, explicitement ou implicitement, par des considérations théoriques. Dans l'étude de la lecture, par exemple, différentes caractérisations du système de représentations langagières conduisent à l'inférence de processus différents ou à des étiologies différentes d'un trouble telle une dyslexie (pour des exemples, voir Coltheart, Curtis, Atkins, & Haller, 1993; Joanisse, Manis, Keating, & Seidenberg, 2000). Parallèlement, différentes approches théoriques peuvent conduire les chercheurs à privilégier des mesures particulières dans l'évaluation

d'une habileté langagière. C'est le cas, notamment, des mesures de performance en lecture orale dans lesquelles on utilise des mots ayant différentes propriétés (ex. sur les plans de la régularité orthographique, de la structuration syllabique, de la longueur, du voisinage orthographique, de la concrétude, de la fréquence d'occurrence) ou des pseudomots (ou logatomes). Certaines caractéristiques des mots pertinentes à l'évaluation peuvent être tirées des dictionnaires usuels, mais, dans la plupart des cas, ces caractéristiques doivent être extraites par l'analyse d'un corpus de textes ou établies par des études normatives.

Le présent article est centré sur la sélection des items qui peuvent servir à déclencher une réponse dans une épreuve de performance langagière. Cette réponse pourra être fournie en français comme langue maternelle ou langue seconde, à l'oral ou à l'écrit, en mode de réception (à l'écoute ou en lecture) ou de production (en parole ou en écriture). Nous présentons ici les résultats d'une recension des sources de matériel disponibles en français pour l'élaboration des mesures standardisées de compétences langagières en privilégiant celles qui sont assorties de données normatives.

#### CLASSEMENT DES SOURCES DE MATÉRIEL

Nous inscrivons les sources de matériel répertoriées dans un schème de classement comportant trois niveaux de différenciation. (1) Le premier niveau sert à distinguer trois types de stimulus linguistiques : les unités supralexicales (p. ex., les expressions), les unités lexicales (c.-à-d., les mots) et les unités infralexicales (p. ex., les morphèmes, les syllabes, les graphèmes). (2) Le deuxième niveau, que nous appliquons aux unités lexicales seulement, consiste à différencier les propriétés relatives à la forme et au sens des mots. (3) Enfin, pour la forme et le sens des mots, nous distinguons les propriétés intralexicales des propriétés interlexicales. Les propriétés intralexicales se rapportent à l'identité propre du mot, indépendamment de ses rapports avec les autres mots de la langue. C'est le cas, par exemple, de la fréquence d'occurrence des mots dans l'usage. Les propriétés interlexicales, par contre, relèvent intrinsèquement des rapports que chaque mot entretient avec les autres mots dans la langue. C'est le cas, par exemple, de la similitude



orthographique ou phonologique entre les mots. Les variables que nous décrivons plus bas présentent toutes le potentiel d'influencer le niveau de performance langagière, en lecture ou en écriture (voir Bonin, 2003, 2004; Ferrand, 2001a; Morais, 1994; Sprenger-Charolles & Colé, 2003; Sprenger-Charolles, Colé & Serniclaes, 2006; Vikis-Freibergs, 1994). Les sources de données sur les unités segmentales du français sont nombreuses, mais éparses. Pour en faire un compte rendu synthétique, nous les présentons en trois catégories selon leur niveau de structuration linguistique.

#### LES UNITES SUPRALEXICALES

Les unités supralexicales de la langue désignent toute unité segmentale constituée de deux ou plusieurs mots. Les locutions, les expressions idiomatiques et les maximes s'inscrivent dans cette classe, sans toutefois en limiter l'étendue. La maîtrise du français déborde les domaines du vocabulaire et de la grammaire. Le locuteur est souvent confronté à des combinaisons de mots qui doivent être interprétées au sens figuré (p. ex., *se faire tirer l'oreille*). Il existe en français de nombreuses listes de locutions ou d'expressions idiomatiques (p. ex., Couture, 2002; Rat, 1987; Rey & Chantreau, 1999).

La compilation des expressions représente, certes, une étape importante dans la constitution d'un matériel utile à l'évaluation de la compréhension d'une langue, mais cette étape n'est que préliminaire. Marquer (2005, chapitre 4) évoque explicitement la possibilité que l'incohérence des résultats dans les recherches récentes sur la compréhension des expressions idiomatiques soit due à l'hétérogénéité des items et à l'insuffisance des contrôles dans leur sélection. Ces expressions varient effectivement sur plusieurs plans tels leur fréquence d'occurrence dans la langue, leur degré d'ambiguïté (la coexistence d'un sens propre et d'un sens figuré), leur degré de transparence (la possibilité d'extraire le sens figuré du sens propre), leur degré de fixité (la difficulté d'ajouter ou de modifier un mot dans l'expression sans en modifier le sens) et leur niveau d'abstraction. En français, un travail important reste à faire pour documenter les propriétés de ces expressions et pour identifier les caractéristiques les plus pertinentes à l'élaboration du matériel pédagogique et à l'évaluation des connaissances.

## LES UNITÉS LEXICALES

Les unités lexicales renvoient aux mots de la langue et sont typiquement réparties dans des classes grammaticales différentes. Certaines de ces classes sont dites fermées, car on peut difficilement leur ajouter de nouveaux membres (p. ex., les articles, les pronoms, les prépositions et les conjonctions). D'autres classes sont dites ouvertes, car leur composition change au fil du temps (p. ex., les noms, les adjectifs, les verbes, les adverbes et les interjections). Les données normatives disponibles en français actuellement se rapportent principalement aux mots des classes ouvertes. Elles sont également plus riches pour les mots de la langue écrite que pour ceux de la langue parlée. Nous présentons plus bas les sources de données relatives à la forme des mots, puis celles relatives à leur sens.

### *La forme des mots*

La propriété intralexicale des mots qui a reçu l'attention la plus soutenue est leur fréquence d'occurrence dans l'usage. Les dictionnaires de fréquences sur le lexique du français sont nombreux, mais ils présentent des différences importantes dans leur composition et dans leur méthodologie. Certaines sources de fréquences reposent sur des corpus de textes étendus et variés (p. ex., Baudot, 1992; Imbs, 1971; Juilland, Brodin & Davidovitch, 1970; New, Pallier, Brysbaert & Ferrand, 2004; New, Pallier, Ferrand, & Matos, 2001), alors que d'autres sont issues de l'analyse de corpus plus spécifiques (p. ex., des livres destinés à des enfants de 3 à 5 ans : Arabia-Guidet, Chevrie-Muller, & Louis, 2000; des livres scolaires ou extrascolaires : Lambert & Chesnet, 2001; Lété, Sprenger-Charolles, & Colé, 2004; des romans français parus entre 1962 et 1968 : Engwall, 1984; de la correspondance d'affaires : Lyne, 1985). Outre le dépouillement de corpus, on a parfois eu recours à d'autres méthodes pour comptabiliser la fréquence des productions lexicales. Vikis-Freibergs (1974), par exemple, met à profit une procédure d'associations libres pour déclencher des réponses verbales chez de jeunes adultes et en calculer la fréquence d'occurrence. La grande majorité des dictionnaires de fréquences s'appuie sur des corpus de la langue écrite, mais il existe aussi quelques sources de fréquences issues

de la langue parlée (p. ex., Beauchemin, Martel, & Théoret, 1992; Véronis, 2000; Tubach & Boë, 1985).

Le pendant subjectif de la fréquence d'occurrence objective des mots est une variable appelée *familiarité*. Pour estimer la familiarité, on demande à des juges de coter des mots sur une échelle de Likert, ordinairement en sept points. Les études qui rapportent des données normatives sur la familiarité attestent généralement une corrélation positive avec la fréquence d'occurrence objective : Arnaud (1989), Bonin et coll. (2003a), Denis (1975), Desrochers et Bergeron (2000), Desrochers, Thompson et Saint-Aubin (2008), Flieller et Tournois (1994), Forget (2005), Gonthier, Desrochers, Thompson, et Landry (sous presse) et Robin (2006). Les mots fréquents dans l'usage sont souvent appris en bas âge. Des normes d'âge d'acquisition des mots français sont présentées dans les travaux de Alario et Ferrand (1999), Bonin et coll. (2003b), Chalard et coll. (2003), Ferrand, Grainger et New (2003) et Sirois, Kremin et Cohen (2006). La fréquence d'occurrence, la familiarité et l'âge d'acquisition des mots sont des variables typiquement corrélées entre elles et elles exercent une influence significative sur la reconnaissance visuelle et la lecture orale des mots et sur la dénomination des objets (Bonin, 2003; Ferrand, 2001a).

Les propriétés interlexicales de la forme des mots qu'on a le plus étudiées se rapportent à leur similitude orthographique ou phonologique. L'exemple le plus connu est l'homonymie dont les deux cas particuliers sont les homographes (p. ex., *air* – mélange gazeux; *air* – mélodie; *air* – expression) et les homophones (p. ex., *mère*, *mer*, *maire*). On peut facilement constituer des listes d'homonymes en consultant des dictionnaires spécialisés (p. ex., Belzile, 1992; Camion, 1986) ou une base de données lexicales (p.ex., BRULEX; Content, Mousty, & Radeau, 1990). Champagnol (1980), Lecoq (1987), Marquer, Le Nestour, Deverloy et Favrant (1987) et Théroüanne et Denhière (2004) présentent des données utiles sur le sens dominant d'échantillons d'homonymes.

Sans être des homonymes, les mots du français peuvent ressembler à d'autres mots de la langue. Par exemple, on dira de *beau*, *peau*, *seau* et *veau* qu'ils constituent des *voisins* orthographiques (ou phonologiques) en vertu de la définition qu'en donnent Coltheart, Davelaar, Jonasson et Besner (1977) : les mots de même longueur qui diffèrent par une lettre,

toutes les lettres communes étant aux mêmes positions. Un autre cas particulier de similitude interlexicale concerne l'emplacement, dans la structure orthographique ou phonologique du mot, à partir duquel il se différencie de tous les autres mots débutant par les mêmes lettres ou les mêmes phonèmes. On utilise le terme *point d'unicité* pour désigner cet emplacement. Ainsi, plus le point d'unicité est éloigné du début d'un mot, plus il partage de lettres ou de phonèmes avec un ou plusieurs autres mots. On peut trouver des données relatives au voisinage orthographique et au point d'unicité orthographique ou phonologique dans les bases de données BRULEX (Content et coll., 1990) et VoCoLex (Dufour, Peereboom, Pallier, & Radeau, 2002). L'influence de la similitude entre les mots sur la reconnaissance des mots en lecture est maintenant bien attestée et documentée (voir Mathey, 2001).

Dans l'évaluation de la lecture orale ou de l'orthographe, il est souvent utile de faire lire ou écrire des pseudomots (ex. *ravier*). Duych, Desmet, Verbeke et Brysbaert (2004) ont élaboré un programme, appelé WordGen, pour construire des pseudomots selon un ensemble de restrictions choisies par l'utilisateur. Il est possible, par exemple, de fixer la longueur et l'étendue du voisinage des pseudomots ainsi que leur degré de conformité aux contraintes orthographiques du français.

#### *Le sens des mots*

Les propriétés sémantiques intralexicales les mieux documentées en français sont la concrétude, la valeur d'imagerie et la valence émotionnelle, qu'on mesure typiquement à l'aide d'une échelle de Likert en sept points. La concrétude renvoie à la mesure dans laquelle un mot désigne une entité qui peut être captée par les sens (p. ex., la vue, l'ouïe). Cette variable est apparentée à la valeur d'imagerie, qui, elle, désigne le degré de facilité avec lequel un mot évoque une image mentale (comparez *maison* à *neutralité*). Les études suivantes fournissent des données normatives sur la concrétude ou la valeur d'imagerie des mots : Bonin et coll. (2003a), Denis (1975), Desrochers et Bergeron (2000), Desrochers et coll. (sous presse), Flieller & Tournois (1994), Forget (2005), Gonthier et coll. (2008), Hammoud (1983), Hogenraad et Oriane (1981), Robin (2006) et Vikis-Freibergs (1976). La valence émotionnelle d'un mot désigne le degré selon lequel son référent est jugé plaisant ou déplaisant.

Cette valence comprend donc deux éléments, une polarité et une estimation d'intensité. Les études suivantes rapportent des normes de valences émotionnelles : Bonin et coll. (2003a), Messina, Morais et Cantraine (1989), Painchaud (2005) et Vikis-Freibergs et Freibergs (1976). Si l'influence de la valence émotionnelle sur le rendement en lecture a surtout été étudiée chez les adultes (Beauregard et al., 1997; Inaba, Nomura & Ohira, 2005), celle de la concrétude et de la valeur d'imagerie a été attestée chez les enfants (Laing & Hulme, 1999) aussi bien que chez les adultes (Strain & Herdman, 1999).

Les propriétés sémantiques interlexicales sont multiples, mais encore peu documentées en français. La caractérisation de ces propriétés repose souvent sur le postulat que le sens de la majorité des mots est complexe et analysable en composantes sémantiques. Ainsi, on dit des mots qui partagent une ou plusieurs composantes sémantiques qu'ils font partie d'un *champ sémantique* (pour un traitement formel, voir Mel'čuk et coll., 1988). On a montré que l'évocation du sens d'un mot par celui d'un autre (p. ex., dans les épreuves de lecture avec amorçage sémantique) dépend également de leur lien associatif. On mesure la force de ce lien en calculant le nombre d'associations libres produites en réponse à un mot stimulus dans un laps de temps fixe. On a accordé beaucoup d'attention à l'étude du réseau associatif entre les mots il y a une quarantaine d'années (p. ex., Hammoud, 1983; Freibergs, 1968, 1970; Lieury, Iff, & Duris, 1976; Oléron & Legall, 1970; Rosenzweig, 1970; Vikis-Freibergs & Freibergs, 1976). Ce sujet connaît actuellement un regain d'intérêt et de nouvelles normes d'association sont parues récemment (De La Haye, 2003; Duscherer & Mounoud, 2006; Ferrand, 2001b; Ferrand & Alario, 1998; Théroutanne & Denhière, 2004).

Les relations sémantiques mieux circonscrites se prêtent souvent à des applications plus ciblées, notamment dans l'évaluation du vocabulaire et de la compréhension des mots individuels en lecture. Les relations les plus amplement documentées en français sont la synonymie, l'antonymie et l'hyponymie (ou l'inclusion de classe; p. ex. {hirondelle, pigeon, aigle...} → OISEAU). Pour les synonymes et les antonymes, les dictionnaires spécialisés fournissent des listes accessibles et abondantes (p. ex., Baratin & Baratin-Lorenzi, 1996; Bénac, 1994; Bertaud du Chazaud, 1997; Boussinot, 2000; Genouvrier, 2001; Tardif,

Fontaine et Saint-Germain, 2001). On exploite depuis longtemps la synonymie et de l'antonymie dans l'évaluation du vocabulaire et de la compréhension lexicale en éducation (ex. Binois & Pichot, 1958).

On a accordé une attention considérable à l'hyponymie dans l'étude de la structuration des connaissances conceptuelles et lexicales (p. ex., les catégories sémantiques, les taxinomies) chez l'enfant et chez l'adulte. Les données normatives disponibles sur les termes catégoriels du français sont issues essentiellement de deux méthodologies. La plus courante a été introduite par Battig et Montague (1969). Elle consiste à fournir aux répondants le nom de plusieurs catégories sémantiques et à leur demander d'indiquer, pour chaque catégorie, le nom des référents qui leur semblent appartenir à cette catégorie. Selon les études, les répondants doivent produire soit un nombre fixe de réponses dans un laps de temps variable ou le plus grand nombre de réponses dans un laps de temps fixe. On rapporte typiquement la fréquence d'occurrence des hyponymes en réponse à chaque terme catégoriel.

Le choix des termes catégoriels utilisés varie selon qu'on s'intéresse à l'établissement du vocabulaire fondamental du français ou à l'organisation du lexique en mémoire à long terme. Les mots stimulus employés pour circonscrire le vocabulaire fondamental représentent plus souvent des « centres d'intérêt » que des catégories sémantiques (voir Goughenheim, Michéa, Rivenc, & Sauvageot, 1964; Mackey, Savard, & Ardoin, 1971; Ters, Mayer, & Reichenbach, 1969). Dans les travaux centrés sur l'organisation cognitive du lexique, on applique généralement des critères plus stricts dans le choix des termes catégoriels. Il existe en français des normes de production calculées à partir des réponses fournies par des adultes (p.ex., Charles & Tardieu, 1977; Cordier, 1988; Denis, 1978; Dubois, 1982, 1983; Favreau & Segalowitz, 1980; Lancry, 1986; Léger, Boumlak & Tijus, sous presse; Marchal & Nicolas, 2003) ou par des enfants (p.ex., Cannard et coll., 2006; Cordier, 1980, 1988; Lecoq, 1987; Tourette, 1979). Une variante de cette méthodologie consiste à fournir les hyponymes et à demander aux répondants d'indiquer le nom de la catégorie à laquelle ils appartiennent. Pineau et Larochelle (1990) rapportent des normes de production de catégories effectuée par de jeunes adultes. Rosch (1973) a proposé une autre méthodologie pour étudier l'organisation des

catégories sémantiques. Elle présente des couples hyponyme – catégorie (p. ex., truite : poisson; requin : poisson) et demande aux répondants d'estimer le degré de représentativité (ou de typicité ou typicalité) de l'hyponyme par rapport à la catégorie sur une échelle de Likert. Les normes de typicalité ne sont pas courantes en français, mais il en existe quelques sources (p. ex., Pineau & Larochelle, 1990; Cordier, 1980, 1988; Léger et coll., sous presse).

#### LES UNITES INFRALEXICALES

Les mots sont constitués d'unités segmentales plus fines tels le morphème, la syllabe (elle-même étant décomposable en unités encore plus fines : l'attaque, le noyau et la coda), le graphème et la lettre. Les recherches récentes indiquent que les propriétés de ces unités exercent une influence significative sur la lecture ou l'écriture. Les morphèmes sont des unités minimales de sens qui peuvent être combinées pour former des mots. Les morphèmes libres peuvent former des mots autonomes (ex. *pipe*), alors que les morphèmes liés, préfixe ou suffixe (ex. anti-, -ique), doivent être joints à un morphème libre pour former un mot (ex. *antifongique*). Thiele (1987) fournit une liste étendue des morphèmes et une description des patrons de construction dérivationnels du lexique français contemporain. On a montré, chez des élèves de langue maternelle française, que la sensibilité à la structure morphologique des mots facilite la lecture orale de mots et de pseudomots (ex. Colé, Royer, Leuwers & Casalis, 2004; Marec-Breton, Gombert & Colé, 2005) et que cette sensibilité est aussi associée à la segmentation syllabique des mots (Casalis & Louis-Alexandre, 2000). Plusieurs travaux de recherche donnent à penser que la syllabe elle-même constitue une unité fonctionnelle en lecture et dans les productions orthographiques (Kandel & Valdois, 2006a, 2006b). Pour sélectionner des items selon leur structure syllabique, la stratégie la plus pratique est d'exploiter une base de données informatisée dont les entrées lexicales ont été syllabées (ex. LEXIQUE 2; New et coll., 2004).

La rime orthographique des noms et des adjectifs (c.-à-d., le noyau et la coda de la syllabe finale) peut être associée sélectivement aux catégories du genre grammatical en français (ex. *bouquet*, *pirouette*). Le degré d'association entre la rime et les classes du genre est toutefois très

variable en français. Certaines terminaisons sont associées presque exclusivement à une seule classe de genre (p. ex. *-et* pour le masculin; *-ie* pour le féminin), alors que d'autres peuvent coïncider presque indistinctement avec les deux classes de genre (p. ex. *-que*, *-be*). Séguin (1969) et Tucker, Lambert et Rigault (1977) rapportent des listes complètes de terminaisons françaises et des données sur leur degré d'association aux classes de genre. On a montré que la valeur prédictive des rimes finales exerce une forte influence sur l'identification du genre des chaînes de lettres chez l'enfant (Tucker et coll., 1977) et chez l'adulte (Desrochers & Paivio, 1990; Taft & Meunier, 1998).

En français, l'unité segmentale minimale de la lecture orale est le graphème. Celui-ci peut être constitué d'une seule lettre (ex. a, i, o, c, g, p) ou de deux ou plusieurs lettres (ex. au, in, ou, ch, gn, ph). Catach (1980) dénombre et présente près de 130 graphèmes distincts en français contemporain. Or, il se trouve que les relations entre les graphèmes et les sons de la parole (les phonèmes) ne sont pas régulières en français. Certains graphèmes n'ont qu'une seule prononciation possible en position non finale, alors que d'autres peuvent se prononcer de différentes manières (ex. e, o, c, g, x). La prononciation de certains mots est même tout à fait exceptionnelle (ex. *monsieur*). On a montré que ces irrégularités nuisent à la lecture orale (Content, 1991; Peereman, Content & Bonin, 1998; Sprenger-Charolles, Siegel, Béchenec & Serniclaes, 2003; Ziegler, Montant & Jacobs, 1997) et aux productions orthographiques (Martinet, Valdois, & Fayol, 2004). Des analyses quantitatives ont été effectuées sur le degré de correspondance bidirectionnelle entre les graphèmes et les phonèmes du français : Content & Radeau (1988a, 1988b), Peereman & Content (1999), Perreman, Lété, & Sprenger-Charolles (2007), Véronis (1986a, 1988) et Ziegler, Jacobs, & Stone (1996).

## CONCLUSION

Le choix des sources de matériel et de données normatives rapportées ici est guidé principalement par le souci d'exercer une rigueur accrue dans la sélection des stimulus devant servir à l'évaluation des compétences en lecture et en écriture du français. Une exploitation stratégique de ces listes et de ces données devrait permettre d'ajuster plus précisément le niveau de difficulté réel des items et de mettre à l'épreuve des



hypothèses plus fines sur les processus qui président au traitement du langage.

De toutes les langues du monde, l'anglais est certainement celle qu'on a le mieux documentée jusqu'à présent. Il n'en demeure pas moins que les données disponibles sur le français se sont considérablement enrichies dans la dernière décennie. La rigueur des méthodologies utilisées auprès des locuteurs francophones se compare favorablement à celles des travaux sur la langue anglaise. Si, dans le passé, la recherche sur les apprentis lecteurs et scripteurs du français a été freinée par l'indisponibilité ou l'inaccessibilité des sources de matériel linguistique et de données normatives, trois solutions sont maintenant mises en œuvre pour pallier ces difficultés. La première est l'affluence grandissante de ce type de contributions à la recherche dans les publications scientifiques. La seconde est l'élaboration de bases de données lexicales informatisées et conçues pour la sélection d'items. Enfin, l'Internet permet de hausser considérablement l'accessibilité des données lexicales et des programmes de calcul à la collectivité scientifique (p. ex., BRULEX, Content et coll., 1990; LEXIQUE 2, New et coll., 2004); MANULEX, Lété et coll., 2004; NOVLEX, Lambert & Chesnet, 2001; VoCoLex, Dufour et coll., 2002).

L'utilité réelle des données normatives sur le français dépend de la rigueur méthodologique avec laquelle elles ont été établies et de leur pertinence aux différentes collectivités de la francophonie internationale. Desrochers et Bergeron (2000) montrent que les fréquences subjectives et les valeurs d'imagerie des mots obtenues au Canada, en France ou en Belgique sont très fortement corrélées. Il reste que certains mots ou expressions peuvent appartenir à des registres localisés géographiquement (p. ex., *poudrerie* au Canada, *môme* en France, *frotte-manche* en Belgique, *foyard* en Suisse). Si les données normatives peuvent guider les chercheurs, elles ne peuvent se substituer entièrement à leur jugement dans la sélection des items devant servir à l'évaluation des compétences en lecture et en écriture.

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#### *Note des auteurs*

Cette recherche a été rendue possible grâce à une subvention du Conseil de recherche en sciences humaines du Canada (CRSH) accordée à A. Desrochers et S. Szpakowicz et à une subvention du Réseau canadien de recherche sur le langage et l'alphabétisation (RCRLA) accordée à J. Saint-Aubin, R. Klein et A. Desrochers. Toute correspondance peut être adressée à Alain Desrochers, École de psychologie, Université d'Ottawa, Pavillon Lamoureux, Ottawa, Ontario, Canada K1N 6N5 (Courriel : [Alain.Desrochers@uottawa.ca](mailto:Alain.Desrochers@uottawa.ca)) ou à Jean Saint-Aubin, École de psychologie, Université de Moncton, Pavillon Léopold-Taillon, Moncton, Nouveau-Brunswick, Canada E1A 3E9 (Courriel : [jean.saint-aubin@umoncton.ca](mailto:jean.saint-aubin@umoncton.ca)).

# ACADEMIC SELF-PERCEPTION AND ITS RELATIONSHIP TO ACADEMIC PERFORMANCE

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One hundred and fifty-five students (average age, 10 years 7 months) were initially tested on reading, arithmetic, and academic self-perception. One year later they were tested again. Initial academic scores accounted for a large proportion of the variance in later academic scores. The children's self-perceptions of academic competence accounted for significant variance in academic performance one year later. However, neither the academic self-perceptions at the beginning of the study nor changes in self-perceptions over time predicted changes in academic performance. Self-perception of academic competence cannot play a simple, causal role in academic achievement.

Key words: self-perception, competence, achievement

Cent cinquante-cinq élèves (âge moyen : dix ans, sept mois) ont été examinés au niveau des compétences alphabétiques et mathématiques, ainsi que la perception de soi scolaire. Les résultats initiaux des examens scolaires expliquaient la plupart de la variance liée aux résultats des seconds examens. Les mesures de la perception de soi expliquaient aussi une part significative de cette variance. Cependant, ni la perception de soi initiale, ni les changements de perception de soi ne semblent indiquer les changements de performance scolaire. Nous constatons que la perception de soi scolaire ne peut jouer un rôle causal simple dans la performance scolaire.

Mots clés: perception de soi, compétence, performance

A major focus of cognitive educational psychology is accounting for growth or decline in academic performance. Some areas have had great success: cognitive psychology has made great strides in identifying the chief sources of variance in reading ability (Stanovich, 1998). Variation in children's abilities of phonemic awareness and phonological processing may account for as much as 50 per cent of the variance in reading ability (Stanovich, 1988). Although this research represents a tremendous accomplishment and has enormous implications for effective instruction in reading, much variance remains to be accounted for. The search for this "extraphonological" variance is occurring in many of the cognitive realms, such as temporal processing (Farmer & Klein, 1995), speed of processing (Kail & Hall, 1994), perceptual processes such as low-level visual perception (Breitmeyer, 1989), and auditory perception such as the "p-centre" (Goswami et al., 2002). Researchers have also found some variance in environmental factors, such as SES effects, number of books in the home, and parents' time spent in reading to children. However, these environmental factors do not account for a great deal of variance in reading ability and may eventually fade in significance over time (Scarborough & Dobrich, 1994a, 1994b), especially as schools adopt more effective methods of instruction.

The attempt to identify the cognitive processes involved in the acquisition of mathematics skills is much less developed. Various processes may be involved, and several have been the subject of some study. Although there has been study of higher level, domain-general processes, such as executive processes (Geary, Hoard & Hamson, 1999), semantic memory (Geary, Haamson & Hoard, 2000; Geary & Hoard, 2001), or working memory (Geary, 1993), processes specific to the domain of mathematics would seem to be more promising. Of particular interest is initial work in numerosity (Landerl, Bevan & Butterworth, 2004), the basic sense of number tapped by Piagetian conservation tasks (Gelman & Gallistel, 1978). Small units of number are normally processed without counting, a process called "subitization." Many animals, including human children, possess the capacity to subitize between three and five items (Starkey, Spelke, & Gelman, 1990; Wynn, 1992). Individuals with dyscalculia, or mathematics disability, seem to have problems

at all levels of number processing, perhaps even at the level of subitization (Koontz & Berch, 1996).

There are also factors believed to account for significant growth and decline in academic performance that are external to any academic area, factors more in the realm of the psychological rather than the cognitive. Of these, one factor that has seen a significant amount of study, and a moderate degree of controversy, is self-esteem or self-concept and its relationship to academic performance. This putative relationship is at the core of the self-esteem movement and has been central to the promotion of child-centred instruction. The core of this approach is the supposition that positive self-concept or positive self-perceptions of competence are causal of many positive outcomes, including good academic performance (Valentine, Dubois, & Cooper, 2004). The implications of this belief have been enormous for modern education: Belief in the necessity of eliciting positive self-concept in students is foundational of much of modern educational theory and practice. Our intent here is not to elucidate the history of this belief because this would be a tremendously large project. However, recent reviews, such as that by Baumeister, Campbell, Krueger and Vohs (2003), have covered this history in some detail. At various levels of analysis, and in various domains, positive self-concept has been shown to be moderately correlated with positive outcomes. There is, however, very little data that would establish that this relationship is causal.

There are rational, principled reasons to suppose that positive self-concept might influence academic performance. Several mechanisms by which this relationship may occur have been proposed. The process of self-affirmation (Steele, 1988) suggests that individuals intentionally choose actions that demonstrate to themselves that their perceptions of themselves are accurate. Self-regulation (Scheier & Carver, 1988) would require individuals to monitor their ongoing behaviour to ensure that it is not discrepant from their self-concept, adjusting behaviour as necessary. Any hypothesised mechanisms could generate different predictions regarding behaviour, depending upon the level at which self-concept is assessed and the beliefs that support this assessment. For instance, assessment of self-concept at a somewhat global level, often better understood as the general self-worth or self-esteem aspect of self-

concept or self-perception (Renick & Harter, 1988), seems to allow a poor self-perception of competence in the academic domain. In fact, children with learning disabilities (LD) have been shown to maintain a level of self-esteem or general self-worth comparable to normally achieving students despite lowered levels of self-perceived academic competence (Heath, 1995; Heath & Glen, 2005). Different levels of assessment, global versus domain-specific, can yield different results regarding aspects of self-concept.

This match between levels of assessment of the self and the level at which data are collected also has empirical ramifications. A recent meta-analysis by Valentine, DuBois, and Cooper (2004) looks specifically at the literature relating self-perceptions to academic outcomes. One of their findings is that studies that matched the level of self-perception assessment with particular academic domains (e.g., self-perception of competence in mathematics with an evaluation of mathematics skills) tended to find larger effect sizes than those that mismatched the level of self-assessment and the level of evaluative data. Overall, the Valentine et al. (2004) meta-analysis found only very small effects of self-perceptions upon academic achievement, on the order of  $\beta = .08$ .

We took some of the lessons of the Valentine et al. (2004) review and analysis to heart in the design of the current study. We used the domain specific self-perceived competence scales for reading and arithmetic from the Renick and Harter (1988) Self-Perception Profile for Learning Disabled Students (SPPLD), which is an adaptation of Harter's Self-Perception Profile for Children (Harter, 1985) and was developed to assess self-perceived competence in both normal children and children with LD. The outcome measures were closely matched to these scales; the reading and arithmetic subtests of the Wide-Range Achievement Test, Third Edition (Jastak & Wilkinson, 1993). We also looked at the relationships between self-perception of competence and change in achievement over time – this should logically be the acid test for causality.

## METHOD

### *Population*

We recruited a representative sample of children in grades four and five that would include the normal diversity found in regular classrooms. All

grade-four and -five students in four, middle-class, suburban schools were invited to participate in a study of self-concept and achievement. Our sample ultimately consisted of 155 students in regular education programmes in local Montreal public schools. Students received a small gift of a pencil for returning consent forms regardless of the participation decision. Sixty-four per cent of all students returned an agreement to participate. The students ranged in age from 112 to 146 months (mean = 127.05, SD = 7.4). Ninety-two students were male, 63 were female

#### *Measures*

*WISC-III Block Design & Vocabulary.* We felt it was necessary to include a measure of IQ because it is a potent predictor of academic achievement and it would be necessary to control for the effects of IQ to reveal other effects. The two-subtest short form of the WISC-III (Sattler, 1992; Waters, Bruck, & Seidenberg, 1985) was used to obtain an estimate of IQ. The use of the two-subtest WISC-III short form to provide an IQ estimate for research purposes is well documented (Sattler, 1992). The Block Design and Vocabulary subtests of the WISC-III were administered to all participants. These two subtests were selected because they have excellent reliability and validity, and correlate highly with the Full Scale score over a wide age range (Sattler, 1992). For the Vocabulary and Block Design combination, the reliability estimates calculated with the Tellegen and Briggs (1967) procedure are  $r = 0.91$  and  $r = 0.86$  (Sattler, 1992). The scaled scores were determined for each of the subtests and then added together to determine the total scaled score. The scaled score was converted to the WISC score using a conversion table that estimates the Full Scale IQ based on the sum of the two subtest scaled scores (Sattler, 1992).

*WRAT-3: The Wide Range Achievement Test.* WRAT-3: The Wide Range Achievement Test (Jastak & Wilkinson, 1993) is one of the few short, quick measures of achievement in basic academic areas. It has Canadian norms and is very well represented in the research literature. From the WRAT-3 we chose two subtests, Reading and Math. Although the WRAT-3 yields both raw and standard scores, we chose to use standard scores in our analyses to assess performance and changes in performance relative to the age cohort. We also thought that standard scores were the best choice to match the demands of the SPPLD, which



asks participants for their perceptions of their own competence relative to other children of the same age.

*WRAT-3 Reading subtest.* The reading subtest of the WRAT-3 requires the test-taker to name as many of a series of 15 letters and 42 words as possible. Words are arranged in increasing order of orthographic complexity and decreasing order of frequency. The test is halted after the test-taker makes 10 consecutive errors or exhausts the subtest items. The test yields both a raw and standard score.

*WRAT-3 Mathematics subtest.* The mathematics subtest requires the participant to identify numbers, count, and answer mathematics problems of varying levels of complexity. The test-taker is allowed 15 minutes to complete as many items as possible, to a maximum of 55. The test yields both raw and standard scores.

*The Self-Perception Profile for Learning Disabled Students.* The SPPLD (Renick & Harter, 1988) is a self-report measure for assessing domain-specific self-perceptions of both children with learning disabilities (LD) and normally achieving children in 10 areas: general intellectual ability, reading competence, spelling competence, writing competence, mathematics competence, social acceptance, athletic competence, physical appearance, behavioural conduct, and global self-worth. The SPPLD consists of 46 items with a format designed to reduce the incidence of socially desirable responses (Renick & Harter, 1988). Each question is composed of two contrasting statements (e.g. "Some kids know how to spell most words BUT other kids find it really hard to spell most words"). The child is asked to decide which statement best describes him or her and then check if that statement is "Really true for me" or "Sort of true for me." Items are scored 1-4, from low self-evaluation to high self-evaluation. The manual for the SPPLD notes that means for the subscales range from 2.51 to 3.25. The SPPLD is a close adaptation of the Self-Perception Profile for Children (SPPC) (Harter, 1985). Although the SPPLD was originally designed for use with students with LD, Renick and Harter (1988) note that the SPPLD is psychometrically sound when used with normally achieving children. They administered the SPPLD to 367 normally achieving students in grades four to eight. Internal consistency reliabilities, based on Cronbach's alpha, for each of the 10 subscales ranged from 0.79 to 0.89. Each of the 10 SPPLD subscales is distinct

from the others, with limited or moderate intercorrelations. Furthermore, the factor structure for the SPPLD with normally achieving students revealed strong support for the subscale structure. Renick and Harter (1988) provide means by grade and gender for non-LD students. Similarly, Heath and Brown (1999) in their study of the relationship between self-perception of competence and depressive symptoms in normally achieving students in grades seven and eight calculated test-retest reliabilities for the domain-specific self-perceptions of competence over a five-week period and report excellent test-retest reliabilities for the academic domains (Reading 0.85; Mathematics 0.83; Spelling 0.84). The advantages of the SPPLD (even for normally achieving children) are that it provides a domain-specific self-perceived competence rating for reading and arithmetic separately rather than as the single "academic domain" as assessed on the SPPC and it is relatively concise, with a grade-three reading level, unlike other domain-specific self-perception of competence measures more commonly used in normally achieving children (e.g., Self-Description Questionnaire, SDQ; Marsh, 1988). Although no extensive studies have been done on the psychometric properties of the SPPLD, studies of the reliability and validity of the SPPC have concluded that it demonstrates extremely good psychometric properties (Byrne & Schneider, 1988; Marsh & Gouvenet, 1989). We assume that the SPPLD shares these properties.

#### *Procedures*

The arithmetic subtest of the WRAT-3 was administered in small groups of about 15 participants (i.e., all the consenting children from each class were tested together). The experimenter administered the items while two research assistants circulated to answer possible questions and deal with any problems. In a separate session the same groups performed the SPPLD. The experimenter read each item aloud while the students followed on their own forms and, again, two research assistants circulated to answer questions and deal with problems. In a break from standard procedure, four practice questions (developed by the experimenters) were read to the participants first. This change was intended to train the participants in the format of the SPPLD to ensure comprehension.

In a subsequent session, each participant was met individually to perform the Vocabulary and Block Design subtests of the WISC-III and the reading subtest of the WRAT-3. The research assistants who performed this task were trained in the administration of the WISC-III and the standardized administration procedures described in the WISC-III manual were used.

At time 2, one year later, the same procedures were used, except the WISC-III was not administered a second time.

## RESULTS

Participant characteristics are noted in Table 1. The average age of the children at first testing was 127 months ( $SD=7.3$ ) and the average estimated IQ score was 108.6 ( $SD=13.0$ ). The average score on the WRAT-3 Reading subtest, which tested single-word reading, was 109 ( $SD=15.4$ ), while the average standard score on the Mathematics subtest was 108.2 ( $SD=13.3$ ).

*Table 1: Participant Characteristics*

Variable	Score at Time 1 (SD)	Score at Time 2 (SD)	Time 2 – Time 1  (SD)
Age	127.0 (7.3)		
WRAT-3 Reading	109.0 (15.4) <sup>a</sup> N=155	107.0 (13.0) <sup>a</sup> N=155	2.0 (10.2) N=155
WRAT-3 Math	108.2 (13.3) <sup>b</sup> N=155	105.4 (11.5) <sup>b</sup> N=153	2.9 (10.4) N=153
Reading Perceived Competence	3.5 (0.7) N=154	3.6 (0.6) N=153	0.07 (0.56) N=152
Arithmetic Perceived Competence	3.4 (0.8) N=154	3.4 (0.7) N=155	0.06 (0.67) N=154

Notes: a =  $p<0.05$ , b =  $p<0.001$

Zero order correlations of the relevant variables are displayed in Table 2. The correlation between self-perceived competence in reading at time 1 and time 1 reading standard scores was 0.463 ( $p<0.001$ ), and between self-perceived competence in mathematics and time 1 math-

ematics standard scores was 0.394 ( $p < 0.001$ ). Independent samples t-tests did not indicate any differences in the performances of boys and girls at time one on the Reading subtest ( $t_{153} = -0.619$ , n.s.) or the Mathematics subtest ( $t_{153} = -1.545$ , n.s.), or on self-perceived competence in reading ( $t_{152} = -1.419$ ) or mathematics ( $t_{152} = 1.682$ , n.s.).

Table 2: Zero-order Correlations

Variable	1	2	3	4	5	6	7
1. T1 Reading							
2. T1 Arithmetic	0.431*						
3. T1 Rd. Comp.	0.463*	0.153					
4. T1 Ar. Comp.	0.095	0.394*	0.218*				
5. T2 Reading	0.755*	0.414*	0.527*	0.042			
6. T2 Arithmetic	0.356*	0.660*	0.096	0.442*	0.417*		
7. T2 Rd. Comp.	0.389*	0.222*	0.587*	0.107	0.473*	0.238*	
8. T2 Ar. Comp.	0.118	0.385*	0.148	0.597*	0.126	0.557*	0.270*

Notes:

\* =  $p < 0.01$ , 2-tailed.

Reading = WRAT-3 reading score; Arithmetic = WRAT-3 arithmetic score; Rd.

Comp. = Reading perceived competence, Ar. Comp. = Arithmetic perceived competence

The correlation between self-perceived competence at time 1 and at time 2 was 0.597 ( $p < 0.001$ ) for mathematics and 0.587 ( $p < 0.001$ ) for reading. The difference between self-perceived competence scores at time 1 and time 2, and the difference between achievement scores at time 1 and time 2 (in each case, time 2 score – time 1 score) was calculated for each subject, as were the absolute differences (time 2 score – time 1

score). The median, absolute change in self-perceived competence scores was 0.25 for reading and 0.50 for mathematics. The first quartile of the absolute change scores, in each case, was 0.00. Thus, a quarter of the participants made no change, either growth or decline, in self-perceived competence over the year, and another quarter changed only slightly. The mean change in self-perceived reading competence was -0.07 (SD = 0.6), and in mathematics, -0.06 (SD = 0.7). Paired-sample t-tests indicated that self-perceived competence scores at time 1 and time 2 were not significantly different for reading ( $t_{151} = -1.524$ , n.s.) or mathematics ( $t_{153} = -1.018$ , n.s.). Self-perceptions of competence were generally high in both domains, with the modal score at both times being 4.0, the highest possible.

Academic performance was also fairly stable across the period of the study, with the correlations between reading achievement at time 1 and time 2 being 0.755 ( $p < .001$ ) and between mathematics achievement at time 1 and time 2 being 0.660 ( $p < .001$ ). Achievement test standard scores were more likely to change between time 1 and time 2 than self-perceived competence scores. The median, absolute change in reading achievement was 6 standard score points, in mathematics, 8 standard score points. The mean change in reading achievement between time 1 and time 2 was 2.0 (SD = 10.2), in mathematics achievement, 2.9 (SD = 10.4). Paired-sample t-tests indicated statistically significant differences between time 1 and time 2 reading scores ( $t_{154} = 2.473$ ,  $p < .05$ ) and mathematics scores ( $t_{152} = 3.466$ ,  $p < .001$ ). Shapiro-Wilk goodness of fit tests indicated that the distributions of the change scores for reading and mathematics did not significantly differ from normality (for reading,  $W = 0.983$ , n.s.; for mathematics,  $W = 0.976$ , n.s.). The reliability of the change scores was assessed by the computation of an error/tolerance ratio (Miller & Kane, 2001). The standard error was used as an estimate for the error term (0.827 for the reading change score, 0.837 for the mathematics change scores); the standard deviation was used as an estimate for the tolerance term (10.224 for the reading change score, 10.357 for the mathematics change score). The resulting ratios are  $0.827/10.224=0.081$  and  $0.837/10.357=0.081$ .

Gender differences have been reported in the literature in this area (Harter, 1985). We used independent samples t-tests to compare the self-

perceived competence scores at time 1 for males and females, but found no significant differences in either self-perceived competence for reading ( $t_{152} = -2.182$ , n.s.) or self-perceived competence for mathematics ( $t_{152} = 1.762$ , n.s.).

The correlation between self-perceived competence at time 1 and achievement at time 2 was 0.527 ( $p < .001$ ) for reading and 0.442 ( $p < .001$ ) for mathematics. After partialling out the effects of time 1 achievement, the correlations were 0.306 ( $p < .01$ ) for reading and 0.251 ( $p < .001$ ) for mathematics. Self-perceived competence at time 1, however, was not predictive of change in academic performance across time (see Table 3, for reading,  $r = 0.029$ , n.s.; for mathematics,  $r = 0.024$ , n.s.). Neither was change in self-perceived competence related to change in performance between time 1 and time 2 (for reading,  $r = 0.084$ , n.s.; for mathematics,  $r = 0.142$ , n.s.).

Table 3: Correlations with Change Scores

Variable	1	2	3	4	5
1. T1 Rd. Comp.					
2. T1 Ar. Comp.	0.218*				
3. $\Delta$ Rd. Comp.	0.597*	0.150			
4. $\Delta$ Ar. Comp.	0.107	0.576*	0.245*		
5. $\Delta$ Reading	0.029	0.090	0.084	0.086	
6. $\Delta$ Arithmetic	0.095	0.024	0.061	0.142	0.151

Notes:

\* =  $p < 0.01$ , 2-tailed.

Rd. Comp. = WRAT-3 reading perceived competence, Ar. Comp. = WRAT-3 arithmetic perceived competence,  $\Delta$  Rd. Comp. = Change in reading perceived competence from time 1 to time 2;  $\Delta$  Ar. Comp. = Change in arithmetic perceived competence from time 1 to time 2;  $\Delta$  Reading = change in WRAT-3 reading score from time 1 to time 2;  $\Delta$  Arithmetic = change in WRAT-3 arithmetic score from time 1 to time 2.

## DISCUSSION

For the participants in this study, self-perception of competence in reading and mathematics was a somewhat accurate and moderately stable attribute, which was moderately predictive of future performance, accounting for roughly 16 per cent to 25 per cent of the variance in later achievement. However, after accounting for the effect of initial levels of achievement on later achievement, the predictive ability of self-perceived competence becomes more modest, accounting for between six per cent to nine per cent of variance in academic performance one year later. More interesting is the finding that self-perceived competence ratings did not predict change in achievement between time 1 and time 2. Although change scores have been viewed with great suspicion, it has been shown (Miller & Kane, 2001; Yin & Brennan, 2002) that change scores can be used as reliable and valid indicators of variation in performance over time. The finding of a favourable error/tolerance ratio (E/T), which compares the probability of error in the score to the tolerance for error in the score, gives reassurance in our use of the change scores in this particular case. If self-perception of competence were causal to academic performance, not merely related, one would expect that perception of competence at time 1 would predict not just later achievement, but also the change in achievement over time, that is, the performance of those participants who rated themselves as very competent would be more likely to improve over time, while the performance of those who rated themselves as less competent would be likely to decline over time. This relationship was not evident. Another possibility is that change in participants' judgment of their competence over time would be related to change in performance over time, that is, for participants whose self-perceptions of competence improved, one would expect performance to improve over time, and vice versa. Again, this relationship was not evident. Thus, the data in our study did not support the hypothesis that self-perception of academic competence in particular domains is a causal factor in academic performance.

Although this study is not the first to investigate the causal role of self-perceived competence for various outcomes, it is one of the first to look at self-perception in particular academic domains and to relate this score to outcomes in those particular domains. This procedure is a very

specific test of the self-concept hypothesis, where one would predict very specific outcomes. Previous studies, such as those of Skaalvik and Hagtvet (1990), have investigated the relationships between general academic self-perception and general academic outcomes. In their study of a large number of students using a structural equation modeling paradigm, these researchers found no causal role for self-perception in academic outcomes. Our study supports and expands upon this finding in specific academic domains.

#### *Implications*

What are the implications of this study for educators? In combination with other findings, which also dispute any causal role for self-perception in academic (and many other) outcomes, it is clear that the modulation of self-perception, to affect academic outcomes, is not an enterprise that should absorb much of any school's limited resources of time and money. This is not to say that self-perception is irrelevant and should be ignored. Self-perception may play a role in protecting emotional well-being. Heath and Glen (2005) proposed a "self-protection" hypothesis, whereby individuals may hold positively distorted self-perceptions of competence to shield themselves from the emotional consequences of failure. In this case, a mismatch between self-perceived and demonstrated academic competence could be a signal to teachers and others of a need to intervene, a sign of distress. Trying to bring student's self-perception back in-line with their actual performance with academic feedback does not seem to be effective in changing the perception and could even be harmful (Glen, Heath, Karagiannakis, & Hoida, 2004). On the other hand, with our data, we strongly argue against reliance on interventions intended to boost self-concept to improve academic performance. A combination of emotional support and effective instructional activities would seem appropriate. Research with students with LD indicates that their self-perception of academic competence may be less related to actual competence than it is to mood (Heath & Brown, 1999). Like their peers without LD, self-perceived competence of students with LD is inflated – lower than that of students without LD but still inflated. The results of this study may be seen as a possible first



indication that the self-perceived competence of children without LD, like children with LD, may be more affectively than academically driven.

This study should not be interpreted as showing that self-perception, in this case self-perceived competence in particular academic areas, is unimportant. Rather, this study, among others, indicates that the interaction of self-perception of academic competence and actual academic performance is not direct or simple (Hoza et al., 2004; Heath & Glen, 2005). Future research should work toward capturing the more complex aspects of these relationships.

#### *Limitations*

One limitation of this study is the high, stable scores on the self-perception measure. The ceiling effect that results from the modal score of 4.0 (the highest possible) damps down variability. It does not eliminate it, however, and 50 per cent of the participants had scores below 4.0. Students who score high on self-perceived competence at time 1 should be among those who improve in performance over time, and vice versa, if self-perceived competence has a causal role. The lack of change in self-perception over time speaks against this causal role because there was significant change in performance. If self-perceived competence were either the cause or the result of changes in performance, it should track change in performance. The lack of change in self-perception despite change in performance strongly implies independence between the two factors.

Another limitation of this study is that measurements were made only one year apart. It is possible, of course, that had the study looked at a longer time span the results might have been different, although no research or theory predicts what time span might be required for a self-perception effect to mature. Likewise, a different participant age-group might have shown different results. Perhaps adolescents would be more likely to show the effect of interest. Future research might productively look into other domains, with different instruments having similar domain-specificity, different participant populations and longer durations. Family variables may also be important, for instance family background variables (Bachman & O'Malley, 1986). Clearly, no one

study can address all these variables and much more research is necessary.

One of the unique aspects of this study centres on one of the points on which we differ from the recommendations of the Valentine et al. (2004) meta-analysis. This is in the procedure of partialling out variance in time 1 achievement from time 2 achievement scores. Instead, we correlated our self-perception measures directly with the difference in achievement scores between time 1 and time 2. We believe that this test of the hypothesis is more direct than one can infer causality if one can explain change in scores over time, not merely end states. The practice of statistically removing variance attributable to time 1 achievement is not conceptually the same. This process will control for the influence of prior learning on later learning. However, this is a rather artificial concept – later learning depends completely upon earlier learning having taken place. The use of a change score does not eliminate the influence of prior learning, and does directly represent what must be explained – the changes in achievement which may, or may not, be due to self-perception.

Had we used the procedure recommended by Valentine et al. (2004), we would have reported results much more similar to those arrived at in their review and meta-analysis – partialling out the variance in time 2 achievement due to time 1 achievement yielded a correlation with domain-matched self-perception of roughly  $r = 0.300$ . Using this process, we would appear to explain, then, about 9 per cent of the variance in achievement. However, the process we used, correlating change in achievement scores over the year with domain-matched self-perception, yielded correlations of essentially zero. This procedure would indicate that self-perception accounts for no variance in the growth or decline in achievement, an effect size of zero. Thus this study replicates the findings of the Valentine et al. (2004) meta-analysis on one level, but also gives new food for thought in the ongoing debate about self-concept and achievement.

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A MODEL FOR INCREASING REFORM  
IMPLEMENTATION AND TEACHER EFFICACY:  
TEACHER PEER COACHING IN GRADES 3 AND  
6 MATHEMATICS

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This study examined the effects of peer coaching on mathematics teaching practices and teacher beliefs about their capacity to have an impact on student learning. Twelve teachers in grades 3 and 6 participated in a brief but intensive professional development program over six months. The program focused on effective mathematics teaching strategies and peer coaching opportunities. Data sources included classroom observations, teacher self-assessments, interviews, and field notes. Data were analysed using a two-level qualitative coding strategy with multiple interpreters. Findings showed that teachers implemented key strategies for effective mathematics teaching, especially in facilitating student interaction and improving the quality of tasks assigned.

Key words: mathematics, teaching strategies, professional development

Cette étude a trait aux effets de l'enseignement mutuel en mathématiques sur les méthodes pédagogiques des enseignants et leurs croyances quant à leur capacité d'avoir un impact sur l'apprentissage de leurs élèves. Douze enseignants en 3<sup>e</sup> et 6<sup>e</sup> années ont participé à un programme de perfectionnement intensif sur une période de six mois. Le programme était axé principalement sur des stratégies efficaces pour l'enseignement des mathématiques et les possibilités d'enseignement mutuel. Les sources des données étaient multiples : observation de la classe, auto-évaluation de l'enseignant, entrevues et notes prises sur le terrain. Les données ont été analysées à

l'aide d'une stratégie de codage qualitatif à deux niveaux avec de multiples interprètes. Les résultats indiquent que les enseignants ont mis en œuvre des stratégies clés pour enseigner efficacement les mathématiques, notamment en facilitant les interactions entre les élèves et en améliorant la qualité des tâches assignées.

Mots clés : mathématiques, stratégies pédagogiques, perfectionnement professionnel.

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Teacher peer coaching is an intensive professional development (PD) activity in which teachers provide one another with feedback about their teaching. This study measured the effects of peer coaching and related mathematics in-service with 12 teachers in grades 3 and 6. We focused on shifts in instructional practice and teachers' beliefs about their instructional capacity to teach mathematics.

#### THEORETICAL FRAMEWORK

##### *Teacher Efficacy*

Our conception of teacher change is grounded in social cognition theory (Bandura, 1997). Teacher efficacy is a type of self-efficacy. Self-efficacy is the belief "in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 2). Self-efficacy affects behavior by impacting goals, outcome expectations, affective states, and perceptions of socio-structural impediments and opportunities (Bandura, 1997). Individuals who feel that they will be successful on a given task are more likely to be so because they adopt challenging goals, try harder to achieve them, persist despite setbacks, and develop coping mechanisms for managing their emotional states.

In this framework, teacher willingness to experiment with instructional ideas, particularly techniques that are difficult to implement, depends on teacher expectations about their ability to influence student learning. Those teachers who believe they have the ability to affect student learning and achievement positively are more willing to implement challenging strategies to achieve their goals with students. Teachers' absolute level of classroom success has less influence than their interpretations of experiences on subsequent action because teacher confidence in executing difficult tasks in the near future determines how



effectively a teacher employs his or her capabilities (Tschan-nen-Moran, Woolfolk Hoy, & Hoy, 1998).

Research in the area of teacher efficacy has produced a solid body of literature that focuses on how teachers judge their own capacity to bring about student learning. Teacher efficacy constitutes a set of expectations that contribute to student achievement (Ross & Regan, 1993; Ross, Bruce, & Hogaboam-Gray, 2006; Mascall, 2003; Muijs & Reynolds, 2001), teacher motivation (Guskey, 1984; Midgley, Feldlaufer, & Eccles, 1989), persistence in achieving goals, and retention of teachers in the profession (evidence reviewed in Ross, 1998). Teacher efficacy contributes to achievement because teachers with high efficacy use effective classroom management strategies to encourage student autonomy, meet the needs of low ability students, and positively influence student perceptions of their abilities (evidence reviewed in Ross, 1998).

Over several years of research, we developed and tested a model of teacher change (see Ross, Bruce, & Hogaboam-Gray, 2006) in which teacher efficacy is the central mediator between experience and action. Our teacher change model illustrates a series of activities and relationships that influence how teachers judge their capacity to impact student learning and achievement, set goals, and persist in meeting those goals.

When a teacher is dissatisfied with current performance (based on student expressions of achievement and teacher self-assessment), there is a perceived need for instructional change. When a teacher has access to powerful alternatives (through effective professional development opportunities, for example), he or she has the means to make changes. If a teacher is sufficiently motivated to sustain efforts and overcome obstacles (has high efficacy), the ability to implement effective instructional strategies is increased. Further, when a teacher receives positive and constructive feedback from a respected peer, there is even greater potential for enhanced goal setting, motivation to take risks, and implementation of challenging teaching strategies. Without providing the entire model, Figure 1 illustrates what we believe to be the core activity and relationships involved in this process.

Our focus for this article is the left side of the model. Our goal is to document the effects of peer input and professional development pro-

moting innovative instruction on the implementation of effective mathematics teaching strategies and teacher efficacy.

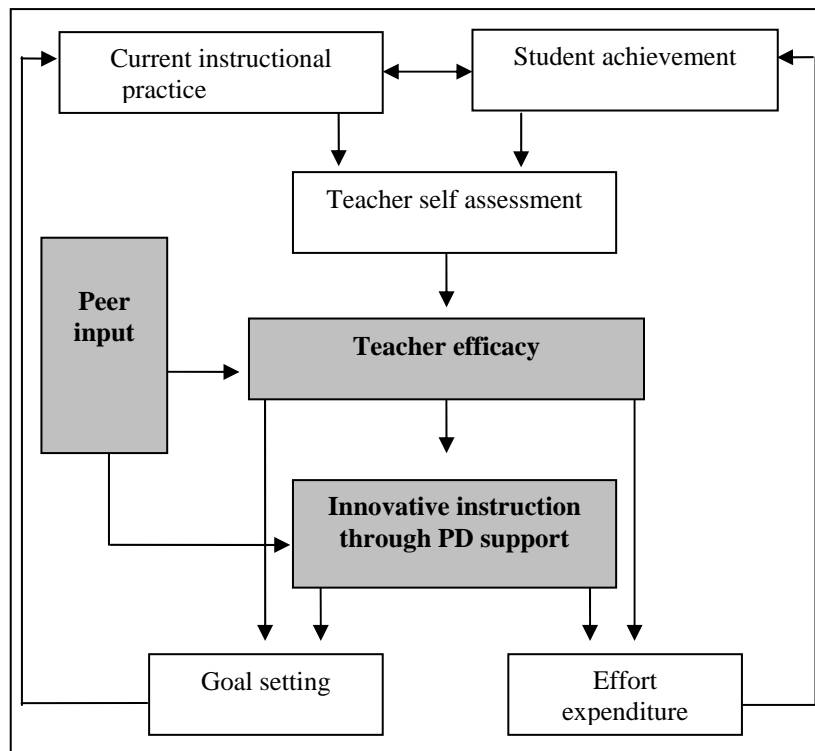


Figure 1. Model of Teacher Change: Activities and Relationships That Influence Efficacy

Of the four sources of teacher efficacy information identified by Bandura (1997), the most powerful is mastery experience – first-hand teaching experiences. Teacher perceptions of changes in student performance gleaned from student utterances, work on classroom assignments, homework, and formal assessments all provide information to teachers that informs their self-judgments. Bandura (1997) defined three other sources of efficacy information: vicarious experience – teacher

observations of peers of similar experience levels; social and verbal persuasion – encouragement, support, and feedback from colleagues and supervisors; and physiological and emotional cues – how a teacher is feeling about teaching and learning situations. These additional three sources of efficacy information have been found to be less influential compared to mastery experience (as reviewed in Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998). What appears to be less clear in the research to date is the nature of interaction among the four sources of efficacy information.

#### INFLUENCE EFFICACY

##### *Goal Setting and Effort Expenditure*

Goals and effort are linked. For example, teachers are more likely to persist if they set goals that are specific, have clear outcomes, are achievable in the near future, and are moderately difficult to achieve (Schunk, 1981). The combination of goals and effort affect teacher practice, including choice of curriculum objectives, teaching methods, assessment practices, and knowledge of subjects, learners, pedagogy, and policy. Teachers willing to try new instructional ideas and persist through obstacles are more likely to sustain the implementation of new approaches, to experience success, and to integrate the innovations into their practice.

##### *Peer Coaching*

Teachers experience norms of privatized practice with limited opportunities for peer input because of the nature of the physical space, administration, schedules, and structures of most schools. Creating professional school communities can help to overcome isolation through the facilitation of shared values, collaborative decision making, and reflective dialogue (Louis & Marks, 1998). A structured approach for building such a community is peer coaching in which pairs of teachers of similar experience and competence observe each other teach, establish improvement goals, develop strategies to implement goals, observe one another during the revised teaching, and provide specific feedback. This approach requires a safe and collegial environment (McLymont & da Costa, 1998). In a review of peer coaching literature, Greene (2004) found

that teachers in peer coaching programs were more successful than control group teachers in implementing new instructional strategies, using the new strategies in more appropriate ways, sustaining the use of new strategies, and understanding the purposes of instruction. Peer coaching also contributes to increases in teacher efficacy (Kohler, Ezell, & Paluselli, 1999; Licklider, 1995).

When teachers make self-assessments about the quality of their teaching, peer input can influence these self-judgments in multiple ways. Peers can direct teachers' attention to particular dimensions of practice and to the level of goal attainment. Further, peers can influence teachers' practice by attempting specific strategies concurrently. These opportunities for positive peer influences involve recognizing teaching success (valid mastery experiences). Peers can also influence teacher efficacy through the three other sources of efficacy information proposed by Bandura (1997): social persuasion (persuading peers that they are capable of performing a task), vicarious experience (observing a similarly capable teacher peer implementing successful strategies), and physiological and emotional cues (peer influence on increasing positive feelings arising from teaching and teaching ability or on reducing negative feelings arising from teaching experiences).

Peer coaching has not been found to be universally successful. Perkins (1998) found that teachers had difficulty with the specific communication skills associated with peer coaching. For example, peer coaching teachers rarely asked open-ended questions of peers, did not paraphrase to check for common understanding, and made limited use of helpful probes. Busher (1994) reported a study of teachers who were randomly assigned to peer coaching and control groups. Training consisted of sessions on questioning skills, nonverbal communication, support strategies, and thinking skills. The treatment had no effect on instructional practice, most likely because there was no attempt to provide teachers with content specific instructional skills. These findings suggest that an effective peer coaching program needs to combine training of the peer coaching process with content specific pedagogy training.

*Content Specific Pedagogy Training*

We based our in-service program on the Professional Development Standards for Elementary Mathematics (Hill, 2004). Consequently, teachers engaged in mathematics tasks and content comparable to those undertaken by their students; the in-service focused on classroom practice (such as teachers examining student work samples); in-service tasks required teachers to work collaboratively; in-service presenters modeled recommended instructional practices; the in-service illustrated how students learn mathematics; and teachers participated in the design and delivery of the in-service. These standards each contribute to teacher learning (Erickson & Brandes, 1998; Garet, Porter, Desimone, Birman, & Yoon, 2001).

Through the professional development program, we urged teachers to reconsider what constitutes effective teaching and learning in mathematics. Instead of defining a lesson as successful if most students obtained the right answer on procedural questions using conventional algorithms, we demonstrated how teachers could focus on the depth of conceptual understanding that students reached and on the extent to which students contributed to the construction of their knowledge as they developed solutions to rich tasks. The central tool to support this process was a rubric for mathematics teaching that focused teachers' peer observations and their improvement goals on dimensions of mathematics teaching of highest priority to subject experts.

We developed a descriptive tool from a research synthesis (Ross, McDougall, & Hogaboam-Gray, 2000) and the National Council of Teachers of Mathematics (NCTM) policy statements (NCTM, 1989, 1991, 2000) that identified 10 dimensions of effective mathematics teaching (standards-based teaching). The rubric was constructed from observations and interviews with teachers who ranged from traditional to innovative (Ross, Hogaboam-Gray, McDougall, & Bruce, 2002). For each of the 10 dimensions, we identified four levels, arranged in order of increasing fidelity to NCTM standards. The validity of the hierarchy of levels was established by a panel of content experts and by a series of studies that tested the validity of a self-report survey and the related rubric (Ross & McDougall, 2003).

We selected three dimensions of effective mathematics teaching for

special attention: facilitating student-student interaction, supporting student construction of mathematical meaning, and selecting effective mathematics tasks. In the professional development sessions, experienced teachers modeled effective teaching using grade-appropriate, engaging mathematics tasks. Presenters encouraged teachers to judge their success in terms of familiar standards, such as students' use of appropriate mathematical language, and less familiar standards, such as students' invention of problem-solving procedures, as well as students' sharing of explanations and justification of solutions. When debriefing between-session practice, we concentrated on these newer standards for teacher self-assessments of success. In this way, we reduced teachers' perceptions of the difficulty of the instructional tasks and increased their belief in their ability to teach in new ways.

## METHOD

### *In-service Design*

In this study, we designed a four-session in-service series to direct peer attention to instructional decisions and enhance content related pedagogical practices, increase the implementation of reform-based mathematics teaching, and enhance teacher perceptions of their ability to improve learning using a reform curriculum. The key challenges were reducing teacher isolation through peer coaching opportunities (funded by Ministry of Education grant money) and providing teachers with both the conceptual and strategic tools to move toward mathematics reform implementation as well as the skills to participate effectively as peer coaches.

The two-pronged approach of providing peer coaching training and mathematical pedagogy training required in-service that explicitly addressed each of these components. For example, each PD session began with training on peer coaching techniques (such as how to set up a peer observation situation so that the peer observing would focus on an articulated goal set by the observed teacher) and a debriefing of the between session peer coaching activity for each peer coaching pair (with specific prompts to guide the discussions). Later in the same PD session, discussion of a specific dimension of mathematics teaching, such as student construction of mathematical ideas was introduced and followed

by specific mathematics tasks that successfully illustrated how to implement this dimension with students. The two components of the in-service overlapped frequently. For example, teachers were engaged in examining the area of a triangle made with an elastic on a pegboard. Participants were asked to use elastics to create other non-congruent triangles on the pegboard with the same area as the first triangle. With their peer coaching partners, teachers explored creative ways to determine area without using a formula and problem solved to construct other non-congruent, same area triangles. When this lesson was concluded, participants were asked to analyse what the teacher did and why the teacher made those particular “teacher moves” during the lesson as well as what they, as learners, were doing and thinking. Participants noted that the “teacher” provided an open-ended problem with multiple solutions and solution strategies. The “teacher” modeled the first triangle as a given but did not lead “students” to an answer. Instead, the “teacher” encouraged partners to work together to explore possible solutions. Participants also noted that they needed partner discussion and physical manipulation of the elastics to arrive at solutions. This practice provided insight into how children construct mathematical understanding, effective mathematics pedagogical practices, and opportunities for the peer coaches to interact as co-learners.

#### *Study Participants*

Participants were four pairs of grade-3 teachers and two pairs of grade-6 teachers. The 12 teachers were volunteers and reflected a range of mathematics teaching styles from traditional to reform.

#### *Data Sources*

*Teacher Observations.* All 12 teachers were observed at the beginning and end of the project (over four individually teacher developed mathematics lessons of approximately 50 minutes each per teacher) with regard to the three teaching dimensions that were central to the in-service: *selection of mathematics tasks, student construction of mathematical knowledge, and support for student-student interaction.* We trained five observers in the use of the Classroom Observation Guide (Ross & Bruce, 2007), which provides guidelines for observing and recording field notes, and a definition of

each of the three dimensions of mathematics teaching, along with specific probes to guide the process of collecting information. Observers recorded detailed examples of teacher actions relevant to each dimension. The observer training sessions emphasized the importance of rich descriptions of teacher practice, consistency in application of the observation template, and collecting sufficient information to make a confident placement decision on the four-point scale for each rubric dimension.

*Online Self-Assessment.* Teachers completed an online assessment at the beginning and the end of the study. The assessment provided a global score representing commitment to effective teaching, reflecting the three focus dimensions of the PD program as well as seven other dimensions of effective teacher practice.

*Peer Coaching Summaries.* Each teacher was observed by his or her peer on three occasions. Each pair compared peer observations to self-perceptions, negotiated improvement goals, devised strategies to implement goals, and provided feedback on instructional changes. Each teacher brought a summary of the peer coaching experience to the following in-service. The first page contained six prompts to establish whether peer coaching had been implemented:

Did you . . .

- Observe your partner teaching math?
- Talk to your partner about what you saw?
- Get feedback from your partner about what he/she saw?
- Help your partner set his/her math teaching goals?
- Get help from your partner in setting your math teaching goals?
- Set a date for your follow up observation?

The remaining two pages were used to facilitate conversations between the peers in discussing observed teacher activity, identifying what went well in their teaching, and identifying what they planned to do next (setting goals).

*Pairs Interviews.* At the conclusion of the study, each teacher pair was interviewed by a researcher. The interview guide focused on teacher perceptions of change in practice, the identification of specific examples of teacher and student activity that illustrated reported changes in practice, and teacher rationales about which component(s) of the professional



development program contributed to the change. All interviews were transcribed verbatim.

*Field Notes of PD Sessions.* Three researchers recorded their observations of in-service activity in field notes that were compiled at the end of each session.

#### *Data Analysis*

The first level of the analysis focused on descriptive questions:

- Was the treatment implemented?
- Did the treatment have an effect on teacher practice?
- Which elements of the treatment had the greatest impact on teachers' instructional practice and beliefs about their capacity (teacher efficacy)?

The second level of analysis used pattern matching (Mark, Henry, & Julnes, 2000) in which we compared hypothesized to observed events to test the claim that self-assessment contributes to professional growth. In doing so we contrasted the mechanisms hypothesized in Figure 1 with a simpler model in which teacher change is attributed to providing teachers with information on how to teach mathematics from a standards-based perspective.<sup>2</sup> This simpler model assumes that teachers fail to implement reform mathematics because they lack pedagogical content knowledge, and that when this information deficit is filled, their practice will change. We treated each pair as a case and then compared across cases.

Credibility of the qualitative findings was enhanced by triangulating between data collection times (pre and post data collection) and interpreters (multiple observers and data analysts) (Creswell, 1998); maintaining an audit trail by creating charts of relationships and counting instances (Miles & Hubberman, 1994); and searching for evidence of alternative theories, i.e., testing the alternate hypothesis that provision of pedagogical content knowledge is sufficient for teacher change (Mark, Henry, & Julnes, 2000).

Although the number of cases was too small to make statistical significance tests meaningful, we found it helpful to calculate the means and standard deviations for each of the dimensions of effective teaching

which we observed at the beginning and end of the study. These quantitative summaries contribute to the credibility of our cross-case claims.<sup>3</sup>

## RESULTS

The coaching reports indicated that the teaching pairs successfully implemented the main steps of peer coaching during the three peer coaching opportunities. Participants observed their peers teaching mathematics, gave feedback to their partners on the observed lesson, received feedback from their partners on their own teaching, helped their peers set mathematics teaching goals, and were given help setting their own goals.

For this study, we report three key findings: first, teachers moved their practice toward standards-based methods; second, the professional development program had positive effects on teacher efficacy; and third, peer coaching caused participants to reflect more explicitly.

### *Finding 1: Teachers Changed Their Practice*

The main finding of the study is that teachers shifted their mathematics teaching practices. Table 1 displays the means and standard deviations of the ratings of teacher practice by trained observers. The observers rated the teachers higher on the rubric for standards-based mathematics teaching at the end of the in-service than they did at the beginning of the study in all but one of the six dimensions/sub-dimensions.<sup>4</sup>

The observational data (summarized in Table 1) found that the 12 participants moved toward a more constructivist approach (student-directed, manipulatives-based, and conceptually-focused learning) in their abilities to facilitate student-student interaction (D3). By the end of the PD program, teachers were also more likely to assign open-ended and engaging student tasks that encouraged multiple solutions (D2). Although there were no pretest to posttest changes in construction of knowledge (D1) during observations, teacher reports of increased attempts to encourage student construction of mathematical meaning were explicitly detailed in peer interviews.

Previous research (reviewed in Ross, McDougall, & Hogaboam-Gray, 2000) found similar difficulties in supporting student construction

Table 1: Pre and Post Teacher Observation Ratings ( $N=10-12$ )

Dimension of Mathematics Teaching	Pretest		Posttest		t-test Results
	Mean	SD	Mean	SD	
D1: Construction of Knowledge	2.92	.76	2.96	.66	$t(11)=-.290$ , $p=.777$
D2: Tasks: Multiple Solutions	2.75	.87	3.08	.82	$t(11)=-.169$ , $p=.120$
D2: Tasks: Multiple Representations	2.46	.66	2.46	.72	$t(11)=0$ , $p=1.000$
D3: Student-Student Interaction: Explicit Instruction (ES = .65)	2.40	.84	2.85	.82	$t(9)=-.187$ , $p=.095$
D3: Student-Student Interaction: Task Assignment (ES = .94)*	2.75	.98	3.60	.84	$t(9)=3.60$ , $p=.006$
D3: Student-Student Interaction: Communication (ES = .45)	2.45	.83	2.70	1.25	$t(9)=-.86$ , $p=.413$

\*  $p<.05$ 

of mathematical knowledge. A key challenge is how much scaffolding to give to students. The handover of responsibility for knowledge construction to students is impeded when teachers excessively cue students and /or when teachers over-summarize what students supposedly learned in their discussions. One participant described this dilemma in her own practice:

I still struggle with this at times, is how much interference I have to have within the task. If I am wandering around, and they are on task, then I know that I am on the right track. But there are times where I have to stop and think. Like with a couple [of tasks] with probability. You need to focus on what they are looking for and they [the students] weren't following. That's a bit frustrating. Like I know I need to go back and re-look at that and organize it some other way. (interview, Kristi)

Our sense is that we need a more comprehensive strategy for supporting knowledge construction in mathematics classrooms with sustained focused professional development in this area.

The largest differences from pre to posttest observation were for student-student interaction. There are three subdimensions related to student-student interaction. When examining the subdimensions, the greatest improvement was for task assignment: posttest mean was almost a full standard deviation higher than the pretest mean (i.e., the pooled standard deviation was .87).

In interviews, participants attributed these changes in their practice to peer coaching *and* to the mathematical pedagogy training provided. It was not an either-or situation where one component was clearly more powerful than the other. The two prongs of the professional development program reinforced each other.

I would say both primarily the peer coaching and the workshops at the board office: Those two kind of blended together there because we did get together, we saw each other there, we could chat even further about things that we were doing in the classroom in math. We sort of did some of that when we were together [at the in-service sessions] and took it a few steps further. It was great. (interview, Linda)

The professional development and peer coaching strategies caused four complementary effects: the peer coaching process awakened a desire for change; the in-service presentations provided explicit and effective models of alternate practices; the between session goal-focused activities provided opportunities for experimentation; and the debriefing conversations provided teachers with opportunities to understand how to integrate new practices into their existing styles. This four stage process reflects the model of professional reflection identified in Ross and Regan, (1993) where teachers experienced four stages embedded in professional reflection: dissonance, synthesis, experimentation, and integration.

*Finding 2: Teacher Efficacy Increases Due to a Nexus of Sources of Efficacy Information*

The second main finding of the study was that the professional development program had positive effects on teacher beliefs about their capacity

as mathematics teachers. Interestingly, the efficacy information from mastery teacher experiences was strengthened because the other three sources of efficacy were more readily available. At the beginning of the in-service, some teachers experienced depressed confidence in response to the peer coaching and in-service program. For example, Laura found that the increased knowledge about "how conceptual math should be taught" generated in the project depressed her self-image because she was more aware of her shortcomings: "I am probably now consciously incompetent" (interview, Laura). Karen also found that her confidence initially declined because her aspiration level increased faster than her ability to meet it. "There were times at the beginning I thought, I need to do this in a different way now; I need to do this more in a more constructivist way [but] I'm not quite sure how to do that with this particular goal" (interview, Karen). As the in-service progressed, Karen found her confidence returning when she realized that she could implement ideas presented in the in-service to meet her goals.

Other researchers (such as Woolfolk Hoy, 2000) have documented this phenomenon of depressed efficacy at the onset of efforts to shift practice. However, by the end of the professional development program, teachers reported that they felt more confident and capable of teaching mathematics with an emphasis on conceptual understanding. Participants attributed this increase in efficacy to several facets of the PD program including validation by recognizing that some of their existing practices were similar to those modeled and recommended by presenters (vicarious experience), by receiving positive feedback from their peer coaching partners (social and verbal persuasion, physiological, and emotional cues), and by acquiring and successfully applying new instructional strategies in their own classrooms (mastery experiences).

Some participants reported that peer coaching was a more successful approach than previous professional development experiences. For example, Jill reported that she had been trying for some time to persuade her partner, Nancy, to adopt a specific strategy for mental mathematics that worked well in Jill's class (interview, Jill). It was only when Nancy saw the method in action in Jill's class during the peer coaching observation that she decided to use it in her own classroom. By the end of the project, Nancy reported that she was using this same strategy regularly

in her classroom (interview, Nancy). This example illustrates how multiple efficacy information sources worked together, because of the peer coaching conditions, to facilitate implementation of an effective teaching strategy: When Nancy heard about Jill's mental mathematical teaching strategy at the in-service, Nancy thought it sounded like a good idea. This example is a form of social and verbal persuasion. But Nancy did not immediately use the strategy herself. The verbal persuasion was insufficient on its own. Then Nancy watched Jill effectively use the strategy with students. The observation incident is an example of a positive vicarious experience where one peer gained deeper understanding of how to implement a teaching technique by watching a partner of similar experience and skill level. After seeing her peer successfully use the mental mathematical strategy with students, Nancy applied it herself and met with success, culminating in a positive mastery experience. This sequence demonstrates how peer coaching generates multiple positive sources of efficacy information to the teacher thus increasing the likelihood of implementation of more challenging pedagogical practices.

Other participants reported that vicarious experiences were particularly important. They were able to put their observations into immediate use. For example, Susan watched Karen teach a patterning activity, was deeply impressed ("I was in awe" [interview, Susan]), and then used the same lesson with her own students. Susan was particularly appreciative of the opportunity to observe an experienced peer because, although a veteran teacher, Susan was teaching grade 3 for only the second time. Participants also reported that observing presenters, who were teachers, model innovative teaching strategies led them to believe that they too could be successful enacting standards-based teaching.

Teachers also described the impact of student expressions of learning as claims of improved teaching performance: enthusiasm, quality of student discourse, and student effort seeking multiple solutions. This evidence of increased mastery experiences was extensive and explicit. For example, Susan compared her previous year's students to this year:

I wasn't getting that enthusiasm last year. I just wasn't. This year they are eager. Their eyes are on me. Their hands are up and they want to participate with the hands-on [materials] and for the most part they are on task. You do have those

kids that need a lot of [support] . . . oh I know, but they are doing a better job this year and maybe that means I'm doing a better job. (interview, Susan)

### *Intense Reflection*

A less anticipated third finding was that participants were led to self-reflect more frequently and explicitly because of the interaction with their coaching peers. Participants reported that they normally had little time for conscious reflection on the success of lessons, beyond private ruminations that occur "on the fly . . . as you are driving home" (interview, Nancy). However, the peer coaching process removed the norm of isolation by providing a structured forum for teachers to share their interpretations of teaching experiences and receive feedback. For example, Helen observed William using a new text resource, which led her to think about how she might use text resources differently. Helen believed William's implementation was more advanced than hers, but she felt that she had incorporated some innovative elements into her teaching. Helen concluded that although she was not "following it as strictly as" William, she was on the right track (interview, Helen). Simultaneously, William was being questioned by his peer about his teaching decisions, leading William to question his own teaching: "I find myself questioning things that I am doing more and more . . . critically looking at the way I'm teaching and evaluating" (interview, William). Both Helen and William believed that self-questioning led them to implement higher quality instructional strategies. Meeta described her PD experiences as a reflective journey. She compared this professional development program to others, evaluating the current program as more powerful because it was personally relevant and focused on her mathematics teaching in particular. "I think [this PD was better] because this is more of a personal journey, a personal learning experience" (interview, Meeta).

### *Limits of the Peer Coaching Relationship*

Because five of the six pairs involved cross-school groupings, some teachers had difficulty meeting and sustaining conversations about their teaching (field notes-S3). In these cases, peer coaching visits required considerable travel time. It is also possible that difficulty in the debriefing component of peer coaching was related to the expressed anxiety by

some participants about being observed. For example, Nancy remembered asking herself during a peer observation lesson: "Why can't I understand what that student is saying? I bet Jill [the peer observer] knows what that student is saying" (field notes-S2). Further, some peers were reluctant to suggest substantive changes unless their partner suggested them first, or their partner specifically asked them to do so.

## DISCUSSION

The professional development program had a positive impact on teacher efficacy and on teacher implementation of standards-based teaching. The combination of content-specific pedagogical training and peer coaching proved to be effective in supporting teachers in their implementation of innovative strategies.

Teacher judgments about their abilities to influence student learning were affected by the combination of efficacy information sources. Not only did teachers have positive mastery experiences using standards-based mathematics teaching and learning strategies (with more explicit selection of open-ended student tasks that encouraged multiple solutions and solution strategies), but they also received information about their success through peer interaction and observing models of teaching (social and verbal persuasion, vicarious experience, and physiological and emotional cues). The nexus of efficacy information sources reinforced one another to provide the participants with strong positive messages about their teaching which, in turn, encouraged further risk-taking and implementation of challenging strategies.

In returning to our model of teacher change, we believe that several directional adjustments to the diagram are required to represent the activity and relationships associated with teacher change. The revised model of teacher change (see Figure 2) reflects the findings of this study and further enhances our understanding of the reciprocal relationships created during the professional development process. Peer input influenced teacher efficacy and innovative instruction as predicted, but equally powerful was the influence of innovative instruction and teacher efficacy on peer input. That is, as teachers implemented standards-based mathematics teaching and increased their efficacy, the quality and importance of peer feedback was also increased.



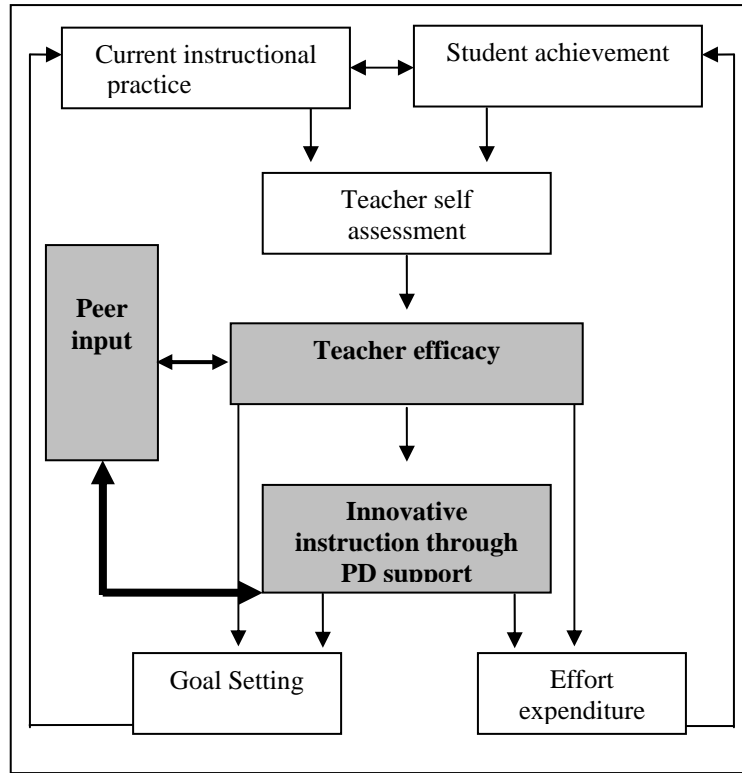


Figure 2. Revised Model of Teacher Change: Activities and Relationships That Influence Efficacy

This reflexive and reciprocal growth process is well illustrated in the paired interviews. For example Kristi explained that her motivation to take risks using innovative mathematics teaching strategies increased because she sought and received support from her peer coach.

Having the peer, the person to talk to, to see what is happening in that class and that you're thinking the same thing. Or to question: I'll say [to my peer] I'm not sure if this is going work. I don't know. You are not plundering along on your own to see if you are on the right track. (interview, Kristi)

One pair combined peer input and innovative pedagogy to the point where they participated in two co-teaching situations to work through standards-based tasks with students:

Nancy: [peer coaching] never did happen before so it was just – to me that was a powerful experience to be able to go into each other's rooms.

Jill: And to watch each other teach. To watch Nancy teach math and to have her watch me was lovely. Especially that one day I was so sick and thank goodness she was here otherwise the lesson was going downhill fast because I wasn't making any sense and (laughter) . . . 'Gee I don't get this I just; oh thank goodness Nancy's here.' She saved that lesson.

Researcher: You did a little bit of co-teaching?

Jill: Oh totally. Because we are comfortable with each other, it was okay for us to step in. And for me to know I could hand out the manipulatives and go around and talk to the groups and I didn't feel uncomfortable doing that in her room and, I know she didn't feel uncomfortable doing that. So that it was more. It wasn't just watching. We definitely did co-teach. We might need to be in the same school

Nancy: I think [nodding in agreement]. (Jill & Nancy, co-teaching)

We believe that the revised model better reflects our findings in this study because it acknowledges the strong reciprocal links between peer input, teacher use of innovative strategies, and teacher efficacy. Although peer coaching models can be expensive in terms of release time for teachers to observe one another, we believe there are possible creative solutions to keep costs at a minimum and make this practice sustainable.

We recommend that the procedures used in this study be considered for professional development programs, but we also think they could be strengthened in several ways. First, we believe that a whole school approach has the potential to heighten implementation if teachers work in same-grade pairs embedded within a school staff. In this case, we recommend that the peer coaching process be linked directly to the school plan. Second, the treatment could be extended to five coaching sessions rather than three. For some teachers, the initial reaction to peer coaching was reduced confidence, which then rebounded over time. By extending the number of coaching cycles, there is greater potential to maximize teacher learning well beyond the confidence dip. The careful

planning of these peer coaching sessions within the school context has the potential to reduce the costs of release time for teachers observing one another. For example, a school may be able to organize planning times so that they coincide to allow a pair of teachers to observe one another regularly during these planning times without additional costs.

Of interest for further research is the exploration of how teacher selection of open-ended tasks can be combined with emphasis on student construction of meaning. Although we have hypothesized in this study about possible reasons for the increased use of standards-based mathematics tasks and student interaction without evidence of increases in student construction of mathematical understanding, it is an area where further research is required, perhaps by examining teacher behaviours of "helping students" and how these behaviours facilitate or hinder student construction of meaning when using open-ended tasks. Finally, we suggest sharing more control with participants by inviting them to self-select goals of greatest importance to them from among the 10 dimensions in the self-assessment rubric.

In this study, teacher peer coaching provided a vehicle for intensive professional development for mathematics teachers. The effects of peer coaching combined with pedagogical training in mathematics proved to be a powerful strategy for moving teachers along a continuum of practices towards more effective teaching and learning opportunities. In the process, teacher engagement with peer coaching increased in terms of the quality and value of teacher collaboration. The interaction between peer coaching and effective mathematics teaching is a promising area for further study.

#### NOTES

<sup>1</sup> The research reported in this article was funded by the Ontario Ministry of Education and the Social Sciences and Humanities Research Council. The views expressed in this article do not necessarily represent the views of the Ministry or the Council.

<sup>2</sup> Standards-based mathematics involves teaching toward specific skills, concepts, and knowledge students should learn at each grade level. Standards-based mathematics teaching also focuses on research supporting the most effective teaching strategies for student learning. The National Council of Teachers of Mathematics (NCTM) in the United States, for example, has developed

over several decades very specific standards for mathematics teaching and learning.

<sup>3</sup>Statistical power is a function of sample size. Large samples can detect small, medium, and large effects; small samples can detect only large effects. If we relied on quantitative comparisons alone, our study would be at high risk of Type II error: the failure to recognize the positive outcomes of a program. However, power statistics are estimates: one of the statistical comparisons reported in Table 1 did reach statistical significance. Other educationally meaningful effect sizes shown in the table were not statistically significant; because of the small sample size we are not able to eliminate the possibility that effect sizes arose through chance.

<sup>4</sup>We were unable to render a decision as to the most appropriate level of practice for the three student-student interaction variables in 2 of the 12 cases on the posttest. We treated the data on these variables as missing in the case-wise calculation of the t-tests.

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# GIRLS' VISUAL REPRESENTATIONS OF LITERACY IN A RURAL UGANDAN COMMUNITY

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This Ugandan-based study examined how visual modes of communication provide insights into girls' perceptions of literacy, and open broader dialogues on literacy, women, and development. Twenty-nine primary school girls used drawing and 15 secondary school girls used photography to depict local literacy practices in relation to their own lives and experiences. The images they captured provide a window on the interface between local and global literacy practices, and the "freedoms" (Sen, 1999) associated with literacy. Drawing and photography move beyond language to make visible the barriers that have historically marginalized and excluded girls from full participation in the development process.

Key words: visual representations, literacy, girls, international development, Uganda

Cette étude menée en Ouganda montre comment des modes de communication visuels permettent de mieux comprendre les perceptions qu'ont les fillettes de la littératie et favorisent le dialogue sur la littératie, les femmes et le développement. Vingt-neuf écolières du primaire et quinze du secondaire ont illustré, les premières par des dessins, les secondes par des photos, des méthodes de littératie locales en lien avec leur propre vie et leurs propres expériences. Ces images montrent l'interface entre les méthodes de littératie locales et internationales et les « libertés » (Sen, 1999) associées à la littératie. Au-delà du langage, les dessins et les photos rendent visibles les obstacles qui ont depuis toujours marginalisé les filles et les ont exclues d'une pleine participation au processus de développement.

Mots clés : représentations visuelles, littératie, filles, développement international, Ouganda



Recent scholarship in the area of literacy and development emphasizes that the success of literacy projects, programmes, and policies in diverse regions of the world is largely dependent on researchers, practitioners, and teachers understanding how local people themselves use and make meaning of literacy practices (e.g., Robinson-Pant, 2001; Street, 2001). The concept of literacy practices links literacy to broader social and cultural patterns, including the values and power structures embedded in the wider society (Street, 2003). Canagarajah (1998) similarly contends that politics of location is central to understanding the literacy practices of a given community. Development, however, is a highly contested category (Rogers, 2001, p. 204), particularly in terms of how it is measured in relation to improvements in education, health, agriculture, transportation, and economic and political life. Nobel Laureate Amartya Sen insists that development is a holistic concept, involving one's mental, emotional, physical, spiritual, and social conditions, as well as one's economic situation. To measure development by economic indicators alone, Sen (1999) argues, is misleading and incomplete; what is more important is individual quality of life in relation to the freedoms one enjoys:

Development has to be more concerned with enhancing the lives we lead and the freedoms we enjoy. Expanding the freedoms that we have reason to value not only makes our lives richer and more unfettered, but also allows us to be fuller social persons, exercising our own volitions and interacting with – and influencing – the world in which we live. (pp. 14-15)

Sen's theory has been pivotal in directing international development policy, central to which is the participation of women and girls (Duflo, 2003; Papan, 2001; Parry, 2004; Robinson-Pant, 2001). What is lacking in the research literature, however, is a more comprehensive understanding of women's and girls' perspectives on their own roles in relation to literacy and development.

The primary purpose of our study was to examine how drawing and photography – as modes of communication and representation – in the hands of primary and secondary school girls might provide insights into their perceptions of participation in local literacy practices, and open broader dialogues on literacy, women, and development. Our research takes place within the context of rural Uganda, a country in the eastern

part of Sub-Saharan Africa, characterized by chronic poverty, unfavourable health conditions, and gender imbalance (Bigsten & Kayizzi-Mugerwa, 1999). Our assumption is that women and girls are key stakeholders in the development process, and that a range of literacy practices is associated with the "freedoms" (Sen, 1999) required for full participation in health, education, economics, leisure, law, and politics. As part of a larger project on literacy, gender, and development funded by the Canadian Social Sciences and Humanities Research Council (SSHRC), we addressed in this article the following research questions:

1. How do girls in a rural Ugandan community use the modalities of drawing and photography to represent literacy practices in their daily lives?
2. Does engagement with modalities such as drawing and photography afford opportunities for girls to perceive and situate themselves in new ways in relation to the literacy practices within their societies and communities?

#### THEORETICAL PERSPECTIVES

Although a plethora of interdisciplinary literature exists on what literacy is and how literacy develops, little agreement occurs on the topic. As Egbo (2000) emphasizes, this topic remains enigmatic and conceptually ambiguous. In conceptualizing literacy for this research, we drew broadly from the fields of linguistics, anthropology, ethnographies of communication, and sociology with a focus on the increasing recognition that literacy is not only a skill to be learned, but a practice that is socially constructed and locally negotiated (see e.g., Baynham, 1995; Fairclough, 1992; Heath, 1983; New London Group, 1996). We found Giroux's (1993) and Carrington's (2003) perspectives helpful in conceptualizing literacy, particularly in relation to the notion of freedoms (Sen, 1999). Giroux (1993) proposes that literacy be viewed as,

a form of cultural citizenship and politics that provides the conditions for subordinate groups to learn the knowledge and skills necessary for empowerment . . . to live in a society in which they have the opportunity [i.e., the freedoms] to govern and shape history rather than be confined to its margins. (p. 367)

Carrington (2003) likewise argues for a critical view that conceptualizes literacy as providing skills and knowledge to mediate self in relation to one's social and cultural context. In particular, we took up her notion that "literacy is about who you are allowed to become in a given society" (p. 96).

With this critical perspective as our backdrop, we located our study within a framework of "literacy ecology" of communities, which, rather than isolating literacy practices to understand them, "aims to understand how literacy is embedded in other human activity, its embeddedness in social life and in thought, and its position in history, language, and learning" (Barton, 1994, p. 32). Baynham (1995) delineates a comprehensive framework for understanding literacy in contexts of use. The underpinnings of his framework emphasize that investigating literacy in social context involves understanding not just what people do with literacy, but also what they associate with what they do, how they construct the value of literacy, and the ideologies that surround literacy in a particular community. He stresses the need to expand the understanding of literacy by investigating how relationships of unequal power shape uses of literacy, specifically who is included and who is excluded in particular literacy practices.

We also draw on the sociocultural work of researchers such as Heath (1983), Barton and Hamilton (1998), Lave and Wenger (1991), Luke (1997), and Norton and Toohey (2004), all of whom view learners' literacy practices within the local and larger contexts in which they live and learn. This perspective emphasizes the importance of learners' imagined communities in understanding how and why they engage or do not engage with particular literacy practices. Imagined communities refer to "groups of people, not immediately tangible and accessible, with whom we connect through the power of the imagination" (Kanno & Norton, 2003, p. 241). Individuals interact with many communities including neighborhood communities, workplaces, educational institutions, and religious groups. However, these are not the only communities with which they are affiliated. As Wenger (1998) suggests, in addition to direct involvement with community practices and investment in tangible and concrete relationships, imagination – "a process of expanding one-

self by transcending our time and space and creating new images of the world and ourselves" (p. 176) – is an equally important source of community.

Kanno and Norton (2003) argue that this notion of the imagined extends both spatially and temporally, which they link to Benedict Anderson, who first coined the term "imagined communities." Anderson (1991) contends that what individuals think of as nations are really imagined communities "because the members of even the smallest nation will never know most of their fellow-members, meet them, or even hear of them, yet in the minds of each lives the image of their communion" (p. 6). In imagining connections to fellow compatriots across space and time, "we [individuals] can feel a sense of community with people we have not yet met, but perhaps hope to meet one day" (Kanno & Norton, 2003, p. 241). Accordingly, learning is viewed as an integral part of changing patterns of participation in various communities with shared practices (Lave & Wenger, 1991). Thus, we view literacy as practices that construct, and are constructed by, "the ways language learners understand themselves, their social surroundings, their histories, and their possibilities for the future" (Norton & Toohey, 2004, p. 1).

Literacy scholars in different regions of the world are giving greater attention to the importance of multiple and alternative modes of communication and representation that move beyond language (e.g., Menezes de Souza, 2002, 2003; Prinsloo & Stein, 2005; Stein, 2003). This emerging body of research informed our use of visual modes (specifically drawing and photography) as a means of enhancing understanding of the complexity of literacy practices. Scholars are increasingly recognizing that in any communicative mode, language, whether written or spoken, is only part of the meaning-making process, and that any communicative event involves simultaneous modes whereby meaning is communicated in different ways through images, gestures, and speech (Kress & Jewitt, 2003). Central to this body of research is social semiotics, which attempts to explain and understand how signs are used to "produce and communicate meanings in specific social settings" (Kress & van Leeuwen, 1996, p. 264). Signs simultaneously communicate the here and now of a social context while representing "what is to hand" (i.e., the resources a given culture values and makes readily available) (Kress,

1997). The meanings also reflect reality as imagined by the sign-maker and influenced by his or her beliefs, values, and biases.

Visual anthropology also broadly informs our understanding of multiple modes of representation within specific social and cultural settings. Visual anthropologists contend, "much that is observable, much that can be learned about a culture can be recorded most effectively and comprehensively through film, photography or by drawing" (Banks & Morphy, 1997, p. 14). They also argue that neglecting visual data may be a reflection of Western bias (i.e., the privileging of the intellectual over the experiential or phenomenological) or neglecting the importance of visual phenomena across cultures. Their position does not require that individuals use visual methods in all contexts, but are used where appropriate with the caveat that appropriateness may not be obvious from the outset of the study. Traditionally, researchers rather than research participants have used visual modes for recording culture. They view participants as co-researchers and put the visual tools of pencil and camera in their hands to enhance their understanding of their every day lives in general and their community's literacy practices in particular. For the study reported in this article, we used both drawing and photography to provide productive resources to supplement our understanding of the social and cultural setting, and concretely positioned our interviews and conversations with our participants.

#### DESCRIPTION OF THE STUDY, CONTEXT, AND PARTICIPANTS

This study emerged from a larger study being conducted in three districts of Uganda: Masaka in the southwest, Mbale in the east, and Nebbi in the northwest. The study, which began in August 2003, is centrally concerned with the relationship between literacy, gender, and sustainable development, includes both formal and informal schooling with children and adults. For the purposes of this article, we have focused on two rural schools (one primary and one secondary) in Masaka District; both schools have a mixed population of girls and boys whose main language is Luganda. Data collection for this aspect of the larger study began in September 2004 and continued until August 2005. Jones lived full-time in Kyato village during this time; Kendrick made site visits in 2005. The students met both researchers in August 2003

through a long-time resident of the village. The researcher who lived in the community worked as a volunteer in the secondary school, in the community library, and as an adult literacy teacher. Girls in the community spent considerable time with her outside the context of the school. We also worked with two trained research assistants, one Ugandan and one Canadian. The Ugandan research assistant worked in the community library, shared with the school. He was a very trusted member of the wider community, and the girls regularly consulted him about personal issues and difficulties. The Canadian research assistant worked as a volunteer in the primary school, and the students enjoyed engaging in leisure activities with him such as soccer and games night at the library. Although we recognize that our presence in the community may have influenced the girls and their participation in our research project, we tried to minimize our influence by developing rapport with the girls, collecting a variety of data, and through triangulation of methods.

Our research questions, design, and interpretation within this study and the larger project are the result of a collaborative relationship among a team of Canadian and Ugandan researchers and practitioners. The reliability and validity of our research is entirely dependent on these collaborative relationships (Brock-Utne, 1996). Further details of the specific methodologies used are discussed in relation to the drawing and photography activities. Pseudonyms are used throughout the paper.

Uganda is a land-locked country in East Africa, sharing borders with Kenya to the west, Democratic Republic of the Congo to the east, Sudan to the north, and Rwanda and Tanzania to the south. It has a total area of 241,040 square kilometers and a population of almost 28 million (United Nations Development Programme Uganda, 2007).<sup>1</sup> The nation is governed by the National Resistance Movement Party, under President Museveni, who came to power in 1986 after decades of civil war and unrest. Although violent conflict has occurred in Northern Uganda since Museveni's presidency began, the rest of the country has been at peace; Uganda has made significant progress in many areas such as education, economic growth, accountable government, and civil service reform, and commitments to poverty reduction and gender equality (Department for International Development, 1999; Pitamber & Chatterjee, 2005). Despite

its gains, however, Uganda is still one of the poorest countries in the world, ranked at 145 out of 177 countries on the Human Development Index (United Nations Development Programme Uganda, 2007). Thirty-eight per cent of the population lives below the poverty line, and the gross domestic product (GDP) per capita is \$320 US per year.

Kyato Village, typical of many rural Ugandan communities, has no electricity, and although piped water became available for a fee in 2004, the vast majority of people cannot afford it. The people are mostly subsistence-level farmers who grow crops such as maize, matooke (green bananas), cassava, sweet potatoes, yams, ("Irish") potatoes, beans, groundnuts, pineapples, mangoes, sweet bananas, jackfruit, papaya, watermelon, and guavas for family consumption. Most families possess a small number of livestock (chickens, pigs, or goats) for consumption or to sell in case of financial exigencies (i.e., school fees, medical expenses). Some families, if they have enough land, grow cash crops such as coffee and vanilla beans. There are distinct gender roles: women do most of the domestic work and farming, and men have more opportunities to earn an income through labour (e.g., making bricks, digging, building houses, driving taxis and boda-bodas, and clearing land). In Masaka District, over half of the entire households, with an average of 5.3 persons, live on less than about \$50 US a month (Uganda Bureau of Statistics, 2002). Most families live in one or two room houses; private spaces for reading, writing, studying, or other individual activities are very scarce.

The Ugandan school system is structured in a hierarchical manner in a 7-4-2-3 system (seven years of primary, four years secondary 'O' level, two years secondary 'A' level, and minimum of three years at university level). Advancing to each new stage is contingent upon passing a national examination. This structure makes the education system highly selective and pyramidal in nature: as students progress through the system, there are fewer students at each level (Aguti, 2002), and in particular, fewer girls. In 1996, Uganda implemented a Universal Primary Education (UPE) policy, which has increased enrollment of both boys and girls aged between 6 and 12 years even among the very poor (Kasente, 2003). Universal Secondary Education (USE) has only recently been introduced in Uganda. Despite efforts such as UPE, USE, and the National Strategy for Girls' Education (Republic of Uganda, 1999) as well

as UNICEF's Girls' Education Movement, girls' school attendance at the secondary level still lags far behind boys' attendance for a variety of reasons including cultural and historic ideologies that influence decisions about whether families can do without the labour of girls, whether girls will be safe at school, and whether financial resources are available and should be invested in girls rather than boys (Kasente, 2003).

As a British Protectorate, Uganda was granted independence in 1962. English, Uganda's official language, still retains its elite position in the country but limited numbers of people speak the language fluently, particularly outside urban areas. In rural areas, English is the language of instruction from Primary 4 onwards although the majority of students have few opportunities to use and maintain the language. Reading and writing in English are equally challenging because access to resources (e.g., reading materials, Internet access) is limited at best. From a global participation perspective, literacy in Uganda is linked inextricably to the English language.

The families in this community, as in all of Masaka District, have been deeply affected by HIV/AIDS. Many of the girls in this study had been personally touched by tragic consequences associated with HIV/AIDS; they have seen family members, neighbours, and friends die from the disease. One of the secondary school girls lost both her parents (and, as her father was polygamous, his other six wives) to HIV/AIDS. The threat of contracting the disease looms large for girls, particularly because they have little control over many of their sexual activities. Very often, girls' sexual experiences were not within the context of an intimate, loving relationship; many of the adolescent girls had experienced forced sex, whether physically, through coercion and/or threats, or out of financial need.

Our study involved 44 girls, 29 from Kyato Primary School (this was the total number of the girls in Primary 6) and 15 from Kyato Secondary School (this was the total number of girls in Senior 3). Although we wanted to work with the highest level in each school, we selected Primary 6 and Senior 3 because we also wanted to be respectful of students in Primary 7 and Senior 4 who were under considerable pressure to pass final exams. Both schools are located in Kyato Village in Uganda's Masaka District. The girls in our study typically awoke before sunrise



each day, dug in the fields, planted and harvested crops, fetched water and firewood, prepared food, maintained their homes and compounds, washed clothes, cared for siblings – often all before they embarked on a long walk to school. They suffered without medication through regular bouts of malaria and other illnesses and pain, studied hard, and were accustomed to only the barest of necessities, typically going without. After school hours, some of the secondary school girls participated in choir, others belonged to dance or drumming groups, some played netball or participated in the newspaper club or the *Straight Talk Club*, which focused on issues such as HIV/AIDS, sexual health, and adolescent relationships. The primary school girls also learned dancing and singing, and enjoyed skipping, talking, and reading together in clusters around the schoolyard. They often wandered over to the secondary school to watch the older girls' dance and choir rehearsals.

#### DRAWINGS AS WINDOWS ON GIRLS' PERCEPTIONS OF LITERACY

##### *Procedure and Analysis*

We premised our use of drawing as a visual method on research that consistently demonstrates children are able to communicate powerful and imaginative ideas and problems through a variety of symbol systems (Kress, 1997; Peterson, 1997; Weber & Mitchell, 1995; Wetton & McWhirter, 1998). The procedure we followed in soliciting the drawings included group discussions and interviews. The girls met with one of the researchers as well as a research assistant, who at the time of data collection had been living in the community for several months, to discuss and draw pictures of their ideas and experiences of literacy across the broad contexts of their lives (e.g., in and out of school, in the future). Because our goal was to explore the students' images and ideas about local literacy practices, we used lead-off questions to open a topic domain (e.g., "What kinds of reading and writing do you do in school and outside school?" "How do you think you will use reading and writing in the future?") (e.g., Carspecken, 1996). The directions for the drawing task did not specify who or what should be in the drawing, or where it might take place. Within the context of their classroom and outdoor school grounds, the girls were simply asked to draw pictures of reading and/or writing based on their own ideas and experiences. The

discussion provided the impetus for drawing, and we were aware that hearing the ideas of their peers could influence what the girls might draw. Our presence as foreigner researchers may also have influenced what the girls chose to draw; the practices and ideas they represent, however, are consistent with other data (see for example Jones, 2008; Kendrick & Hizzani, 2007; Kendrick & Mutonyi, 2007; Kendrick, Jones, Mutonyi, & Norton, 2006) we have collected over the past four years. The rapport established with the girls over several months should also have minimized our influence. Although all students had some English language ability, we worked with language interpreters to enhance data collection and communication with the students.

Drawing as a free-time activity was something all the students, both boys and girls, appeared to enjoy considerably; when we visited classrooms we often observed students drawing pictures – particularly soccer pictures – during the free moments that followed the completion of an exam or a classroom assignment (e.g., while they waited for classmates to complete).

We use an adaptation of Dyer's (1982) checklist for exploring what the drawings as signs might mean within this particular socio-cultural context. Specifically, we coded and analyzed the drawings according to the following categories: representations of bodies (age, male/female, race, hair, body, size, and looks), representations of manner (expression, eye contact, pose), representations of activity (touch, body movement, positional communication), and representations of props and setting. We concentrated first on a description of the visual, then established a narrative thread that wove together other elements and layers of meaning in the drawing, all the while contextualizing our interpretations within observational and interview data collected as part of the larger study. For this article, we focus on three drawings that are representative of the predominant literacy practices featured in the collection of drawings. These practices focus exclusively on the forms and functions of reading in the lives of these primary school girls (e.g., reading newspapers, adolescent newsletters, books; reading to get knowledge, to get a job, to learn English, for interest, to pass exams, to know about science, to keep cattle, to know the world).

*Hannah's Drawing*

In Hannah's drawing, a self-portrait, she is attired formally, wearing a dress and shoes not typical of school garments (see Figure 1). Secondary school girls in this area typically dress in this manner when they are traveling home from boarding school on weekends or holidays. Her manner of dress may also be reflective of a desired future lifestyle that affords her material goods such as fashionable clothing, which she does not currently possess.



Figure 1: Hannah's drawing

The bench situated under the tree most likely depicts a study environment. Sitting under a tree is a common place for students to read, especially during examinations when there are no classes, and students are preparing at home. Hannah's solitary positioning here may be indicative of her need to claim a private space away from the distractions and domestic responsibilities she is confronted with at home. Studying in private also signals that schoolwork is taken seriously, which is

reinforced by Hannah's concentrated facial expression and upright posture. She clearly labels her reading material *Young Talk*, which is a monthly national newspaper for youth that communicates information about HIV/AIDS and other sexual health issues. *Young Talk*, a common reading resource at the school, requires a high level of English language ability, which may reflect her desire to become part of the English literacy community because of the increased life opportunities it will afford her. As she explained in writing, she is reading *Young Talk* "to know about the [English] words."

The narrative Hannah composed in the drawing is about a well-dressed, young woman who is literate in English and possibly also knowledgeable about issues such as HIV/AIDS and sexuality, local concerns that could pose barriers to attaining an education and comfortable lifestyle. This image of herself, real or imagined, represents her "imagined freedoms" in relation to economics, education, and status in society.

#### *Sarah's Drawing*

Sarah also portrayed herself reading under a tree (see Figure 2). The reading event includes her friend, who appears to be a somewhat older girl. Sarah is wearing shoes, which again, most likely indicates she is away from home, possibly visiting her friend. Both girls are wearing school uniforms. The way they are sitting on the ground is a traditional sitting posture for girls and women in this area of Uganda; it signals to other members of the community that these are girls who engage in proper female behaviour (i.e., what is traditionally valued).

The girls are holding the newspaper *Young Talk*. Their faces show intense concentration, which reflects Sarah's written explanation that they are reading *Young Talk* because it "is the way to pass the examinations," which are in English. Their mouths are slightly open, perhaps because they are reading aloud or discussing what they are reading. The inclusion of talk is also representative of the continuum of communication in this context whereby literacy and spoken language intermingle in everyday interactions around text.



Figure 2: Sarah's drawing

The girls' shoulders are touching, demonstrating their level of comfort with each other; the image portrays the image of relationship: of friendship and support, a clear example of the social nature of literacy learning in this cultural context. The narrative Sarah constructed is most likely an instance taken from daily life events, in this case, studying with a friend so she can pass primary school exams to attend secondary school.

#### *Gertrude's Drawing*

Gertrude's drawing includes two images of self (see Figure 3). In one, she is standing; in the other, she is sitting in a chair under a tree. In both, she is holding books. The two images taken together can be interpreted as the process of her coming to study under the tree. In the first frame, she is walking towards the chair, carrying a book; in the second, she is sitting and reading. She explained that she is reading an English book "to study the word." Similar to the other two girls, Gertrude's drawing

emphasizes the importance of English to education in this cultural context. The inclusion of the word *education* and images of books on the trunk and at the base of the tree may also profile the tree as a signifier of knowledge acquired through formal education in general and book reading in English in particular.



Figure 3: Gertrude's drawing

Occupying the space under a tree represents, as noted previously, a claim to a private space, in this case, ownership of a place to read. In this community, however, sitting in a chair is often the exclusive privilege of men. Gertrude's occupation of the chair as a young girl is a bold claim to status and power in her community. Her formal style of dress and high-heeled shoes indicate she is most likely away from home. The image is one of a well-educated woman, who has the economic resources for material goods such as fashionable clothing and books, and whose status

allows her to occupy important positions (e.g., the chair); these are the freedoms she imagines for herself in the future.

### *Emerging Patterns*

The human mind, Hubbard (1989) posits, has a need for organizational systems that sort out the kaleidoscope of images to which individuals are exposed. Both art and language provide a means to encode experience, whether real or imagined (Baron, 1984). As Kress (2000) argues, the two modes are “embedded in distinct ways of conceptualizing, thinking, and communicating” (p. 195). Drawings in particular, he explains, show an astonishing conceptual understanding and imagination that cannot be expressed through language, even language in narrative format. By making visible what is hidden in their mind’s eye, these girls reveal who they imagine they are allowed to become in this society. Their social and material choices about how to construct literacy constitute, in Willis’s (1977) words, “the organization of self in relation to the future” (p. 172). In all the drawings, each girl situates herself as the central literacy participant. They portray themselves as readers who occupy private study spaces under trees, seated on chairs and benches. The chairs and benches indicate a serious student, and in this rural area, where very few adults are able to read and write, represent literacy itself. The girls use props such as English books and *Young Talk* to signal their membership in the literacy community, and in particular, the English literacy community. As Primary 6 students, communicating in spoken or written English remains quite challenging. As they explained in their written comments about their drawings, they read English texts and *Young Talk* to “learn the word” and “know the world.” Learning about the world outside of their village depends upon knowing English because of the limited number of people outside of their district who could speak Luganda. The English language community is clearly a community to which they one day hope to belong.

The girls also include in the reading event participants other than themselves, specifically siblings and friends. Reading is often social and interactive, sometimes involving lively discussion or reading aloud. Strikingly absent from all the drawings, however, were teachers, parents, and other adults as mediators of literacy. From a pedagogical perspect-

ive, siblings and peers may play a more important role in scaffolding literacy learning than teachers and adult family members. Gregory (2001) describes this interaction as a synergy, a "unique reciprocity whereby siblings [and peers] act as adjuvants in each other's learning" (p. 309). From a Vygotskian perspective, peers and siblings take on the role of the more competent other in supporting and teaching reading outside of school contexts, which is where the majority of the literacy events in the drawings are situated.

Historically, communication in this cultural context was predominantly spoken. Spoken and literate practices are fused in many Ugandan communities where it is common to see a group of people interacting and engaging in discussions around a text that is read aloud. This intermingling of reading and talking was portrayed in many of the students' drawings. Writing practices, which tend to be more solitary and private, were not embedded in the social and cultural practices depicted in the drawings. Only one drawing included an example of writing, which was specifically for the purposes of exam writing.

Inextricably linked to the girls' constructions are the imagined freedoms they associate with literacy. They portray financial freedom through the inclusion of expensive clothing, make-up, shoes, and other material goods and lifestyle representations. Financial freedom has not been within the experiential realm of any of these girls; the three profiled here, along with many of the other participants, represent educational freedom through the depiction of themselves as secondary school students. For many Ugandan girls, the opportunity to attend secondary school is not assumed. Indeed, there is tremendous uncertainty whether their families will have the money to pay secondary school fees and other school-related expenses, whether they will choose to invest in the education of their female children, and whether they will release girls from apprenticing as mothers. From the perspective of these primary school girls, freedom from poverty provides access to full participation in the literacy practices of their society. This relationship between poverty and literacy needs to be addressed before girls and women in Uganda will gain the freedom to participate in all aspects of life in their society.



## USING PHOTOGRAPHY TO EXPLORE RELATIONSHIPS BETWEEN LITERACY AND LIFE OPPORTUNITY

### *Procedure and Analysis*

We used photography as an investigative tool (e.g., Hamilton, 2000; Prosser, 1998) to explore the young women's understandings of literacy practices in relation to career and life opportunities. The girls ventured into their local community with a digital camera and photographed men and women engaged in a variety of activities, including domestic work, leisure, and paid employment. Prior to their photographic exploration, we held discussions with the girls about women's roles and literacy practices; the girls then documented everyday activities in three local contexts: their village, the neighbouring trading centre, and the nearest city.

The 15 girls from the secondary school assumed the role of co-researchers, which required that they pay particular attention to everyday literacy practices and interactions that may otherwise have gone unnoticed. The moments, individuals, activities, and signs captured in the photographs provide a "still life" gallery representation of the larger social ecology where these girls lived. The girls formed five sub-groups; each sub-group used photography to investigate literacy practices in one of the following domains: the village, the local trading centre, and upper-level or supervisory positions in companies and organizations in nearby Ganda Town. Before they embarked on the photography exercise, we engaged in a series of brainstorming activities and discussions around the themes and objectives of the activity. Each sub-group considered its focus theme and compiled a list of possible subjects related to that theme. Following this, each sub-group used a digital camera to capture images to represent their research subject. The girls viewed and analyzed the photographs after transferring them to a computer.

For the purposes of this article, we chose three photographs that represented each location (i.e., their village, the neighbouring trading centre, and the nearest city) to examine the girls' documentation of literacy practices in varying contexts in their local and extended community. Hamilton's (2000) "basic elements of literacy events and

practices" (p. 17) provide the framework for analyzing these photographs. This framework includes both visible components of photographs (e.g., participants, settings, artifacts, and activities) as they relate to literacy events, as well as the non-visible constituents of literacy practices. This approach to analysis places moments of everyday life captured by a camera in a much broader context of social and cultural constructions of literacy, where associations, values, understandings, and opportunities around literacy inform literacy events and practices. The framework also highlights the *absence of literacy* in the photographs, which is also associated with particular social and cultural values and understandings (e.g., limited life opportunities and possibilities for the future).

#### *Nurse in Trading Centre Clinic*

This photograph shows a nurse in a health clinic in the trading centre holding open a book that documents patient visits, their ailments, and treatments provided (see Figure 4). The patient record book is one of several immediately apparent examples of literacy practices in the context of the health clinic. On either side of the nurse are walls covered with text and illustrated posters conveying important messages on topics such as proper nutrition, safe sex practices, the use of mosquito nets to prevent malaria, the importance of clean drinking water, and the identification of various illnesses and diseases. The shelves of prescription drugs located behind the nurse are another important aspect of literacy. In ensuing discussions about this photograph, the girls identified print literacy as critical for understanding the contents of prescription medication and the proper dosage to administer.

The nursing profession embodies the need for literacy, both in terms of education necessary to become a nurse, as well as the daily, ongoing requirements of the job. The girls identified nursing as one of the very few paid positions in the trading centre where women could earn a reasonable salary (as opposed to unskilled, paid positions, such as restaurant workers, where women may earn as little as 50 cents US per day). The girls also discussed how literacy and education at secondary and post-secondary levels enable girls and women to make certain choices about who and what they will become. Associated with such



Figure 4: Nurse in trading centre clinic

empowerment are the freedoms associated with economic independence, mobility, and status within the community.

*District Commissioner of Police*

In the photograph of the District Commissioner of the Police Department, he is sitting at his desk in his office. There are various files, newspapers, notices, and other papers scattered on top of his desk, as well as several “tools” of literacy – a stapler, a hole punch, pens, and paper clips. Beyond the border of the photo are numerous filing cabinets and certificates with the Commissioner’s credentials framed and hanging on the wall, as well as posters on crime prevention published and distributed by the national government. In this photograph, seated across the desk from the District Commissioner, is the group of three girls who visited the police station as part of their research on literacy practices in various institutions in Ganda Town. The District Commissioner emphasized the importance of literacy and education for career opportunities by



Figure 5: Masaka District Commissioner of Police

enthusiastically encouraging the girls to complete their secondary school studies and consider a career with the police. He explained that the police force actively recruits bright, young women who have an interest in becoming policewomen or working in some other capacity with the police force. He showed them personnel files and the kinds of documentation required to apply for a position. In addition, he led the girls on a tour around the police station and introduced them to the various heads of departments, several of whom were women.

#### *Young Woman Washing Dishes*

In this photograph, a young woman is washing dishes outside her home (see Figure 6). Not much older than the secondary school girls who took the photograph, she spends her days performing domestic work. She lives at home with her mother and several siblings and is responsible for digging in the fields, preparing meals, keeping the compound clean, tending to younger children, and washing dishes and clothes. There are no literacy artifacts in her immediate environment, no demands for literacy for her domestic work, and little opportunity to engage in lit-



Figure 6: Young woman washing dishes

eracy practices. Because the young woman in the photo is of secondary school age, it communicates an obvious message to the secondary school girls: without secondary education, opportunities to provide economic freedoms are more limited.

#### *Emerging Patterns*

During the collaborative analysis of all the photographs, several important themes highlighting the relationship between literacy and life opportunities emerged. These include the unequal division of domestic labour, unequal access to income-earning opportunities, and the unequal ratio of men to women in high-level positions. In many ways, these

themes epitomize the “unfreedoms” (Sen, 1999) that prevent girls and women from fully participating in their communities, and therefore, in national development. The girls maintained that there is an inseparable connection between opportunities for girls and women, literacy, and access to education. Photographs that explored and documented daily activities in the village, trading centre, and nearby city, showed that women and girls are overwhelmingly responsible for daily domestic labour such as cooking, cleaning, fetching water and firewood, looking after children, and digging in the gardens. If both husband and wife are farmers (as many are), or boys and girls have equal burdens of studying (which is certainly the case), women and girls do more overall work than men and boys. When we considered the conspicuous lack of men and boys in the village set of photographs, the girls said that the men were absent because they were either working in their fields, had income-earning jobs, or were simply “relaxing” while their wives worked at home. Clearly, the perception of the girls was that men and boys were afforded considerably more freedoms (e.g., employment/economic, time/leisure freedoms).

Although no one was surprised that the photographs revealed that women and girls do more domestic labour than do men and boys, this visual evidence became a catalyst for discussions about typical women’s roles, expectations, opportunities in the local context, and paid/unpaid labour. In the trading centre, it was noted that men held almost all the income-earning jobs (e.g., car mechanics, tailors, barbers, bike mechanics, shoe repair). Although there were some women working in paid capacities such as hotel or restaurant staff, teachers, and nurses, the vast majority of income-earning work belonged to men and unpaid labour belonged to women. Contrasting these photos with the ones that showed women in paid positions, the girls noted the important relationship between education and income-earning opportunities: that being literate and educated would provide them with access to more employment opportunities, more equality in their marital and family relationships, and more status and respect within the community – in other words, more freedoms.

Photography served not only to document literacy practices, but also as a new role to provide the girls with a sense of purpose and entitle-

ment to venture into places and situations “for the purposes of research” that they had never been or experienced before. For example, the group of girls who took photographs of individuals occupying high-level positions in Ganda Town entered a bank, the Uganda Telecom office, a lawyer’s office, and the police station for the first time in their lives. They were initially nervous and reticent to enter these offices and institutions, but afterwards, their sense of accomplishment was palpable. The experience allowed them to gain valuable information, through dialogue about various career opportunities. As one girl explained, she had previously been unaware of the possibility of having a career in the police department but because of this visit, she was seriously considering it as a career possibility. Other girls pointed out they were not aware of many different kinds of career options and would like to have career counseling at school. Simply being in possession of a camera and taking pictures seemed to afford the girls particular freedoms they had not previously experienced, which manifest in confidence and assertiveness. One girl, Shamim, who was chronically shy and retreating, demonstrated considerable talent as a photographer; she choreographed shots, successfully persuaded those who were reluctant to have their pictures taken to pose, and adamantly assumed the role of photographer for her group.

#### PATTERNS ACROSS THE DRAWINGS AND PHOTOGRAPHS

The images of literacy constructed in the drawings and photographs provide insight into the girls’ perceptions and personal experiences of literacy, including what sense they have made of its complexities. Their constructions move beyond the depiction of local literacy practices alone, and reveal how local literacies interface with global literacies. Street (2003) argues local and global practices need to be contemplated as hybrid phenomena because local literacy uses are not isolated from the broader social structure:

The result of local-global encounters around literacy is always a new hybrid rather than a single essentialized version of either. It is these hybrid literacy practices that NLS [New Literacy Studies] focuses upon rather than either romanticizing the local or conceding the dominant privileging of the supposed ‘global’. . . it is the recognition of this hybrid that lies at the heart of an NLS

approach to literacy acquisition regarding the relationship between local literacy practices and those of the school. (p. 80)

The girls' constructions of these hybrid literacies offer insights into not only what these girls and other community members do with literacy, but also what they associate with what they do, how they construct the value of literacy, and the ideologies that surround literacy in their community (Baynham, 1995). Of particular importance is the way the images disclose how relationships of unequal power shape uses of literacy in this community by focusing attention on who is included and who is excluded in particular literacy practices. In the drawings, the girls consistently included themselves as participants in literacy practices, but most typically, these were imagined versions of themselves in which they are older, secondary school students who are English language speakers with financial resources and material goods. In the exam-driven context of the Ugandan school system, it is English that the girls associate with advancing to the next level; a premium is placed on both education and English in relation to the economic gains and improved lifestyle they may provide. For the secondary school girls, images of daily life associated educated, professional men, with literacy, and with positions of privilege and power. Largely absent from the roles they associated with literacy and power were women, particularly women with limited financial means.

The drawn and photographic images also constitute new ways of knowing. Because the images are not language-based, they help to diminish the power distribution between adult and child (Schratz-Hadiwisch, Walker, & Egg, 2004). The images also serve to traverse the language barriers that exist between adult academic researcher and child:

What young people see through the lens of a camera [or their mind's eye], and what they capture through their photographic frame [and drawings], demonstrates the 'interconnectedness' between places, rooms and areas, and feelings, emotions and associations. (Schratz & Löffler-Anzböck, 2004, p. 133)

By fixing images of daily life, the girls were able to reflect on and contemplate in new ways that which was familiar and taken for granted within the routine practices of their lives. Creating and viewing these



images as visual objects allowed them to engage in a process through which they were able to make the familiar strange. This reflective process engaged them in a dialogue and permitted them to imagine themselves in new places and situations, and to consider new possibilities for their futures. In other words, by giving these girls opportunities to engage with different kinds of texts and images, they observed and participated in the literate practices of other people, and as they added new tools, materials, and technologies to their repertoire, their understanding of who they are allowed to become in their society inevitably changes (Kress, 1997).

The positions the girls come to occupy – as both creators and subjects of the images – represent possible ways of being and each person's experience of those possibilities, as they are made available – or unavailable – through particular kinds of freedoms (e.g., economic, educational, political, domestic). From both Carrington's (2003) and Norton and Toohey's (2004) perspectives, the drawings and photographs testify to the girls' awareness that their ability or inability to participate in local literacy practices positioned them in particular ways in their communities, and made public statements about their histories (e.g., whether or not they were educated) and their possibilities for the future. Norton (2000) and Toohey (2000) contend imagined communities, such as those represented in the girls' visual images, provide a key to understanding how and why students engage or do not engage with particular literacy practices. For these girls, the freedoms associated with English, education, status, safety, space, and time were not only fundamental to their imagined communities, but represent the pre-requisites for full participation in the literacy world. Until girls and women can access the freedoms they associate with literacy, their participation in the development of their nation will remain marginalized.

## CONCLUSION

Understanding the imagined freedoms that young girls in development contexts associate with literacy learning is a key component of successful development projects and initiatives that will allow for the full participation of girls and women. Alternative modes of representation and communication such as drawing, photography, and film in the

hands of diverse groups of girls and women (e.g., rural, urban, schooled, unschooled) move beyond language to make visible the unfreedoms (Sen, 1999) that have historically marginalized and excluded them from full participation in the development process. The National Strategy for Girls' Education effectively identifies many of the barriers to girls' education, but it does not address the fundamental unfreedoms related to poverty, gender inequity, and sexuality, and the degree to which those unfreedoms underpin those barriers (Republic of Uganda, 1999). Providing opportunities for girls to explore and consider their worlds through alternative modes of communication and representation has immense potential as a pedagogical approach to cultivate dialogue about the nature of gender inequities, and serve as a catalyst for the positing of imagined communities where those inequities might not exist.

#### NOTES

<sup>1</sup> By comparison, the province of British Columbia is 944,735 square kilometers and has a population of approximately 4,380,256 (British Columbia Stats, 2007).

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## ACKNOWLEDGEMENTS

We gratefully acknowledge funding support for this research from the Social Sciences and Humanities Research Council of Canada, the International Development Research Centre of Canada, and the University of British Columbia Hampton Foundation. We also express our deep gratitude to the students who so generously and willingly shared their life experiences, and to our Ugandan research assistant, Dan Ahimbisibwe.

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# “WHAT WERE YOU THINKING?”: THE USE OF METACOGNITIVE STRATEGY DURING ENGAGEMENT WITH READING NARRATIVE AND INFORMATIONAL GENRES

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This qualitative case study illustrates and compares the metacognitive strategies that a grade-3 female student used while reading narrative and informational texts. Data were collected from interviews, observations, and videotaping of the participant's narrative and informational text oral reading sessions and examined using thematic analysis. Findings showed that she used markedly different metacognitive strategies for each genre, resulting in comprehension difficulties while reading the informational text. This article suggests that for students to meet the challenges of informational texts, they must be taught specific metacognitive strategies while working with explicit text patterns.

Key words: metacognition, comprehension, text, stimulated recall, self-regulation

Cette étude de cas qualitative illustre et compare les stratégies métacognitives utilisées par une élève de 3<sup>e</sup> année en lisant des textes narratifs et informatifs. Les données, provenant d'entrevues, d'observations et de vidéos des séances de lecture à haute voix de ces textes par la participante, ont fait l'objet d'une analyse thématique. Les résultats indiquent que l'élève avait recours à des stratégies métacognitives nettement différentes pour chaque genre de textes, ce qui entraînait des difficultés de compréhension pour les textes informatifs. Il semble donc que, pour que les élèves soient en mesure de saisir les textes informatifs, il faut leur enseigner des stratégies métacognitives particulières tout en tenant compte de la structure explicite du texte.

Mots clés : enseignement de la lecture, métacognition, compréhension, texte, rappel stimulé, autocontrôle.

In this article I report my findings from my instrumental case study (Stake, 1995) which illuminates the metacognitive strategy use of a grade-3, female student while she read narrative and informational texts. I focused on one student to develop my understanding of her use of metacognitive strategy by holding up for analysis her conversation during spontaneous and researcher prompted metacognition. To accomplish this purpose, I made video tapings of sessions while the student read narrative and informational texts orally, and sessions in which I used stimulated recall (SR) to access her metacognition. The following question framed the study: What is the nature of the student's use of metacognitive strategy during oral readings of narrative and informational texts? In answering this question, I sought to enhance awareness of some of the processes of learning, and of reading in particular.

#### BACKGROUND TO THE STUDY

Simply put, metacognition is the process of thinking about one's own thinking. As individuals engage in any mental activity, in any knowledge domain, metacognition is a tool of wide application for solving many sorts of problems (Flavell, Miller, & Miller, 2002). Its central role in problem solving and learning has important applications in the field of education, with some of the richest applications in the area of reading.

When applied to the field of reading, the concept of metacognition contributes to a constructivist understanding of how reading comprehension occurs, as well as to a body of knowledge regarding instructional strategies that facilitate reading comprehension (Tracey & Morrow, 2006). In constructivist theory, a person learning something new brings to that experience all his or her previous knowledge and current mental patterns. Constructivist learning is intensely subjective and personal, a process and structure that each person constantly and actively modifies in the light of new experiences. As Wilson and Daviss (1994) point out, each individual structures his or her own knowledge of the world into unique patterns and connects each fact, experience, or understanding in a subjective way, ultimately binding the individual into rational and meaningful relationships with the wider world.

With the theory of constructivism, the reading process is one in which a reader constructs his or own meaning while reading. Existing knowledge, organized as schemas, influences the construction of these meanings or, in other words, comprehension. Rosenblatt (1994), in particular, has shown how individuals construct their own interpretations based on their existing schemas or personal background knowledge. Metacognitive theory further extends researchers' understanding of comprehension by elaborating on how proficient readers mentally engage with text during reading.

Interest in children's metacognitive abilities and a concern with developing these abilities with regard to reading has grown out of Durkin's research in the late 1970s. In her seminal study, Durkin (1978) revealed that teachers most often employed the directed reading lesson to develop reading comprehension, as often expounded in teacher education faculties. This technique, still popular and promoted in many basal reading series, dictates that a teacher introduces a reading selection to students, guides their reading of the text, and then discusses the reading with them. This approach to reading instruction offers few tools that students can use independently to facilitate their own reading comprehension. In short, the students are left in a teacher-dependent state.

Concerned with these findings, researchers looked for alternatives to the directed reading lesson that would afford greater opportunities for students to develop independent reading comprehension abilities. The results of this research identified metacognition as a way to understand reading comprehension and as an approach to comprehension instruction (Duffy, 2002).

In their classic overview of metacognitive skills and reading, Baker and Brown (1984) point out that metacognition is implicated as a constructive process in all theories of reading. In these theories, comprehension is viewed as an active process of hypothesis testing or schema building. Baker and Brown determined that proficient readers employ a number of metacognitive strategies during reading that assist them to understand a text. For example, proficient readers, aware of whether or not they understand what they are reading, will use "fix-up" strategies when comprehension fails, such as rereading, slowing down, or looking up word definitions. They might use other processes to assist

comprehension such as making associations to ideas presented, making predictions about what is coming up in the text, or revising prior knowledge that is inconsistent with ideas in the text (Pressley, 2002). Some of the other metacognitive skills Baker and Brown (1984) identify in proficient readers include clarifying the purposes of reading, identifying important aspects of a message, focusing attention on major content rather than trivia, engaging in goal-setting and determining if these goals are being achieved, and taking corrective action when comprehension fails.

Although researchers have demonstrated how good readers use metacognitive strategies effectively, others have shown that less proficient readers have far less metacognitive awareness than proficient readers and that young children are less likely to display metacognitive strategy use than are older children (Brown, 1980; Flavell, 1979). These findings have encouraged researchers to investigate the effectiveness of teaching metacognitive strategies to all readers. Although comprehension instruction has been studied since the middle 1970s, more recent work reflects instruction that can fit well in classrooms and can go far in stimulating students to engage text in the ways in which proficient readers engage with it.

The purpose of metacognitive instruction is to help readers become more aware of their own thinking during the reading process. During instruction, teachers provide explicit instruction on the use of metacognitive strategies that students can employ while reading. Explicit teaching of comprehension strategies begins with a teacher clearly explaining and modeling the strategies, followed by discussion about when and how a reader should apply the strategy while reading, and finally moving to provide scaffolded student practice of the strategies during reading. Modeling strategies often occurs through teacher think-aloud methods. Through this instructional cycle, gradual transfer or release of responsibility from teacher to student is possible. Over time, students gradually become able to independently initiate and utilize that particular strategy. The cycle then repeats with another targeted strategy.

Research on the effectiveness of metacognitive instruction to improve students' reading comprehension ability has shown that this type of instruction does lead to significantly strengthened reading compre-

hension ability (Block & Pressley, 2002). Despite its effectiveness, explicit metacognitive instruction has not seen widespread use in classrooms. Instead, comprehension instruction in classrooms may actually look quite different. As Pressley, Wharton-McDonald, Mistretta-Hampston, and Echevarria (1998) point out, although teachers intend to teach students how to comprehend, they are, in many cases, testing only reading comprehension. The pedagogical implications of these findings alert researchers to the fact that teachers need to direct attention more explicitly to the processes of learning while students are reading, rather than to the processing of text after students have completed their reading.

This point has particular impact as children continue their journey from the early to the later elementary years to become proficient readers, as they encounter many different genres and many different patterns of texts. One of the goals of my research has been to explore how different genres might influence students' metacognitive strategy use and, as a result, to assist them to comprehend and therefore to construct knowledge. To foreground this, I turn to a discussion of the use of narrative and informational text in schools.

#### *Narrative and Informational Text Use in Schools*

Historically, literacy lessons in schools reflect the belief that educated persons must read and understand literature and their understanding must be displayed in the writing of stories and essays. As students progress through school, they develop a literacy repertoire that includes reading and writing stories and analyzing their text structures, investigating different authors and poets, and examining classic literary works. Narrative genres (e.g., personal and fictional stories) have been dominant in primary classrooms because they were considered easiest for young children. Erickson (1998) also noted this dominance of the narrative genre stating that in the United States, fiction is used in classrooms four times more than nonfiction. Similarly, Duke (2000) found in her study involving first graders, only 3.6 minutes per day were spent with informational text during classroom written language activities. As a result of this research, teachers should provide their students with equal opportunities with information books to acquaint them with the numerous non-narrative forms and to the range of new concepts

encountered in texts, particularly in the content areas (e.g., science and social studies) that are read to learn (Manning, 1999; Smolkin & Donovan, 2001).

At the same time, researchers contest the teaching sequence of first learning to read/write (through stories) in primary grades and then reading/writing to learn (through informational genres) in later grades. Some researchers contend that this instructional method may be contributing to an "expository gap" at about grade 4 and to the persistent "fourth grade slump" in overall literacy achievement (Chall, Jacobs, & Baldwin, 1990; Erickson, 1998). The "fourth grade slump" is described as an overall decline in reading achievement with reading comprehension problems that occur as texts becoming more varied, complex, and challenging. In other words, students not only need exposure to informational texts in the early years, they also need to be explicitly taught how to read these types of texts.

As a case in point, Symons, MacLatchy-Gaudet, Stone, and Reynolds (2001) found that elementary school students had significant difficulties with information-seeking literacy tasks. When randomly assigned students in third, fourth, and fifth grade were taught to identify indexed terms, to skim text carefully, and to monitor how well extracted information fulfilled the search goal, they were successful in locating information efficiently. Students also transferred the strategy to an unfamiliar book, suggesting that children can develop transferable metacognitive knowledge about locating information in text. Those students who were not instructed in these strategies performed less well in locating information than those students given specific instruction in strategy use, suggesting that children in the elementary grades do not spontaneously use an efficient approach to locate information in text.

Although exposure to informational texts was important, these students required explicit process-oriented instruction with informational texts for comprehension to be successful. Recalling the earlier discussion of metacognition and the deliberate strategies students may use to facilitate their own comprehension, I argue that if comprehension problems occur because of differences in text structures, some differences (perhaps even deficiencies or deficits) may occur in metacognitive strategy use as students engage with different texts.

*Assessing the Use of Metacognitive Strategy*

Historically, metacognitive strategy use in young children has been very difficult to assess because some cognitive knowledge and processes are tacit and inaccessible. As a result, educators have used a variety of tools to access strategy use in young children. These methods include self-report surveys, interviews, think-aloud protocols, and stimulated recall (SR).

Self-report surveys, which have increased in popularity, provide valuable information about a learner's perceptions. However, in the case of young children, self-report measures may prove problematic because of the sophisticated language used in the response formats and the tendency of young children to display positive response bias (Turner, 1995).

The think-aloud is a technique by which an individual voices her or his thoughts during reading. Think-alouds have been used to provide information about user cognition and processing during reading or problem solving. The intent behind using think-alouds is to help students develop the ability to monitor their reading comprehension and employ strategies to guide or facilitate thinking (Baumann, Jones, & Seifert-Kessell, 1993).

Used as a tool for assessing the use of metacognitive strategies, think-alouds and other verbal report data (e.g., interviews) have been criticized for a variety of reasons. These include children's lack of language and verbal facility to discuss mental events, an interviewer's behaviour to elicit answers perceived to be desirable, participants "forgetting" that might interfere with introspective reports, and interviewers' asking questions during cognitive processing, thereby disrupting thinking (Jacobs & Paris, 1987).

Research has also indicated that observations and semi-structured and SR interviews can help researchers understand how young children construct knowledge and how they can and do regulate their engagement in reading (Neuman & Roskos, 1997; Perry, 1998). SR is an introspective research procedure through which researchers can investigate cognitive processes by inviting participants to recall, when prompted by a video sequence, their concurrent thinking during that event. This method is particularly effective for use with young children to gain access to how they construct meaning of text. As Juliebo, Malicky, and



Norman (1998) point out, children might be aware of strategies that they are using during reading, but they may not always verbalize this awareness as they read. Viewing a videotape after reading can prompt participants to verbalize what strategies they might have used. Further, the authors suggest that interviews with young children after their reading without the use of video, using questions out of context, could be more a reflection of the difficulty younger children have in expressing instances of metacognition in response to interview questions than a real difference in their metacognitive awareness and control.

To understand metacognitive strategy use in comprehending narrative and informational text, I undertook a qualitative instrumental case study (Stake, 1995), an appropriate method to research a question, a puzzlement, or a need for general understanding and insight by studying a particular case. Although I make no claim that this study's case is representative or could be generalized to a larger population, its "usefulness" (Brooker, 2002) as a small-scale study brings to the forefront some considerations for practice. More specifically, I designed the study to address the following question: What is the nature of a student's use of metacognitive strategy during oral readings of narrative and informational texts?

## METHOD

### *The Participant*

Nicole (a pseudonym), the focal participant for the study, is an engaging eight-year-old Caucasian girl. She lives in a middle-class community of a suburban area of Western Canada, and attends grade 3 at her local public school, a short two-block walk from her house. Her parents, Marcia and Terry, who are both university graduates, place high value on education. They are actively involved in Nicole's school life. Eleven-year old brother Matt attends the same school and enjoys the company of his sister, often playing games and reading with her.

### *Data Collection Procedures for the Study*

The study took place in the latter part of the first term of grade 3. Over a two-month period I visited Nicole and her family in their home. During this time I observed and made field notes regarding her literacy practices

and those of her family. I also observed and noted family literacy materials, the genres of the materials, and how these materials were mediated in the family. I collected reading and writing artifacts from the school and from the home. I conducted interviews with Nicole and her mother regarding Nicole's literacy development. At the same time I observed Nicole in her grade-3 classroom, making field notes regarding school literacy practices, particularly around the teaching and learning of comprehension strategies. I also interviewed Nicole's teacher, Mrs. Murphy, regarding Nicole's school literacy development. At the end of the observations, I conducted a specific stimulated recall interview with Nicole.

#### *Analysis of the Data*

To begin my data analysis, I first examined the field notes of the observations I had made of Nicole's home and school literacy practices, looking for themes and patterns. In the same manner, I analyzed the reading and writing artifacts I had collected. I then transcribed all the interviews with Nicole, Marcia, and Mrs. Murphy and analyzed these transcripts for themes and patterns. This triangulation of the data allowed me to obtain a sense of who Nicole was as a learner and as a reader. With this foundation, I then reviewed the video tapings of the SR interview. I fully transcribed these interviews, subjecting them to a thematic analysis. Specifically, I analyzed the data from each retrospective tape for possible instances of metacognitive strategy use. I then grouped these instances into thematic categories, illustrative of the strategies that Nicole employed while reading the two types of texts. As a final piece of the analysis, I analyzed Nicole's retellings of the two text types.

### FINDINGS

#### *Nicole's Home Literacy Practices*

Nicole's home was filled with literacy materials. The entire family had access to books, magazines, computers, papers, pens, pencils, games, catalogues, the Internet, computer games, and software. All members of the family had their own workspace that they could uniquely call their own. Nicole's space was filled with drawing and writing paper, felt pens, crayons and pencils, and craft materials. Her numerous collections of rocks, beads, easers, and knick-knacks vied for competition among her

favourite books. These books, a mixture from personal, school, and community library collections, were predominantly fiction. On one occasion, Nicole showed me the family's communal bookshelf which held over 200 picture and easy chapter books that her parents bought for her and Matt or were given to them as gifts. Nicole seemed to have familiarity with almost every book and she was able to pick out and show me her favourites.

The books on the family bookshelf were predominantly narrative, with a very few information books, which were largely hard cover tomes that included topics such as nature, dinosaurs, the human body, and amazing facts about a host of different subjects. Nicole's parents' personal bookshelves were filled with mainly work-related books and manuals, although a specific section of Marcia's bookshelf contained a large number of classic novels that she collected as a member of a monthly book club. Terry, a classic car buff, had a bookshelf that held treasured car manuals, collections of British car journals, and sports magazines.

Interviews with Nicole's mother Marcia revealed that Nicole loved to be read to and had been read to from birth. The bedtime story ritual, well-established over the years, has continued despite Nicole's learning to read. Marcia did the majority of reading to and with the children, sharing her childhood favourites with them. Marcia stated that she invoked a great deal of discussion of the stories with Nicole before, during, and after the reading. She mostly read fiction to her children, "following the tradition that was passed down from her family to [her]." Marcia has always allowed Nicole to select her own books at the library or for the bedtime stories, based on Nicole's interests; these were usually fiction.

Nicole stated that she enjoyed reading, particularly the easier chapter books. During my visitations to the home, I did not see Nicole reading a book. Rather, she was usually in the middle of some craft project, or making notes and to-do lists. To this end, Marcia bought a number of project craft books that typically contained the materials to make such things as window decals, tissue paper flowers, painted rocks, or jewelry. Nicole did not read the instructions for the crafts per se, but looked at the illustrations and proceeded from there. If she had difficulty, she usually asked her mother or brother to assist her: This usually involved

Marcia or Matt reading the instructions with her, scaffolding her to the next step.

Marcia reported that although Nicole did "fairly well" in school, she assisted her when she had difficulty with homework or home assignments. She commented that Nicole learned to read in grade 1 and has been making steady progress. Interestingly, Marcia relayed that Nicole "loves the idea of books"; she frequently requested that they be bought for her, or be taken to the library to borrow them. She spent a lot of time piling them up in her bedroom for later perusal. However, her mother found this curious because, as she explained, "Nicole is not a voracious reader and will start a book, and usually abandons it before finishing it." Marcia suspected that Nicole chose books that were appealing to her because of the illustrations but may in fact be too difficult for her to read.

The family spent a great deal of time together with much of their free time engaged in physical activities such as soccer, skiing, and golf. Photos displayed around the home indicated that the family has had many traveling experiences together.

#### *Nicole's School Literacy Practices*

The 23 students in Nicole's classroom were instructed by Mrs. Murphy, a teacher of 10 years experience. The language arts program consisted of basal readers, individualized writing programs, weekly spelling lists, novel studies, poetry, grammar, and informational reading and writing. During my time observing in the classroom, Mrs. Murphy was selectively following a locally designed core reading program, based on 12 particular reading strategies (e.g., accessing background knowledge, predicting, figuring out unknown words, self-monitoring, and self-correcting). These strategies were taught over the entire school year, with Mrs. Murphy focusing on two strategies each month. These strategies were usually taught through direct instruction in a single activity lesson using a piece of narrative literature. In fact, most of the reproducible graphic organizers supplied by the program to support the lessons dealt primarily with fiction to teach the strategy. During my observation time period, I saw four strategies being taught: accessing background knowledge, predicting what will be learned or what will happen, figuring out unknown words, and making inferences and drawing conclusions. After

Mrs. Murphy taught these strategies, I did not see students' independent use of them, nor did I observe Mrs. Murphy make further reference to them.

I collected information regarding Nicole's current reading ability through interviews with Mrs. Murphy. In sharing Nicole's assessment file, Mrs. Murphy explained that in language arts, Nicole was making satisfactory progress, meeting the expectations designated for reading fluency for grade-3 students and demonstrating comprehension of a range of grade-appropriate, literary texts, including stories from a variety of genres (folk tales, legends, adventures), series and chapter books, picture books, and poems. In addition, Nicole was making satisfactory progress in fluently reading and demonstrating comprehension of grade-appropriate, informational texts such as non-fiction books, textbooks, or charts and maps. "Nicole can," Mrs. Murphy went on, "retell, follow directions, infer, draw conclusions, and respond critically when working with these different texts." Nicole was also making satisfactory progress in using a variety of strategies before, during, and after reading to construct, confirm, and monitor her reading.

During the day, the students followed a schedule that took them through separate blocks of reading, writing, and spelling; math; science and social studies based on thematic topics; then physical education, music or art. I seldom observed integration of subject areas or skills. Mrs. Murphy demanded high expectations for organization and for work, evident in the neat classroom displays of published writing and art. The classroom, tidy and neatly furnished, contained bookshelves that housed mainly picture books and chapter books. Thematic information books were displayed on a separate shelf based on the current topic of study.

This information from the home and the school provided me with a basis for the next data collection procedure that I undertook with Nicole at the end of the observation period: the metacognitive stimulated recall (SR) interview.

#### *The Stimulated Recall Interview*

To do the first part of the SR interview, I took Nicole into a vacant room beside her classroom where I had displayed a number of narrative and information books on a table, sorted by genre. I had selected these books

from a reading series that is matched to the interests and reading abilities of primary children to maintain an element of consistency (e.g., visual appeal, reading difficulty) among the selections. These books were relatively short in length (approximately 15- 20 pages) with illustrations on every page. They were very suitable for an oral reading session. Thus with assessment information provided by Mrs. Murphy, I selected books at Nicole's instructional level; therefore the texts were slightly challenging. I made this decision because the selected texts would require Nicole to use metacognitive strategies to comprehend them.

I gave Nicole some time to handle and look through each book on her own and then asked her to select one narrative book and one informational book to read to me. Nicole chose *The Dog Show* (Crebbin, 1996) as her narrative choice because she "never had a dog and [she thought] it would be fun to find out what happens at a dog show." During our interviews over the course of the study, Nicole told me that her parents, particularly her mother, did not want to have a dog. She explained that her "mom thinks that she [Marcia] would be the only person looking after the dog after everybody got tired of it." Nicole then chose *Camouflage* (Gates, 1997), as her informational text choice, "because it looks like there are neat pictures in [the book]."

We began the oral reading session with the selection, *The Dog Show*. Again I gave Nicole a brief time to look through the book but this time I gave her the opportunity to do a "picture walk," a strategy I had observed Mrs. Murphy using in the classroom. A picture walk is used to access background knowledge, to predict what will happen in the text, or to assist in figuring out unknown words (North Vancouver School District, 1999). I then asked Nicole to read the book to me as I videotaped her. Upon completion of the reading, I asked Nicole to "Tell me what you just read about" to elicit a retelling of the story and to show comprehension. Lipson, Mosenthal, and Mekklesen (1999) confirm that children can successfully show their understanding of stories through retelling. I asked only one or two questions at the end of the retelling for clarification purposes (e.g., "What did you say was the reason for Dad being mad?") because "questions, even when carefully constructed, provide students with information that they may not have recalled or understood and they impose a sequence for recalling the story" (Lipson et al. 1999, p.

118). I followed the same procedure for the information book, *Camouflage*.

During this same session, and immediately after the *Camouflage* retelling, I rewound and played for Nicole the videotape of her oral readings of the two texts. This immediacy is an important aspect of the SR interview technique because any time lapse may interfere with a participant's recall of strategies employed during the reading process. As Nicole first watched the video taping of her oral reading of *The Dog Show*, I asked a series of structured, but relatively open-ended questions specific to her act of reading to elicit retrospective comments (e.g., "What were you thinking there?"; "What made you notice it wasn't right?"; "You said '\_\_\_\_.'; Why did you go back and change it to '\_\_\_\_\_'?"; "What were you thinking when you paused at that spot in your reading?"; and "Why didn't [the word] fit there?"). I asked follow-up questions to clarify Nicole's responses. I then followed the same procedure for the information book, *Camouflage*. Each retrospective session was videotaped for analysis.

Although I tried to stay within the pure categories of the strategies I discuss below, often the events I observed and the data I collected were difficult to categorize under one particular strategy type. It is apparent to me, based on the background information that I collected, that Nicole used a number of different strategies during reading to construct meaning. Although she was usually only able to articulate one strategy, my observations indicated otherwise.

*Figuring Out Unknown Words.* Nicole used this strategy most frequently in reading both the narrative and informational texts, with a slightly higher incidence in the informational text than in the narrative text. Within this strategy of figuring out unknown words, Nicole used a number of different mechanisms to figure out the unknown word, including letter cues, word parts, picture cues, and context cues. For example, when asked what she was thinking when she came upon an unknown word in an informational text, Nicole stated, "I was thinking that if I [read the word] in chunks, it would be better." Using this strategy, she was able to continue with her reading of the text. Similarly, when she came to the words "looper caterpillar" in the informational text, she stopped once again. At this juncture, however, she looked over

at the picture that showed the caterpillar inching along a branch, its body making a loop as it moved. After studying the pictures for some moments, she returned to the text, and back to the picture, then back to the text, decoded the word "looper" and then continued reading. When asked what she was thinking at this point, she said,

I've never heard of a looper caterpillar and when I glanced over at the picture, it looked like it was a stick, but stick didn't start that way, so I went back and thought what starts with 'l' and I thought maybe it was 'loop' because it looks like a loop and so I guessed and I was right. (Nicole, SR interview)

It is evident here that Nicole also used letter cues and hypothesizing to figure out the unknown word.

Nicole also used context cues to figure out unknown words, using this strategy slightly more in the narrative text than in the informational text. For example, in the narrative, *The Dog Show*, the main character, Alice, is preparing the dog for a show by giving him a bath. As Alice is quickly cleaning the tub so that she won't get caught bathing the dog in the bathtub, she lifts great handfuls of dog hair into the toilet. At this point in the text, Nicole read the sentence, "Then she rushed the toilet." Nicole stopped, frowned, and then went back to read, "Then she flushed the toilet." When I asked her why she said "rushed" the first time, Nicole explained that "I wanted Alice to hurry before her dad found out and [the word] sounded like rushed and then I noticed that it didn't go with the sentence so I went back and changed it." Nicole self corrected several times during her reading of *The Dog Show*, using the strategy of figuring out unknown words, and she was successfully able to monitor her comprehension.

*Making Predictions.* Nicole used the strategy of making predictions to assist comprehension of the narrative text almost as often as figuring out unknown words, but she did not use the prediction strategy when reading the informational text. During the stimulated recall interview of *The Dog Show*, I asked Nicole what she was thinking when she paused at the end of a particularly interesting part of the story when tensions between the characters were high. Nicole responded, "I was thinking about the story and what was going to happen and like if the dad would know about the wet hairs and stuff." At this point in the text, it was evident by



Nicole's speeding up her reading of the text and her laughter at the pictures that she was not only very engaged with the story but in an anticipatory mode. Nicole did not use the strategy of prediction in the informational text, but to be fair, it was evident that the informational text did not lend itself as readily to make predictions as did the narrative.

*Making Inferences and Drawing Conclusions.* Nicole used the strategy of making inferences and drawing conclusions for monitoring comprehension slightly more in the informational text than in the narrative text. Although Nicole was able to use this strategy, she actually did so incorrectly, which impeded her understanding. In the following example, a passage from *Camouflage* reads as follows:

When a mother red deer goes to look for food, she has to leave her fawn behind. The markings on the fawn's coat look like dappled sunlight. This makes it difficult to see the fawn when it sits in the long grass. (p. 7)

Nicole read the passage as such:

When a mother red deer leaves to look for food, she has to leaves her fallen behind. The marker of the fallen coast looks like a dampled [sic] sunshine. This makes it difficult to see the swan when it sits in the long grass. (Nicole, SR Interview)

As Nicole watched herself reading this difficult passage, I asked her what she thought was happening in her thinking as she read. She replied, "I was imagining that it would be kind of weird if a deer's mom would put leaves over the baby because that wouldn't do anything." Here, Nicole knows that her understanding is impaired, but does not employ any other strategy to fix it up. Because she read the word "leave" as "leaves," she inferred that the mother had covered her fawn with leaves. But again, she did not think that this covering of the fawn with leaves would help in camouflaging the fawn. Her confusion is further evidenced in her reading of the next line of the passage where she made a number of word substitutions seemingly to move herself along to get to the end of the passage. Near the end, she substituted the word "swan" for "fawn," even when the picture shown immediately left of the passage

showed a fawn (not a swan) sitting in the long grass, and in the absence of leaves. Although she had used pictures earlier in the text to aid her understanding, she did not employ this strategy at all. In the end, Nicole "checks out" of this chunk of the text, and moved to the next part of the information book, seemingly relieved to be finished with this difficult passage.

*Asking Questions.* Nicole used this strategy particularly well and predominantly in the narrative text. For example, while reading *The Dog Show*, Nicole miscued at the words "show ring." After reading "shoe ring," she went back and self-corrected. When asked what she was thinking at this juncture, Nicole stated, "I thought it was the 'shoe ring' and then [I asked myself] why would it be 'shoe ring' when we're not at a shoe store? It's a show so it's got to be [the word] 'show'." Asking questions of herself during reading assisted Nicole's comprehension monitoring and enabled her to self-correct, and move on almost seamlessly.

*Accessing Background Knowledge.* Nicole used the strategy of accessing background knowledge equally well in both the narrative and the informational texts. As an example, a sentence from *The Dog Show* reads, "Spike brought the newspaper from the front door" (p. 14). Nicole read it as follows: "Spike bounced the newspaper from the front door." After reading it this way, Nicole stopped, returned to the beginning of the sentence and read, "Spike brought the newspaper from the front door." When I asked Nicole what made her think that the word was "brought" rather than "bounced," she replied, "A dog usually goes out to the front door to get the newspaper every morning so it would be 'brought'." Similarly, in the informational texts, Nicole read, "The hermit crabs pick up sea enemies and stick them onto their shells" but she went back to correct the word "enemies" to "anemones" – a particularly difficult word to figure out without background knowledge. When asked about this, Nicole stated that she has "been to the beach and to [her favourite holiday island] and [she has] has seen all kinds of them." In fact, Nicole had so much background knowledge about anemones that she proceeded to spend a great deal of our interview time explaining their appearance and qualities to me. Accessing background knowledge was certainly a very helpful strategy for Nicole.

*Extracting Information from Illustrations, Photos.* Nicole used the strategy of extracting information from illustrations and photos, particularly in the informational text. Unfortunately, the information she extracted was not always helpful. For example, she read the following sentence from *Camouflage*: "Snowshoe horse [sic] are white, like the snow." The sentence should read: "Snowshoe hares are white, like the snow" (p. 4). Although she looked at the picture, she did not self-correct here. When I asked her during the SR about the picture, Nicole stated that the picture was "a bunny rabbit." Although she was correct, it was not in her schema to consider this animal anything else but a bunny rabbit, let alone a hare. When I told her that the word in the text was "hare," she looked at me quizzically and said, "So a hare is a rabbit? Ohhhh.....so that's why there wasn't a picture of a horse!" I also found this interesting considering that the text for this picture was right beneath it, and the publishers had also used an arrow to indicate that the text belonged with the pictures. Nicole did not use this signpost to assist her comprehension. Moreover, she did not employ any other strategies (e.g., figuring out unknown words through letter cues or word parts) as she experienced success with using them earlier in the text.

*The Retellings of the Narrative and the Informational Text*

These findings indicate Nicole's comprehension of the narrative and the informational texts. Retelling is a generative task that requires a reader to construct a personal rendition of a text by making inferences based on the original text and prior knowledge (Gambrell, Koskinen, & Kapinus, 1991). Learning to interpret and reconstruct text is a vital part of the reading process. For reading comprehension to occur, a reader must engage in constructing relationships with text information.

Based upon criteria from Fountas and Pinnell (1996) for narrative text, Nicole's retelling of *The Dog Show* included the main idea or problem, an accurate reporting of events with some details, and a general organization and sequence.

In contrast, the results for Nicole's free retelling of *Camouflage*, based upon criteria for informational text "retelling" (Saskatchewan Education, 2002), showed few identifying key ideas and pertinent details, little

recognition of text order, and a marginally stated main idea or the point of the text.

#### CONSTRUCTING UNDERSTANDING

Although Nicole applied metacognitive strategies to assist in comprehending both texts, she constructed relationships to comprehend the narrative text to a greater degree than the informational text. What became significant is that the type of strategies that Nicole used for the two texts was similar, even though the demands of the text were different.

Reading the narrative text and using a variety of strategies with success, Nicole read the informational text and began to employ the same type of strategies. Her use of the strategy of figuring out unknown words was put to the test because she met many words with which she had little familiarity (e.g., comma, hare, hover-fly, woodcock, dappled). Nicole tried to figure the words out, but this strategy did not give her the assistance she needed with comprehension. She knew the strategy she had chosen was not working, but she had little idea how to repair her understanding. Although she was in a position to self-correct, she did not know what to do, nor did not know what other strategies she could employ, and so she simply went on reading. In comparison to the informational text, Nicole regulated or self-corrected to a higher degree in the narrative text, employed strategies more efficiently, and as a result, was able to self-correct more readily, leading to greater understanding of the text.

Why might this be occurring? One possibility may be that although Nicole was using strategies to assist her comprehension, they were not the type of strategies that were particularly useful for informational texts. Duke (2004) suggests that strategies useful for informational text include monitoring, understanding, activating prior knowledge, making predictions, thinking aloud, and generating questions, all strategies that Nicole did not readily employ when reading the informational text.

Although figuring out unknown words may be helpful in decoding some of the more unfamiliar vocabulary, it did not assist Nicole with her overall comprehension. One would expect greater use of such strategies as generating questions, attending to and uncovering text patterns, or

accessing background knowledge when reading informational text. Nicole did not use these strategies sufficiently to assist her. As Nicole's comprehension weakened, she was aware that she did not comprehend what she was reading, but did not know why. She employed strategies to help her, but her use of them was faulty. This problem led her to continue, as Symons et al. (2001) note, as if she were on automatic pilot. In fact, this problem is revealed in one of her metacognitive instances when she was faced with comprehension breakdown. In this example, Nicole came upon a passage that described a particular type of fish known as a rock goby. She stated: "I didn't know what type of fish it was and I didn't know what the word was so I kind of thought of what it would have been and I just went on with what I thought it was." In other words, because Nicole knew that she needed to complete the task that was being asked of her (i.e., reading the selection), she made the decision to continue reading as best she could.

An alternative explanation for this action can be seen in the literature on comprehension. In struggling to decode some of these unfamiliar informational words, a child may not have much capacity left for comprehension (Pressley, 2002). This theory would also explain why Nicole made very few self-corrections when reading the informational text.

Nicole did not make great use of pictures in the informational text. I found this most surprising, based on the richness of experiences that Nicole had with her family. However, I also note that Nicole's rich narrative literature background from the home and school may not have afforded her experiences with informational texts.

Informational texts may be rich in photographic pictures (as was the case in *Camouflage*), but Nicole did not use the strategy of picture cues to assist her. I find this curious because I believe that Nicole chose this book because of the interesting pictures. But this response also reveals to me information about the kind of reader that Nicole is: a reader who enjoys reading the pictures, rather than the connected text. This approach could be due to Nicole's lack of schema for the concept of camouflage, or perhaps she had not had sufficient exposure to visual literacy. Similar to some of the vocabulary found in informational texts, pictures in informational texts may be unfamiliar and, in fact, could be distracting. While looking at the pictures to gain comprehension of the text, a student

might need to spend more time here, simply to study and to make sense of a picture. As a result, this increased expenditure of time at a picture may interfere with a student's ability to remember what she had just read, resulting in further comprehension failure. Expanding a child's world through informational read-alouds, content study, and informed and strategic reading of informational texts may help with this process.

If children have had a greater exposure to narrative text as Erickson (1998) suggests, then there is a possibility that they may have less background knowledge to access for use with informational text. This situation again would suggest (as is Nicole's case with her unfamiliarity with the concept of animal camouflage) that background knowledge would have an impact on comprehension. Teachers must be aware, then, to help students develop appropriate schemata for some texts.

Nicole did not use patterns that were available in the informational text. For example, *Camouflage* had bold text headers to indicate a change in topic, the text was written so that each small paragraph was adjacent to each corresponding photograph, and arrows were drawn to point to and connect the text with the photograph. Nicole seemingly ignored these signposts because she made no mention of them as aiding her comprehension in the stimulated recall interview. This finding suggests that teachers need to explicitly teach text patterns to students to assist them in navigating informational text and to aid in comprehension.

For some children, reading informational text may be difficult, even in the early primary grades. Nicole commented to me early on in her oral reading of the informational text that certain passages were "hard." She seemed to disengage with reading them, and I suspect that had she not been in an interview situation, she would have abandoned them. This experience corroborates the data from Nicole's mother's interview, abandoning books part way through reading was a common occurrence for Nicole. However, Nicole tried to compensate for her difficulty with the text by slowing down her reading, a good first strategy to use, and then began to use her finger to follow the text. Indeed, the text was situated in chunks around pictures so using her finger might have been helpful in negotiating the pathway of the text.

Often, teachers have an implicit expectation that students know how to use these comprehension strategies and therefore do not teach them.

This problem might also be the case for Nicole. Although she had been given instruction in strategy use, a gap appeared in Nicole's knowledge about when to apply these strategies, how to apply them effectively, and how to switch strategies when some were not working. In Nicole's case, more scaffolded instruction would be needed.

#### CONSIDERATIONS FOR PRACTICE

The results of this study support the notion that some students could indeed experience the "fourth-grade slump" based upon their inability to effectively use strategies such as accessing background knowledge, using picture cues, and asking questions to comprehend informational text. Although it may be beneficial to introduce more information-type books in the earlier or primary school years, it appears that specific strategic instruction when teachers work with informational text needs to occur. Such strategies as teacher think-alouds, mental imagery, question generation, analysis of text structure, and comprehension monitoring would be necessary. These strategies need to be taught in context, and explicitly. Once these strategies have been taught, it is necessary to ensure that students transfer them to unfamiliar texts. To be truly effective, a learner's use of these strategies must become spontaneous. Strategy instruction alone is not enough.

Students should read and comprehend informational text for authentic purposes. Rather than answering a list of comprehension questions or completing worksheets after reading informational texts, students can work within experiences and issues that impact their world. For example, one teacher had her class research and write brochures about recycling after collecting data on the amount of garbage they had found on a walk in their neighborhood. Another class pored over anatomy books after a classmate broke a bone playing baseball to find out the name of the bone and how long it would take to heal.

Students also need instruction to monitor their comprehension. To ask students to "think about their thinking" may not be explicit enough for students to understand how they need to monitor and regulate their understanding, which they can accomplish through explicit instruction and guided practice with familiar and then unfamiliar texts.

I have found this case study to be useful to understand metacognitive strategy use from a constructivist perspective. To view the construction of meaning through articulation of thinking adds to the body of knowledge on metacognition that goes beyond a solely cognitive perspective. The results of this study suggest a need for further research investigating children's metacognition while reading different genres. Using different measures of metacognition (other than stimulated recall) could also describe a different picture of children's metacognition. Finally, future studies could also include how specific strategy instruction for informational text impacts students' metacognition. Such research would ensure that all students achieve strong literacy skills for learning across the curriculum.

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# DEALING WITH MESSINESS AND UNCERTAINTY IN PRACTITIONER RESEARCH: THE NATURE OF PARTICIPATORY ACTION RESEARCH

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This article reports on the experiences and perceptions of K-12 teachers as they engaged in a participatory action research (PAR) project, *Science Across the Curriculum*. Although the experiences and professional learning of two of the project participants are highlighted, the challenges that all participants experienced as they conceptualized and implemented action research are also reported. The author concludes that messiness and uncertainty are inherent and necessary elements of action research and that these elements need to be explicit for the benefit of those who engage in and facilitate PAR.

Key words: science education, teacher development, teacher inquiry

Cet article présente les expériences et les perceptions d'enseignants de la maternelle au secondaire qui ont pris part à une recherche-action participative (RAP), *Science Across the Curriculum*. Ce sont surtout les expériences et l'apprentissage professionnel de deux des participants qui sont mis en lumière, mais l'article fait également état des défis auxquels ont fait face tous les participants dans la conceptualisation et la mise en œuvre de la recherche-action. L'auteure conclut que la désorganisation et l'incertitude sont des éléments intrinsèques de la recherche-action et que ces éléments doivent être explicites pour le plus grand bien des personnes qui participent et animent une RAP.

Mots clés : recherche-action participative, perfectionnement des enseignants, recherche sur les enseignants

In this article, I focus primarily on the experiences of two middle-school teachers, Ada and Tanya, who were members of an ongoing participatory action research (PAR) project, *Science Across the Curriculum*.<sup>1</sup> Their experiences highlight the myriad challenges that teacher researchers encounter when they engage in PAR for the first time. As well, I have reported challenges experienced by other teachers who participated in this project over a three-year period. The following research questions guided this study: What types of challenges do teachers experience as they engage in PAR? and What are teachers' perceptions of PAR as a strategy for fostering teacher development?

#### THE THEORY AND PRACTICE OF ACTION RESEARCH

In many educational contexts, researchers (Calhoun, 1994; Carson & Sumara, 1997; McKernan, 1996; Sagor, 1992) promote action research to foster teacher development and educational change. However, these researchers conceptualize and implement action research in a variety of ways. For example, Noffke (1997) describes the personal, professional, and political purposes of action research. Calhoun (1994) describes three types of action research: individual, collaborative, and school-wide. Rearick and Feldman (1999) offer a more elaborate framework for conceptualizing action research based on three dimensions: theoretical orientation (technical, practical, and emancipatory), purposes of the research (professional, personal, and political), and types of reflection (autobiographical, collaborative, and communal). Maruyama (1996) distinguishes between "practitioner-centred" and "Lewinian" action research, with the former focused on the role of the practitioner and the latter primarily concerned with the generation of knowledge about teaching and learning. Despite the variations in conceptions and purposes, action research usually involves a social practice that can potentially be improved – systematic inquiry into practice through cycles of planning, acting, observing, and reflecting; and direct involvement of those responsible for the practice (Grundy, 1982).

Tillotson (2000) views action research as a possible solution to the problem of research failing to inform classroom practice and effect positive change in schools. In science education (the context of this study), action research is gaining in popularity. According to Feldman and

Capo-bianco (2001), educators have used action research in three domains in science education: teacher education, science learning, and curriculum development and implementation.

In the context of teacher education, university researchers use action research methods to enhance and restructure teacher preparation programs (Buck & Cordes, 2005), while other researchers report on how teachers' professional knowledge is enhanced as a result of their working collaboratively within action research groups (Goldston & Shroyer, 2000; Goodnough, 2001; Hewson et al, 1999; Koch & Burghardt, 2002; Tuan, Chin, & Tsai, 2003; van Zee, 1998).

Many studies (Chin & Tuan, 1998; Feldman, Mason, & Goldberg, 1992; Pedretti & Hodson, 1995) report on how action research has been used as a vehicle to transform teaching practices and enhance curriculum. Other action research studies have focused primarily on improving facets of student learning – e.g., student perceptions of alternate assessment (Waters, Smeaton, & Burns, 2004) and the impact of adopting multiple intelligences on a grade-eight science class (Saurino, Saurino, & See, 2002).

Action research has the potential to foster teacher development, which is especially important in view of research that has shown a range of constraining factors – lack of content preparation, of confidence, and of experience in teaching science – that prevent many teachers from teaching science using inquiry-based, constructivist learning approaches (Abel & Roth, 1991; Tilgner, 1990). The research study reported here was empirical in nature, with participants seeking to gain a greater understanding of their classroom practice through individual and group reflection.

In the research I report in this article, teachers used participatory action research (PAR) (Kemmis & McTaggart, 2005) to study their classroom practice. They engaged in continuous cycles of reflection, dialogue, action, and learning as they developed and implemented their inquiry projects. According to Kemmis and McTaggart, in addition to this self-reflective cycle, PAR has other key features: it involves a social process; participants examine their own knowledge and understandings and the research is self-directed rather than other-directed; it is practical, collaborative, critical, emancipatory, and reflexive; and it changes both theory

and practice, viewing the development of theory in relationship with practice and vice versa.

#### RESEARCH DESIGN

This study was guided by a constructivist-interpretive framework, designed to develop understanding through the collaborative construction of knowledge (Guba & Lincoln, 2005). I studied the experiences of individuals and groups within PAR, making sense of the meanings individuals and groups brought to these experiences.

In 2003-2004, five teachers participated in this project. In 2004-2005, 17 teachers participated, while five of these teachers participated in 2005-2006, as well 12 new teachers. Over the three-year period, most participants were part of school-based teams consisting of two or three teachers. Two levels of support were present during the project – planning, dialogue, and reflection occurred during school-based meetings and during whole-group meetings. Through the involvement and support of local school districts, I invited K-12 teachers of science to join the project. Recruiting occurred in the spring of each year and projects started in the fall of the subsequent school year. Tanya, a French Immersion, middle-school teacher of seven years, and Ada, a 15-year veteran middle-school teacher, were part of the project in its first year. They worked collaboratively to plan and implement an action research project in their respective classrooms. Because they taught in the same school, a rural middle /high school with 350 students, they were able to work closely on-site as the project unfolded. During her teaching career, Tanya's teaching assignments were primarily French, physical education, mathematics, and science. Ada was in her second year teaching science at the middle-school level. Her usual course load included language arts, social studies, and health. Neither teacher had any formal preparation in teaching science. Hence, they viewed this project as an opportunity to "work with knowledgeable teachers from the district, develop a grade-eight curriculum unit on Optics, and explore new teaching strategies" (Ada, planning session). Tanya's French Immersion class had 15 students with high variability in terms of academic aptitude. Ada's heterogeneous English-stream class had 32 students, with 9 receiving program modifications.

*Data Collection*

Research for this project occurred at two levels – the teachers collected data within the context of their own classrooms and I collected data generated from group discussions and other group and individual activities. At times, these data sources overlapped and were shared. By adopting qualitative data collection methods, I could explore the beliefs, values, ideas, and experiences of the participants as the research unfolded.

To develop an in-depth understanding of the complexity and multifaceted nature of individual and group experiences, I used several data collection methods and sources:

*Participant observation.* In each year of the project, the group met on eight occasions, with sessions varying in length from three to six hours. During these sessions, participants engaged in activities that encouraged them to explore the nature of action research, to develop the skills necessary to conduct action research, to consider the nature of science teaching and learning, to structure inquiry-based teaching in science, and to plan for and reflect on all aspects of their action research projects. I recorded field notes after meeting sessions, as well as during and after school visits; all meetings were audiotaped and later transcribed.

*Documents.* According to Hodder (2000), documents involve a “personal technology” (p. 703) that requires contextualized interpretation. I examined participants’ lesson plans, records, and other materials to enhance data analysis and interpretation, providing another perspective from which to corroborate themes emerging from the data. At the end of the study, each teacher submitted a final report based on what she learned about science teaching and learning and action research.

*Journals.* Journals, collections of notes or written passages, contain “personal record[s] of insights, beginning understandings, working hunches, recurring words or phrases, ideas, questions, thoughts, concerns, and decisions made during the research process” (Maykut & Morehouse, 1994, p. 68). The participants and I maintained electronic journals throughout the study to foster individual and group reflection, to provide a forum for the exploration of developing ideas, and to better inform our evolving actions.



*Semi-structured and informal interviews.* I interviewed each participant at the beginning and at the end of the study. Interviews were audiotaped and later transcribed; careful notes were taken after each interview. Informal conversations occurred face-to-face before and after action research meetings and notes were recorded based on these conversations.

#### *Data Analysis*

In this study, data analysis closely followed data collection. When analysing the data, I adopted grounded theory (Strauss & Corbin, 1998), using open coding initially to identify concepts. I assigned labels to units of text from transcripts, field notes, journal entries, and interviews, forming the basis for identifying concepts throughout the data set. Simultaneously, I engaged in constant comparison, identifying similar incidents and events for grouping into the same conceptual categories.

Subsequently, I used axial coding to establish larger categories and make connections among large categories and subcategories. To manage the large data set, I used NUD\*IST, a qualitative computer software analysis program, to assist with the coding and retrieval of data. In addition, I found that NUD\*IST facilitated data analysis by allowing me to generate visual maps of developing categories and their relationships.

To enhance the validity and reliability of data interpretation, I adopted several strategies, such as prolonged engagement at the research site, reciprocity, and member checking. There was considerable interaction among the participants and me over an extended period of time at group meetings, during classroom visits, and through numerous telephone and on-line conversations. To ensure that teachers' voices were represented strongly when reporting the research during and after the completion of the study, I asked teachers for feedback after providing them with summaries of my interpretation of the data.

#### THE ACTION RESEARCH PROCESS

From September to December of each year of the project, school-based teams explored the nature of PAR (purposes, conceptions, and models), identified areas of focus, formulated specific research questions, and developed plans of action. In addition to learning about action research, teachers shared their beliefs about science teaching and learning, the

prescribed science curriculum, and issues and concerns having an impact on their schools and classrooms. In my role as a facilitator of PAR, one of my goals was to foster the development of a “community of practice” (Wenger, 1998) and to promote individual and group learning and reflection within the context of this community.

In addition to learning about PAR, the initial meetings in each year of the project focussed on building community and trust within the group. At these meetings, teachers shared their reasons for participating in the project: having the opportunity to collaborate with colleagues on an ongoing basis, enhancing various aspects of student learning in science (e.g., student understanding of science topics), developing an understanding of assessment and instructional approaches, and becoming more comfortable with teaching science topics. Teachers also expressed concerns about teaching science. Most of the primary and elementary teachers reported that science was not a curricular focus in their schools, while mathematics and language arts received most of the attention. The following teacher’s comment reflects this problem: “Although I always enjoyed learning science, I often overlooked the importance of science in my classroom, instead focusing most of my teaching on reading and math development. When I did finally get around to the science outcomes, my teaching was mostly direct teaching, supplemented by factual texts” (group planning meeting). Teachers valued science and shared their beliefs about how students should learn in science, although beliefs and classroom practice, according to the teachers, did not always align. Some of their perspectives are reflected in such comments as:

Students are likely not to learn science in isolation. Children do not learn like that. They need to learn language, math, art, and science in an integrated way.” [and] “I believe that constructivism should guide science and learning. Students should take an active role in the learning process, exploring scientific concepts, making discoveries, and learning new concepts. (Teachers’ comments in group meetings)

School-based teams posed a variety of research questions focussed on improving teaching through a technique or strategy, or revising and enriching a curriculum unit. Examples of research questions posed in-

clude the following: "How can we use a worm-composting project in our classrooms to increase recycling/environmental awareness?" (School-based team A, primary), "How will students use the WebCT discussion forum to help them learn during the chemistry unit?" (School-based team B, grade 9), "How will combining art with science enhance student understanding of simple machines?" (School-based team C, grade eight), "How would the adoption of an inquiry-based teaching and learning approach impact our classes in science?" (school-based team D, grade six), and "How would our grade-five students become more engaged in science learning if I changed my approach to an activity-based one?" (School-based team J, elementary)

Teachers developed plans of action by the end of February of each year and implemented them between March and April in each year. All teacher inquiry projects were qualitative, usually involving one classroom. All teachers used their journal entries as a source of data. The teachers adopted their data collection methods and sources such as pre- and post-surveys, student-generated data (e.g., presentations, student self-assessments, journal entries, portfolios, and other written work), and field notes. As implementation occurred, teachers engaged in individual, school-based, and whole group sharing and reflection.

#### THE EXPERIENCES OF ADA AND TANYA

Although I did not know this until later, Ada and Tanya started the project with their own notions about the purpose of the project and how the process would work. Based on a discussion after completion of the project about how the confusion arose, the teachers reported that they misinterpreted the information that was sent to the school district and had not paid careful enough attention to what was stated in the consent form, although I had explained the nature of the project and participant expectations. In post-study interviews, both Ada and Tanya retrospectively reflected on these notions, explaining how they had originally conceptualized the research:

Somehow I thought this would be a place to test out ideas. You would come here on one day and this is what we would learn [a new teaching strategy or approach]. Then, we would go to our schools, teach it for a month or so, and then

we would come back, do a new scenario and teach it again for another month. (Tanya, post-study interview)

Early in the project, there were times when I felt I was lured under false pretence. There was considerable trepidation on my part. It was not what I expected. (Ada, post-study interview)

I intended to foster individual and group ownership of the project by supporting a forum to allow collaborators to guide their own professional development, based on their available time and classroom needs. I devoted the early group sessions to examining the characteristics of action research, comparing action research models, and exploring how to develop a plan of action. For example, on one occasion, after examining several conceptions of action research, two questions arose: "Does action research have to focus on a problem?" and "Isn't this what we always do?" The following dialogue that occurred during a planning session provides insight into how Ada, Tanya, and other group members grappled with the issues raised by the questions.

Karen [researcher]: Yes, action research is systematic; it's intentional, and requires considerable commitment. You first have to find an area of focus and then develop a focused research question. Once you focus, you need to do some reading. And then you come up with strategies for answering your research question. For example, "What can I try in my classroom to encourage more girls to participate in my science classes?" You try something new. You collect data. Did it work? Did it not work? So there is a cycle involved in action research.

Ada: So, does action research have to be a problem?

Karen: From my perspective, no. Sometimes action research can stem from a problem in your own classroom. Not always, but it can. For example, when I did my small action research project last year in my preservice classroom, I had read a lot about problem-based learning, as an instructional approach. Based on the research at post-secondary level that's been done, it seemed to be a very effective form of instruction. It could also add variety. So for me it wasn't that I perceived a problem, I just wanted to try a new approach and ascertain the outcome.

Tanya: I think this is a lot of what we do now. Plan a lesson, take action, teach it. See what works and does not work. You evaluate what works and does not work. What we do in our classroom is a cycle.

Ada: Yes, I think we do this all the time.

Karen: So how is action research different?

Tanya: I guess we are formalizing the process – putting ideas on paper. (group planning session dialogue)

These teachers had identified a critical difference between action research and “what they do all the time.” In formalizing the process, they were suggesting that action research moves beyond reflection and involves “systematic, intentional inquiry by teachers” (Cochran-Smith & Lytle, 1993, p. 5) that allows teachers to examine and interrogate what they do in classrooms and why they do it.

As the group learned more about the nature and process of action research, Ada and Tanya gradually came to the realization that most of the onus for structuring the project would rest with them. They would have to choose their own research area and develop and implement a plan of action. Some resistance to this notion persisted, even as they formulated their research questions and developed a plan of action. Eventually this resistance dissipated, only to be replaced with feelings of frustration and apprehension.

#### *Planning for Action*

For several months, Ada and Tanya struggled with formulating their shared research question. From a broad perspective, they wanted to gain more insight into their students’ thinking as they engaged in inquiry-based activities. After exploring possibilities and getting feedback from the group, Ada and Tanya decided to use student journals in their Optics unit to probe student thinking and understanding. Their research question at the outset was: “How can journals be used to evaluate students’ understanding of scientific concepts and their transfer of knowledge to new situations?” As Tanya stated in a journal reflection, “We struggled with this question all the way through the planning and early implementation stage of the project. We were not convinced that the question reflected the true needs of our classrooms.” Furthermore, it became evident to me that although other group members were enthusiastic about their research questions and plans of action, Ada and Tanya did not exhibit the same level of enthusiasm. Their enthusiasm was dampened by feelings of insecurity about their plan of action: “I am still very unsure about what we are doing. What do I know? I want kids to think

and figure things out without being spoon fed . . . inquiry . . . but it is messy. They make a lot of mistakes and as a result, draw poor conclusions. Is that really wrong? Isn't that how science develops anyway?" (Ada, journal entry).

To compound feelings of uncertainty, Ada and Tanya, interpreting a new science curriculum framework, lacked the content knowledge needed to teach a unit on Optics.<sup>2</sup> They shared their uncertainty with the group at a planning session: "We just don't know the material. We have had to put a lot of time into learning it. It's all so new" (Ada). Furthermore, time became another challenge. In the context of teaching, it is often difficult to separate the personal and professional dimensions of one's life. As Ada commented at one point, "Finding time is almost impossible right now. Between my children's commitments and my work commitments, I am overwhelmed. I need more time for me; I need to set priorities, and my time on task needs to be more efficient."

Ada and Tanya had completed their plans of action by the end of January and started implementation in early February. During the planning process of interpreting curriculum outcomes, designing and modifying learning and assessment activities, and determining how they would collect data, the teachers worked collaboratively at their school site. Some planning occurred during whole-group meetings, while I provided support and feedback during visits to their school and through online communication using e-mail.

#### *Taking Action and Reflecting on Action*

At the end of this project, Tanya reflected through a journal entry on the overall process: "It has been frustrating, exhilarating, and thought-provoking." The real excitement and exhilaration for Ada and Tanya did not become evident until close to the end of the project. At one of our later group planning sessions, Tanya entered the room stating, "I can't wait to tell you our news. We have changed our research direction." As our session started, Tanya and Ada informed the group that they had attended a professional development session on differentiated instruction (Tomlinson, 1999, 2001), an approach to organizing teaching and learning that offers students a variety of learning options that cater to different readiness levels, interests, and learning profiles. Students are

provided with different avenues to develop their understanding of content, to process ideas, and to show what they have learned. Adopting a differentiated approach to teaching and learning incorporates a variety of classroom organizational, instructional, and assessment approaches and principles (e.g., flexible grouping, tiered assignments, learning contracts, cluster grouping, thematic units, curriculum compacting, student choice, multiple intelligences, and learning styles) that allow teachers to move away from teaching to the middle. Subsequently, they decided to modify their research plan. Continuing to assess students' work through journal writing using three key areas (explanation of new concepts, use of scientific vocabulary, and formulation of research questions), they would now deliver their Optics unit using a new instructional lens: differentiated instruction. Their final research question was, "How can differentiated instruction be used to improve the quality of student journal entries?" In other words, they expected students to write about their developing understanding of science concepts and how they felt about learning activities as they engaged with them. Tanya commented in her journal on this shift: "The new direction allowed us to modify the presentation of the unit; we felt this new approach was more appropriate for our mixed ability classes."

Their rationale for this change was consistent with the learning needs of their students. I commented on this observation in one of my journal entries:

Ada and Tanya were extremely excited throughout the day. They re-focused their research question. This notion of using a range of strategies to differentiate instruction really resonated with them. They have students with such diverse abilities that this approach seems promising. They now have a clearer focus and seem more grounded. (Goodnough, journal entry).

Ada and Tanya adopted tiered activities as a starting point to differentiate their instruction. They designed learning activities such that students could choose activities from a selected or assigned ability level; they designed rubrics for all tasks. For example, in one learning activity students were asked to choose one of the following options:

- (a) Green level: What are the mathematical symbols for angle of refraction, angle of reflection, and angle of incidence? Draw and label a ray diagram with an angle of incidence of 45 degrees.
- (b) Gold level: Use a ray diagram to explain how to use the laws of reflection in playing one of the following games: pool, ping pong, baseball, or basketball.
- (c) White level: You are an interior designer. Design a room using three different sources of diffused lighting. Explain your choices. (Ada and Tanya's reformulated research question)

Students were assigned a particular level but could choose to complete an activity at a higher level of complexity. In moving from green to gold to white, the specified activity became more complex and more open-ended. In addition to adopting a tiered assignment approach, Ada and Tanya used Gardner's (1993, 1999) multiple intelligences (MI) theory inventory to help their students explore their unique intelligences profiles. Moreover, MI theory provided a lens for them to examine their own teaching beliefs and approaches and how they aligned with students' strengths and weaknesses.

Although Ada and Tanya reported that their students liked this approach, the teachers felt some of their activities (lower level) did not foster student engagement. "A lot of kids chose not to do the lower end activities because they were more text-oriented. The higher activities were more challenging and motivating, even though some of the students' writing and explanations were not good" (Ada, journal entry). Ada and Tanya hoped in the future to redesign some of the learning activities and to get to know their students better by using ideas from the learning styles literature. By catering to the different ways that students process information, they hoped to enhance students' understanding of science and to make learning more relevant for them. In using journals with their students, Ada and Tanya reported two challenges: first, students did not have enough class time to complete their guided journal entries, and second, many of their students struggled to articulate their thinking when writing in their journals.

#### *Learning and Transformation through PAR*

One of the obvious outcomes of this project for Ada and Tanya was the enhancement of their pedagogical content knowledge (Grossman, 1990;



Shulman, 1986, 1987). Shulman (1986) refers to pedagogical content knowledge as “the most powerful analogies, illustrations, examples, explanations, and demonstrations – in a word the ways of representing and formulating the subject matter that makes it comprehensible for others” (p. 9). According to Ada and Tanya, they developed a much greater understanding of how to differentiate science instruction for their mixed ability science classrooms, which resulted in a change in how they designed and implemented the science curriculum.

Although teacher research can result in learning and the transformation of practice for individual teachers, unfortunately the outcomes of teacher research initiatives are not widely disseminated (Cochran-Smith & Lytle, 1993; Gore & Zeichner, 1995). To contribute to the professionalization of teaching, it is critical that practitioner research outcomes be shared with others. In this study, I encouraged all participants to consider sharing the outcomes of their research in a public format – through staff meetings, local or national conferences, or publications in a district newsletter or practitioner journal. Ada and Tanya decided to share their research through a workshop presented during a local district professional development day. This decision allowed local dissemination of their work, thus increasing the possibility that other teachers might benefit from what they learned. This workshop also provided a culminating, synthesis experience for them to crystallize their thinking and reflect on what they had learned during the first year of the project.

Most of the action research journey was frustrating for Ada and Tanya; yet, from the untidiness and uncertainty, learning occurred. Both teachers highly endorsed action research as a feasible approach to teacher development.

Action research is a messy, yet exciting concept. Selecting a specific area of your teaching to improve and concentrating on that area helps to bring about change in your classroom. It allows you to research current methods and evaluate activities on an ongoing basis, deciding what works and does not work, and adjusting for the next activity is an important step in this research method. (Ada, interview)

Action research is a method that offers a researcher the flexibility to make changes and adjustments as situations occur. This was a very positive learning

experience . . . our students are benefiting as we incorporate new ideas into our current and future science units. We are also incorporating differentiated instruction into and using action research in other subject areas. (Tanya, interview)

The messiness and uncertainty within action research challenged Ada and Tanya, but they were able to garner many insights about their own teaching and student learning from the experience. And more importantly, they did not view this action research project as the end but as a beginning. “The most interesting thing for us is that as we come to the end of this year, we are really at the beginning. We are looking forward to the future” (Tanya, journal entry).

#### CHALLENGES ENCOUNTERED BY ALL PROJECT PARTICIPANTS

Teacher inquirers encounter a range of challenges when they engage in PAR which can vary from teacher to teacher and group to group. For example, for many action researchers, finding an area of focus and formulating a research question is the most demanding aspect of action research. In other instances, data analysis presents the biggest challenge.

Table 1 presents an overview of the challenges identified by teacher researchers who engaged in action research in this project over a three-year period. The most prevalent concern expressed by teacher researchers was finding enough time to devote to all stages of the action research. Although several days were provided for release time for teachers, they felt this was not enough. Most teachers reported that the demands placed on their daily professional lives had become more and more demanding, and consequently, they had less time to devote to all aspects of their professional practice. One teacher shared her concerns about the business of teachers’ lives:

This [action research] takes time and the demands of every day teaching are multiplying – we were cut back on preparation time this year, the demands of committee work have increased, the extras associated with teaching have increased; and the actual teaching in all of my classes and the administrative things have taken on more time. (project teacher)

Table 1  
Challenges Experienced by Teacher Researchers  
during Action Research

Challenge	Number of teachers who identified this challenge (total participants = 39)	Brief description of the challenge
Time	39	More time for developing plans of action prior to implementation, library research, and meeting with school-based colleagues to collaborate
Area of Focus/ Formulating a Research Question	22	Identification of the topic of the inquiry and the development of an appropriate research question
Data Analysis/Interpretation	20	Uncomfortable with how to analyze and interpret data
Journal Writing	20	Finding time to make regular journal entries
Logistics	17	Difficulty with adhering to implementation time lines, accessing computer technology, avoiding daily classroom interruptions imposed externally
Resources	14	Lack of resources to support the implementation plan
Support	7	Lack of school-based support

Teachers cited lack of time during the regular teaching day as a significant barrier to making regular journal entries and holding regular meetings with school-based colleagues during implementation. Over one-half the teachers struggled with finding an area of focus and formulating a

research question, while many did not feel comfortable with how to go about data analysis and interpretation. Other challenges focused on logistics, resources, and school-based support.

#### PERSONAL REFLECTIONS ON FACILITATION

At the core of the approach to action research conceptualized in this study is the recognition that human learning occurs in social contexts. One of the defining principles of this approach is doing research *with* people instead of doing research *on* them. Hence, I assumed a variety of shifting roles (facilitator, supporter, challenger, and teacher) in supporting teachers throughout the project (Goodnough, 2003). I attempted to foster ownership by encouraging all collaborators to take responsibility for the process. For example, the group planned agendas at the end of a meeting day in preparation for the next meeting. In this way, the group was better able to assess its needs formally and plan appropriately.

Initial meetings were devoted to learning about the nature and process of action research (e.g., formulating research questions, conducting data collection and analyzing data, examining other accounts of teacher research). My initial role of teacher changed as the needs of the group changed. Later, my role shifted to facilitator, and often I acted as a sounding board, as did other groups members, providing feedback on teachers' developing ideas and insights.

Based on my previous experience in facilitating inquiry groups, one of the dilemmas I regularly encounter is judging the amount of support teachers need at different stages of the action research. For example, in reflecting on my role in the first year of this project, especially at the problem formulation stage, I questioned how I could have better assisted Ada and Tanya as they struggled with their research question.

Although they [Ada and Tanya] have formulated a tentative research question, they still seem frustrated and less than content with how the process is unfolding. The group brainstormed ideas for sources of research questions and issues, we completed a reflective tool that encouraged teachers to answer questions about their practice, the teachers collected some preliminary data from their students about their learning needs, and we read other reports by teacher

researchers. Am I providing enough support in helping group members identify a research area? [Author's journal reflection]

Although I was providing guidance to help Ada and Tanya identify a research area, I believe the activities I adopted were not focused enough. When I asked Ada and Tanya at the end of the study for input about my role in the action research, they suggested that a more exhaustive exploration of ideas occur up front. For example, Ada said, "If we had known about differentiated instruction at the beginning, things may have proceeded differently. Perhaps future groups could explore teaching approaches in more detail."

In the second and subsequent years of the project, I used the work of Dana and Yendol-Silva (2003) to enhance my ability to support teachers when they are identifying areas of focus and formulating research questions. Based on their own work and the work of Hubbard and Power (1999), these authors suggest the following guidelines to help teachers pose and refine research questions:

1. Look at teaching using eight lenses (the child, curriculum, content knowledge, teaching strategies, beliefs and practice, personal/professional identity, social justice, and context).
2. Be prepared for research questions to change as an inquiry progresses.
3. Explore questions that do not have answers.
4. Develop open-ended questions as opposed to closed questions.
5. Eliminate jargon.
6. Ensure the question can be supported and explored by the methods adopted.
7. Share question ideas with colleagues.
8. Be patient with articulating a research question. (p. 47)

These ideas have become an integral part of my work in facilitating teacher inquiry groups. Dana and Yendol-Silva (2003) present a comprehensive approach with a series of built-in exercises that I use to provide a more structured exploration of potential issues and problems. For example, in exploring the relationship between teacher beliefs and classroom practice, one of eight lenses, the authors suggest that teachers generate a general teaching philosophy and then a teaching philosophy about their discipline areas; share it with a friend; and then identify how

the philosophy is or is not being enacted in the classroom. The information gathered from this exercise can then become the essence of a research issue.

Of course, helping teachers find an area of focus and formulate a research question is only one facet of facilitation. Teachers need support at all stages of action research. I have found the design principles of Wenger, McDermott, and Synder (2002) to be very helpful in cultivating productive action research communities of practice.<sup>3</sup> Table 2 provides a brief overview of each design principle and its application in cultivating communities of practice.

This multi-layered study of teacher inquiry provided a forum for a small group of teachers to engage in professional development in the context of science education. Although it is difficult to separate process and product when exploring the nature of action research, the primary focus of this article has been on process – the experiences of Ada and Tanya as they engaged in collaborative action research. Because teacher research is contextual research and begins with teachers' beliefs, knowledge, and understanding, the problem or issue they research cannot be held in "place while it is researched" (Loughran, 2003, p. 182). Rather, as teachers inquire into their own practice, their problem and research plans are continually shifting, developing, and being revised as ideas are translated into classroom practice. In essence, the experiences of Ada and Tanya reflect, in a vivid way, the nature of the action research cycle, described by many as involving a recursive spiral of planning, acting, observing, and reflecting. Intertwined in this process is the element of human learning, a process of negotiating meaning as new insights are garnered.

In negotiating new meaning during action research, participants, especially novice teacher researchers, frequently experience challenges as they conceptualize and implement projects (Elliott, 1991). However, often the inherent messiness and uncertainty of action research is not reported in accounts of action research. One notable exception is the work of Cook (1998), who reports on the experiences of a group of novice researchers and their dissonance around reconciling the messiness of

Table 2  
Seven Design Principles for Cultivating  
a Community of Practice

Principle	Characteristics
Design for Evolution	Communities need to be dynamic and flexible, redesigning and making changes in how they operate and what they do over time.
Open a Dialogue Between Insider and Outsider Perspectives	Only insiders can understand the nature of knowledge that is relevant to a community and the challenges that members of a profession or domain encounter. However, communities need to capitalize on outsider perspectives and knowledge to strengthen community functioning and evolution.
Invite Different Levels of Participation	Individuals participate in communities of practice for varying reasons. Not all will have the same interest or involvement in a community. Participation should not be forced. Rather, the contributions of all individuals, whether at the periphery of a community or at the core, should be valued.
Develop Both Public and Private Space	The successful functioning of a community is dependent on the intricate web of relationships among its members. Members need many informal opportunities to interact and share. Strengthening community member relationships also allows public events such as meetings to be more productive and inviting.
Focus on Value	The value of a community may not be apparent in the early stages of its existence. Its value needs to emerge over time, and members need to explicitly reflect on how to harness the community's potential.

Combine Familiarity and Excitement	Community members need to have regular events and structures, while simultaneously having opportunities to participate in new events, interrogate new ideas, and welcome new members. Routines and structure foster relationship building; new ideas and events foster excitement and are more likely to engage members.
Create Rhythm for the Community	Wenger et al. (2002) refer to rhythm as the “beat” of the community. If participants do not have enough time to reflect on their learning, they can become overwhelmed. Likewise, if the pace is too slow, then interest can wane and members may become less engaged. A balanced rhythm is needed to create a vibrant community and enhance its value.

Source: (Wenger et al., 2002)

action research with the necessity of having a model to structure and guide their work. She suggests that PAR researchers need to “describe the action research process more expansively and candidly . . . and to allow it to be critically scrutinized for its intrinsic worth and what it has to offer” (p. 107).

Tanya referred to the messiness and uncertainty in action research as “there-and-back-again,” an apt description of the bumpy road that many novice action researchers experience (Gilbert & Smith, 2003). Garnering more than superficial insights into this “there-and-back-again” process will necessitate, as Cook (1998) suggests, reporting in the literature that is frank and comprehensive. Making the process of action research explicit has implications for both practitioners who engage in action research and those who support and facilitate action research.

From a practitioner’s perspective, being able to study and read about other accounts of action research can facilitate an understanding of the process and hence, inform how others engage in action research. Like-



wise, those who facilitate action research and become “critical friends” to teacher research groups can benefit from gaining more insight into action research. Facilitators assume myriad roles, face a range of facilitation challenges (Burchell, 2000; Goodnough, 2003), and make decisions about how to best address those challenges. For example, having a greater understanding of the action research process and the potential challenges that may arise for novice action researchers can assist facilitators to examine their roles and how they are fulfilling those roles. Facilitators of action research need to engage in second-order inquiry, “constantly deliberating about their own practice and its relationship to the nature of the activity they are trying to facilitate” (Elliott, 1985, p. 259).

Messiness and uncertainty are inherent, and often necessary, elements of action research. Those who engage in action research need time to grapple with new ideas, to make sense of an emergent process, and to construct shared meaning within PAR communities of practice.

#### NOTES

<sup>1</sup> The action research project was sponsored by the Social Sciences and Humanities Research Council (Initiative for the New Economy).

<sup>2</sup> The Optics unit, in which students explored the properties of visible light, included investigations of the reflectioning and refractioning technologies of light.

<sup>3</sup> According to Wenger, McDermott, and Synder (2002), communities of practice are “groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis” (p. 4). Communities of practice are ubiquitous and individuals are often members of a variety of these communities. These authors believe that communities of practice can be cultivated through thoughtful attention to creating learning environments that value learning and provide support through resources, time, and the removal of organizational barriers.

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MIDDLE-CLASSNESS AND WHITENESS IN  
PARENTS' RESPONSES TO  
MULTICULTURALISM: A STUDY OF ONE  
SCHOOL

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Since its founding in 1941 until the 1980s, "Pincrest" School was dominated by children from "Baywoods," an economically privileged and largely Jewish neighbourhood. In the late 1980s, the population of the school changed to include children of immigrants in an adjacent neighbourhood, "Kerrydale." Seeking to protect their children's cultural capital and class advantages, the Baywoods parents' response involved the construction of fundamental difference and concerns about effects on school quality. The responses were interrupted by dilemma and ambivalence. They are read through the intersections of middle-class formation and whiteness in terms of three dimensions: practice, relationality, and maintenance.

Key words: Jews, immigrants, public school, parents, exclusion, social class, ethnicity

Depuis sa création en 1941 jusque dans les années 1990, l'école « Pincrest » accueillait principalement des enfants de « Baywoods », un quartier habité par des familles à l'aise et surtout par des Juifs. À la fin des années 1980, la population de l'école a changé à la suite de l'intégration d'enfants d'immigrants provenant de « Kerrydale », un quartier voisin. Cherchant à protéger le capital culturel de leurs enfants et les avantages de leur classe sociale, les parents de Baywoods ont réagi en invoquant la notion de différence fondamentale et en se préoccupant des effets possibles sur la qualité de l'école. Dilemmes et ambivalence ont toutefois interrompu le processus. Les réactions des parents sont interprétées dans le contexte du lien entre la formation de la classe moyenne et la blancheur et ce, à trois niveaux : la pratique, les relations et le maintien de la reproduction du groupe.

Mots clés : Juifs, immigrants, école publique, parents, exclusion, classe sociale, ethnicité



Although not entirely a recent phenomenon in critical methods, “studying up” or what Leslie Roman (1993) describes as the examination of “cultural practices, social relations, and material conditions that structure the daily experiences and expectations of powerful groups” (p. 29) resonates with current directions in sociological research. Studies on loci of power embodied in whiteness, masculinity, and the middle class have generated much interest. The research project described in this article emerged from this approach. It primarily explores the perspectives of a group of parents in an urban neighbourhood I call “Baywoods” whose children attend “Pinecrest,” a public elementary school. These parents could be characterized as economically privileged if the phenomenon can be determined through income, residential property values, and professional and executive occupations. The participants are also identifiably white (but their Jewishness may call for some qualification of that term), and most are women. Rather than illustrate a single dimension of studying up, my research project weaves two dimensions together, suggestive of an intersectional approach. I refer here to the term as described by Stasiulus (1999): “Intersectional theorizing understood the social reality of women and men, and the dynamics of their social, cultural, economic, and political contexts to be *multiply, simultaneously, and interactively* determined by various significant *axes of social organization*” (p. 347, original emphasis). Yet Anthias (2005) distinguishes the fact of intersections in inequality from the processes by which inequality occurs. Specifically, she wants to separate “the notions of social position (concrete position vis-à-vis a range of social resources such as economic, cultural and political) and social positioning (how we articulate, understand, and interact with these positions, e.g., contesting, challenging, defining)” (p. 33). Thus the story here not only describes the particularities of a powerful group; it also conveys something of the exercise of their power.

In the late 1980s, the population of the school changed to reflect the shape of immigrant settlement in its adjacent neighbourhood, “Kerrydale.” Within the space of a few years, Pinecrest made a transition from monocultural to multicultural. How did Baywoods parents respond? My interviews revealed how they constructed fundamental differences between the groups of children. They also worried about effects on school quality as they sought to protect their children’s cultural capital and

class advantages. This process was not always smooth; it was interrupted by dilemma and ambivalence. I read the parents' responses through the intersections of middle classness and whiteness in terms of three themes: practice, relationality, and maintenance in the face of perceived threats to the group's reproduction. These themes are taken up below through the performance of middle-class parenting<sup>1</sup> in dilemma over social values and doing the right thing by one's children. A Canadian study in a literature dominated (and inspired) by British sociology of education, this study fortifies understandings of the reproduction of forms of exclusion in schools and in the communities that surround them.

#### BACKGROUND AND METHOD

Pinecrest is an elementary public school (kindergarten to grade 6) situated in the heart of Baywoods, a neighbourhood located in a large Canadian city. Approved by City Council in 1936, the municipal plan for Baywoods recommended lot sizes, street layout, and public services appropriate for a high-class residential area.<sup>2</sup> By the 1960s, the neighbourhood had become solidly Jewish; today, many of the stores on the commercial strip carry products for the Jewish market. From the school's founding in 1941 until the late 1980s, the children at Pinecrest had a great deal in common: they were generally high socio-economic status (SES) and Jewish.<sup>3</sup> The demographic profile of the school changed along with immigration patterns in the city particularly affecting Kerrydale, an adjacent neighbourhood in the Pinecrest catchment area. Kerrydale consists of a large cluster of high-rise apartment buildings. Among its residents are many new immigrants who reflect the diversity of Canadian immigration patterns. According to Citizenship and Immigration Canada, in 2000, the city received 108,034 immigrants (including refugees). The rich diversity is revealed through the list of the top 10 source countries from which 60 per cent of all Canadian immigrants arrive: China, India, Pakistan, Sri Lanka, Philippines, Korea, Iran, United Arab Emirates, Russia, and Jamaica (Citizenship and Immigration Canada, 2001). The other 40 per cent of immigrants come from over 100 different countries.

This migration predictably affects city schools. According to the district school board, at the time of this study (2000), 51 per cent of the students at Pinecrest spoke a primary language other than English and 28 per cent of students had lived in Canada for five years or fewer. In income, ethnicity, first-language use, and duration of residency in Canada, therefore, the differences between the residents of Baywoods and Kerrydale were great.<sup>4</sup> Table 1 illustrates these differences. For the Baywoods parents, the contrast was significant. The homogeneity of Baywoods defines the collective memory of some of the families there. Remarkably, over half (13) of the participants as well as six of the non-interviewed partners spent their childhood in or near Baywoods. Three participants were living in the same houses in which they or their partners had grown up, making their children the third generation in the same house. Where Baywoods was homogeneous in most respects, Kerrydale was heterogeneous. The dominant ethnicity in Baywoods was Jewish (71%) while in Kerrydale, the largest groups were Southern European (19%) and Eastern European (19%). The rest were from countries in Asia, the Pacific, Africa, the Middle East, and elsewhere.

Table 1  
A Comparison of Baywoods and Kerrydale Based on Statistics Canada  
2001 Census data (using PCensus for MapPoint)

	Baywoods	Kerrydale
Population	3,348	1,442
Canadian Citizenship	93%	64%
Immigrant Population	21%	65%
Household Income	\$159,121	\$52,607
English as a first language	79%	38%
Jewish ethnicity	71%	10%
University degree obtained	60%	35%

I designed this research project to explore the practices and perspectives of the Baywoods parents as the dominant members of the school community. After a pilot interview with a Baywoods parent whom I knew, I recruited the rest through flyers posted in the neigh-

bourhood and through snowball sampling in which I asked early participants for additional contacts. After our initial contact, my research assistant, Jessica Ringrose, and I interviewed everyone who was available and who consented to an interview. We concluded the data collection after some remarks became noticeably repetitive indicating saturation of themes. We conducted 25 personal interviews with 26 parents;<sup>5</sup> 20 of these were members of the white, high SES, Jewish group. Interviews, about two hours in duration, were conducted in the participants' homes. Transcribed verbatim, the data were analyzed using HyperQual software. Participants' ages ranged from 31 to 51. Sixteen of the participants had full-time occupations: four in business, four in healthcare, three in education, two in childcare, one in clerical work, one in social services, and one in the trades. Six participants had part-time employment and three of the women were full-time homemakers, although combinations of these occurred. The occupation of one parent was unknown. Only two of the participants were men; twenty were married, three were separated, two were divorced.

In my work, I assumed that the Baywoods parents were a powerful group in the school community. I explored how power operated among them, how it was expressed and secured, and how it affected and was affected by the changes that had taken place at the school. I learned about their responses to the developments at Pinecrest, theorized about how they conceptualized or problematized the changing character of the school, and traced the tensions that might exist in their responses. Data were collected on their observations of the school, their evaluation of its programs, their involvement with school activities, their school choice, and their views on their children's needs. I also asked them to describe problems they observed at the school regarding the staff, students, or interactions between groups.

The 25 interview participants had 58 children among them and of these, all but three attended Pinecrest for their elementary years at some time between 1985 and 2001. Two of the three children who never attended Pinecrest attended another public elementary school nearby and one had been sent to a Jewish day school. Of the 55 children at Pinecrest, four attended elite private schools for at least some of their elementary grades, one moved to Pinecrest from a Jewish day school,

and two more had applied to elite private elementary schools but were not admitted. Two had been switched from other public elementary schools. One child had attended three different schools by grade 6: one elite private school and two different public schools; a few others had moved between various private schools and the public system between intermediate levels and secondary school (grades 9 to 13, now to grade 12).

What proportion of my interview participants chose to leave Pinecrest? Although a small minority, 4 of the 58 children had actually attended some kind of private school at the elementary level, two more had applied but were not accepted as noted above. This number increases if I count the 14 children from the eight families who said that they *would have* chosen private schools in hindsight or if they could have afforded to do so for one or more of their children. Finally, four children left Pinecrest for another public elementary school. Therefore, of the 58 children who were entitled to attend Pinecrest as their neighbourhood school, 41 per cent did not or would not have attended given their parents' preferences. In contrast, 7 families of the 24 in total (29%) said resolutely that they would not consider private school for their children. Of the 25 participants, I would count 8 as critics of Pinecrest since its "sudden multiculturalism," 10 as supporters, and 7 as ambivalent. Exploring these positions inspires possible explanations of the parents' responses.

As the powerful group, the Baywoods parents preserved a sense of their morality through their distance – psychic if not physical – from their Kerrydale neighbours. And they were distant, too, from the impact of their school choices upon all the students at Pinecrest School. The parents operated within this tension: school is regarded as a community institution serving the public interest *and* as a quasi-political site where public and private claims are contested. Emerging from their claims upon education as a public good, the Baywoods parents were sensitive to the value of multiculturalism in their children's lives. Yet, emerging from their claims upon school as a private choice, the parents were anxious to "protect" their children to the neglect of the needs of other children. This tension remains unresolved for them.

## THEORETICAL CONTEXT

*The Practice, Relationality, and Maintenance of Middle-Classness*

I begin with a cultural perspective on middle-classness. Distinct from questions of “who” belongs to the middle-class (as represented by Goldthorpe, 1980) or even “what” is the middle-class (as represented by Wright, 1989), this perspective stresses the practices of the middle-class. The concept of cultural capital as developed by Pierre Bourdieu receives special attention (see Ball, 2003; Lareau, 1989; Savage, 2000; Skeggs, 2004). In its “objectified” state, Bourdieu (1986) explains that cultural capital is the acquisition of those cultural goods valued as the “distinction” of the privileged class, and that these become components of one’s *habitus*, durable systems of attitudes and dispositions that develop through history and generate practices. Class is not understood in the abstract. Nor is it a static or discrete category. It is approached instead in terms of “the situated realizations, of class and class reproduction” and “as it happens” (Ball, 2003, pp. 6, 174) bridging a structuralist and culturalist perspective. As a structural phenomenon, class bears upon material conditions and the production and distribution of rewards and resources. As a cultural practice, class positions are achieved and enacted as lived reality.

Class is also understood relationally. That is, class becomes itself through differentiation and exclusion (see Savage, 2000) and through active identification or gestures of belonging (Ball, 2003). As Anthias (2005) points out, group membership involves the maintenance of boundaries. Defining *we* is premised on constructing otherness. The concepts of cultural and social capital as developed by Pierre Bourdieu are frequently used for analyzing the school choice among the middle class particularly for its relevance to studies of social inequality. As Ball, Bowe, and Gewirtz (1996) note, choice is thoroughly social; it depends not just on cultural capital but on the activation of cultural capital. One must be able to choose to reap the economic, social, and symbolic benefits conferred by social class. Middle-class parents are more likely to animate their cultural capital through a variety of means, including direct involvement with the school, the provision of supplementary educational programs, better contacts with teachers and administrators,

and efforts to achieve confluence between the school culture and that of their home (Lareau, 1989; Wells & Oakes, 1998). More generally, the act of school-choosing itself is attached to class positions (and class positioning). As stated by Strathern, in *After Nature: English Kinship in the Late Twentieth Century*, this “demonstrates how choosing is a particularly middle-class way of operating in the world . . .” (as cited in Skeggs, 2004). Choice is embedded in class relations, assuming its universality obscures the class location of the chooser and the inequalities of condition that make choosing more possible for a chooser.

Finally, class is subject to economic and social forces that prevent its stability. Its reproduction is not assured and people are actively engaged in maintaining themselves in their classed location. Indeed, class is highlighted in times of crisis when the issue of its reproduction is in question. This dynamic is of particular relevance in discussions of schooling. Parents invest their children with class and their desire to maintain class. Ball (2003) explains that “middle-class ontologies are founded upon incompleteness, they are about becoming, about the developmental self, about making something of yourself, realizing yourself, realizing your potential” (p. 163). Parents’ decisions about schools embody that moment at which they would make their children into a classed subject. They fight to preserve their advantage against a threat posed by competition from others (Dehli, 2000).

#### *The Practice, Relationality, and Maintenance of Whiteness*

Just as oppression is seen as intersectional, the exercise of power must also be critiqued intersectionally. This observation became quite apparent when I listened to the Baywoods parents; it was not simple racism, nor ethnocentrism I heard, nor even exclusion based on social class differences. The way that these dimensions came together, presented itself as the most accurate way of describing the parents’ positions and practices. As noted, this article adapts Stasiulus’ and Anthias’ intersectional theorizing. Therefore, it is to the literature on both middle-classness and whiteness I turn.<sup>6</sup> I propose that these three dimensions of middle-classness – practice, relationality, and maintenance – may also be applied to an analysis of whiteness. Critical whiteness studies refer to the emerging corpus of writing that takes white racialization and the exer-

cise of domination and privilege as its departure point in anti-racism.<sup>7</sup> Whiteness has a dual, even paradoxical meaning. On the one hand, it confers meaning upon the white body demarcated through geography (the West) and history (imperialism). On the other hand, its evocation in critical whiteness studies theorizes the replacement of white racialization as objective fact with white racialization as a process of domination in social relations. An effective way to negotiate this dualism is to focus not on who is "white" or what is "whiteness," but how whiteness works.

Several contributors to critical whiteness studies have described mechanisms through which power is practised among whites. Hurtado and Stewart (2004), for example, describe such dynamics as the creation of social distance from others' difficult circumstances, the denial of personal circumstances conferring racial privilege, white racial privilege acknowledged only with its loss, superiority ascribed to a "normalcy" and "neutrality" unattainable by racialized others, and an unrecognized solidarity. Gabriel (1998) specifies in whiteness the processes of exnomination (refusing to name itself), naturalization (against whom others require definition), and universalization (taking its peculiarity as representative of all). Frankenberg (1993) asserts that whiteness operates as a set of cultural practices that are usually unmarked and unnamed.

The second dimension, *relationality*, is a salient theme in the literature on whiteness. In critical whiteness studies generally, racism involves participation in systems of domination, the rewards for which are distributed inequitably among groups constructed as racially different. Benefits accrue to those groups who occupy a social location of power or who engage in the performance of power. As Toni Morrison (1993) points out in her extraordinary statement, qualities attributed to whiteness are possible only in relation to their absence in a racialized other. White privilege, a normalized identity, status, rewards, and dominance are contingent upon an epistemological frame that situates others as different relative to these characteristics. Critical whiteness studies expose the often unacknowledged but mutual contingencies of privilege and oppression.

Lastly, middle-classness and whiteness intersect at the market in a way that has particular implications for the maintenance of middle-class boundaries (Dehli, 2000; Whitty, 2001b). This begs the question of the



relationship between whiteness and social class. In the paragraphs above, I have framed whiteness as a practice of domination and a consolidation of privilege in relation with disadvantage. However, nothing in that frame determines an intersection with middle-classness unless Stasiulus' (1999) approach to intersectionality joins that of Anthias' (2005) who sees "ethnicity, gender and class, first, as crosscutting and mutually reinforcing systems of domination and subordination . . . secondly, ethnicity, gender and class may construct multiple, uneven and contradictory social patterns of domination and subordination . . ." (pp. 36-37 [original emphasis]). Middle-classness and whiteness so clearly reinforce each other that they are usually conflated in the literature on school choice. With their link to Bourdieu's (1986) notion of cultural capital, researchers in the UK and USA write almost exclusively about the choices of white, middle-class parents in relation to others marked by difference in both these respects (see Ball, 2003; Brantlinger, 2003). Lareau and Horvat (1999) include whiteness as an element in cultural capital providing advantages to middle-class parents; Gillborn (2005) discusses UK education reforms toward privatization as an act of white supremacy. The link between class and whiteness in school choice is reflected in cultural approaches to class and whiteness more generally. In the social history of European immigrants, the advantages of whiteness were conferred through entry into the middle-class (Roediger, 1991).

#### *School Choice and Neo-Liberalism*

To return to the question of how middle-class parents struggle to maintain their whiteness, school choice turns out to be a particularly good illustration. Because the discourse of economic orthodoxy and political neo-liberalism permeates institutional life, the school becomes another product for sale in the marketplace. For Ball (2003), such reforms ("financial and organizational . . . and symbolic") facilitate "a reorientation of the education system as a whole to the needs, concerns and interests of middle-class parents. They work to embed class thinking into the policies of schools" (p. 49). Whitty (2001a) concurs: "Much of my own work . . . has demonstrated empirically that education reforms couched in the rhetoric of choice, difference and diversity often turn out

to be sophisticated ways of reproducing existing hierarchies of class and race" (p. 289). Parents' practice of middle-class whiteness erects a differentiation between *us* and *them* in which schools are evaluated and compared. Because the individualism and competitiveness of the market stimulates the desire of middle-class parents to secure a future for their children in unpredictable conditions (Brown, 1997), whiteness converges with middle-classness to bring about ultimate advantage. These relationships structure the presentation of the data that follows. The practice of class and whiteness may be linked to the exclusion of difference; relationality corresponds to the question of school quality; and the theme of maintenance emerges in the parents' management of school choice and competition.

#### THE PRACTICE OF CLASS AND WHITENESS: THE EXCLUSION OF DIFFERENCE

In the literature discussed above, middle-classness is constituted as practice and accomplished through both material and symbolic means. A manifestation of their performance of class and whiteness is the Baywoods parents' construction of social difference. The invention of boundaries around *our* children and *theirs* enables these parents to claim distinct qualities and needs. They evaluate the educational services available at Pinecrest in terms of their children's individualities and assess the correspondence between individual requirement and the services offered. However, they do not make assessments on the basis of the school's manifest content. Parents observe the social environment for its prospects for (or threats to) their child's ostensible needs. The culture of the school – significantly in the makeup of the children there – is at least as important if not more important than public measures of achievement. The difference represented by the Kerrydale children – despite its enormous diversity – is problematic for some participants and valued by others. Among the latter, the interactions with the students from Kerrydale carry social benefits for their children. Helen,<sup>8</sup> a critic of Pinecrest, values multiculturalism in elementary school because it exposes her children to realities of urban life (presumably centred around race and ethnic diversity) rather than postponing the experience until university. Multiculturalism becomes something of a learning opportunity. Anne

says that she “just thought it was, like, good for my kids to see that not everybody can speak English.” She continues, “I think, like, eyes just open up. And, yeah, there’s kids that have come from, like, war-torn countries and look how they’re doing in school and that’s great and they’re part of a community – I say it’s great. I think it’s great for everybody to see that. And be a part of it.” Anne evinces here a stereotype of the battered refugee. The children from Kerrydale thus provide her children with a lesson in global perspectives. Despite these speakers’ benevolence, their practice of middle-classness and whiteness produces a social distance and neutrality. Hearing others’ oppression takes on a heuristic value. Commodified to satisfy a white, middle-class desire, their identity is maintained through a consumption of the difference they attribute to the Kerrydale children. It has become a means by which their children can improve themselves and thus acquire the (multi)cultural capital required for success in today’s world.

The increase in the school’s ethnic diversity was identified specifically and unequivocally by eight of the participants (Heidi, Sharon, Gail, Helen, Barb, Fern, Tracy, Miriam). Here are two relevant interview excerpts. The first is Fern for whom the Kerrydale students represent an absolute difference. Her position represents the far end of the spectrum. During the interviews, some of my participants expressed self-consciousness about making remarks that would “sound racist.” At least two participants requested that we turn off the tape recorder so their explicitly racist remarks would not be recorded. The richest of the interview excerpts on the meaning of difference constructs, by turns, a child with abject ignorance of Western education, disruptive in behaviour, neglected at home, and traumatized by the refugee experience.

So the teacher was dealing with not just children from a different culture—like, if you came from France or something—she was dealing with someone who has never even been exposed to books before. And so, they’re light years behind children that have been to kindergarten and junior kindergarten and all that kind of stuff. And that’s very hard for a teacher. I mean, they, you know, she’s dealing with kids at that level and there’s several behavioural problems. (Fern)

I mean, I don’t want my kid to associate with kids whose parents don’t care whether their kids do well at school, who don’t care about whether [she] is, you

know, filthy dirty. You know? So, if it turns out that there's a school where—I know this sounds like so awful – but anyhow, you know, if parents sort of perceive that these new Canadians are careless about their kids or are—and I don't know that that's necessarily so – but if that's the perception that the majority of the kids – and it's 51 per cent [ESL] now – so, if a lot of those kids are coming from homes where the parents have maybe been so traumatized because of escaping from wherever they were that they don't have – they're so busy trying to make a living here that their kids are kind of neglected in some way or whatever – that's not a common, a common, that's not a common thing for my kids to – that's not a common experience. (Barb)

In the first excerpt above, Fern claims that the children from Kerrydale are markedly behind, even backward in their adaptation to life at Pinecrest. Their deficits begin, she asserts, from their earliest years and their cumulative effects are detrimental for her children who have more than adequate preparation for the demands of elementary school. This situation together with the children's "behavioural" problems leads Fern to conclude that such classrooms are inappropriate for children like hers because, among other things, teachers cannot cope with the diverse needs. Next, Barb links defilement and neglect with the "other" embodied in the Kerrydale children and their families. Note her self-doubt and her privileging of perception over knowledge. This notwithstanding, she places her beliefs in a context. The problems derive from the families' violent refugee past and current dire straits as they struggle to get by in the city. These conditions, for Barb, are simply more than she can tolerate. For these mothers, the practice of middle-class whiteness reveals what Gabriel (1998) calls naturalization of social location and personal circumstances. Further, the superior status embedded in these parents' remarks is given meaning through their reflection in the Kerrydale families. Finally, in their rejection of difference, these mothers attempt to strictly control the social interactions of their children. Theirs is a frantic gesture to maintain their white, middle-class identities in the face of a threat.

In this study, there were parents who appreciate Pinecrest for its cultural diversity and those who object to it. There were parents like Diane, Melinda, and Anne who regarded the Kerrydale children as different but positive nonetheless for the learning opportunities they

could provide their children. These parents supported Pinecrest as inclusionary. Then, parents like Fern, Barb, and Wendy preferred the school to be exclusionary and have, in some cases, removed their children from it. Between these two positions lies another. Some of the parents placed limits on the amount of diversity they would accept. That is, they presented the desire for balance as a benign, even optimal compromise. Yet their desire for control over the process indicates their insistence on shaping the school environment in ways conducive to their values. Tracy admitted to feeling like “[a] minority here . . . like, inundated with immigrants . . . I think we should give them a chance. But I would like to see a little bit more of a balance. That’s all.” The preference for balance registers a preference for exclusion. The following excerpt is illustrative. Note Tracy’s downward shift from 80 per cent to 70 per cent as an acceptable level of immigrants in the classroom and her survey of her daughter’s happiness as contingent upon the degree of diversity there.

It bothers me to a certain extent but not enough that I would pull my child out of Pinecrest. Because she has lots of – when you look in your [School Year] Book, you’ll see she has lots of friends who are Canadian and she’s fine. As long as she gets that balance – as long as it’s not 80 per cent of immigrants, then I’m happy . . . I don’t want her in a class with 70 per cent of immigrants. (Tracy)

The fragility of class boundaries is shown here. The middle-class parents leaned heavily upon their own members to remind themselves of where they stood and against whom they stood. The middle class knows itself in relation to what it strives not to be. Parents who might have taken middle-class homogeneity for granted were able to name it once they faced the alternative. Thus the school is a venue for the learning white, middle-class identities (Byrne, 2006). To get that lesson right, these parents vigilantly ensured the optimal amount of exposure to cultural diversity. Although exposure is good in principle, the risk is overexposure. Parents expressed their desire to set the terms of achieving the best “mix” as they practised their class (and race) position. Academic standards, security, and stability become the spoken features of the school. Race and class persisted as the unspoken features.

### THE RELATIONALITY OF CLASS AND WHITENESS: THE QUESTION OF SCHOOL QUALITY

The most conspicuous instance of the power among the Baywoods parents is manifest in the problem of the quality of education. Other researchers (e.g., Brantlinger, 2003) identify this theme as well and because it avoids the socially unacceptable language of social difference, it is often analyzed as a code for exclusion (Holme, 2002). In my study, supporters and detractors alike identified this reason as key to explain why parents wanted to remove their children from Pinecrest. With the entrance of students from Kerrydale, Baywoods parents expressed their concerns in terms of the educational impact on their children. Coded as “getting ahead” through enriched educational programs or as a desire to maintain a “higher level” of education than that perceived to be available at Pinecrest, problems appear to be indisputable and consensual. The following interview excerpts are evocative.

When you have kids that are not intelligent (laughs) or not as coming from families where education is not a priority. It's a cultural thing. Education to a great extent – education is a cultural thing. . . . You've got all these immigrant kids coming into the school – which is turning the school more into, like, an inner-city school. Which right away, in our minds, makes us think that the quality of the education's not gonna be the same. You don't have the same calibre of kids in the classroom. You know, you want your kids to be in a class where they're being challenged. How can they be challenged when [for] three quarters of the kids in the class, English is a second language? (Miriam)

I know the majority of the group of friends that I knew. . . . We always talked about what the change was in the school at Pinecrest. How sorry we were to see that the school had gone in this direction, whether we were gonna continue to send our children to this area; what the level of education and instruction and what the problems were. Administratively and socially and academically. (Sharon)

For both Miriam and Sharon, the boundary separating *us* from *them* was rigid. Miriam conflated the difference embodied by Kerrydale families with a lack of intelligence and academic ambition. Sharon lamented the loss of the Pinecrest she knew as a child. In this, she evokes solidarity

with peers because she attributed a range of problems to the children at Pinecrest who represented an undesirable change in the school culture. Given a choice among the group so strictly circumscribed by these two mothers, what parent would opt for such a school? The commitment they have in erecting this rigid difference reflects their rejection of the school and justifies their fierce insistence that doing so is in the best interests of their children. The new marketplace of schools provides an appealing array of alternatives in which avoidance of undesirable children can be assured. The raced and classed identities of Miriam's and Sharon's children are more likely to be maintained when such choices are considered.

The question of school quality is not restricted to Pinecrest critics like Miriam and Sharon. Even supporters of the school like Gail, Elaine, and Anne suggested that the demands of Kerrydale students diminished teachers' ability to respond to those students from Baywoods who had a higher level of skill. In the following quotation, Gail explained this predicament, but by associating the Kerrydale children with a plethora of problems. For Gail, the risk was her children's exclusion from the teacher's attention because they were simply unlikely to require as much of her time. Rhonda stated this position more forcefully; she, Heidi, and Barb made the same point, but from their critical perspective. The consequence of a teacher's distribution of her attention in such classrooms was, for these parents, a neglect of the more academically capable children like theirs. The particular status and privilege of white, middle-classness is like precious cargo on a ship threatened with hijacking. To preserve its integrity, these parents sought the utmost in its care. The safest bet is, of course, away from Pinecrest to a safer place where such considerations are obviated through self-selection of passengers.

For the classroom teacher, especially when you have a school where the program is inclusionary, you have a teacher dealing with kids whose English is not their first language and they have learning disabilities and they have emotional problems, behavioural problems. There's a lot for that teacher to cope with and I think that the kid that's just sort of sailing along, sort of doesn't get the attention.  
(Gail)

[The teacher] was stretched to the limit and she had three to five ESL kids in her class who were only taken out an hour or two a day. So, that's where I do agree with the parents. That you're asking the classroom teacher to be all things to all people and you're not providing the resources for her to do that. And is the higher level child gonna pay a price for that. Is the quality of education gonna decline? Yes. (Rhonda)

[F]rankly because of the make-up of the Pinecrest now with so many children coming from lower class area (sic). You know, from outside . . . they do have many more, like I said, ethnicities and I think it does – I'm not saying these children aren't smart because you know, they can be smart as well. But it just slows down a classroom. (Heidi)

[B]oth my kids were very bright and I don't feel they are challenged enough by all the teachers. . . . I wanted something extra for my kids. . . . And they were motivated to learn and so it would have been nice had the teachers been able to provide some enrichment. You know, either make their projects a little bit more interesting or complicated or expect more. (Barb)

Barb expected that Pinecrest teachers have lower expectations of the other students to whom they assigned less interesting projects. Her evaluation of her own children as smart, dovetails with some of the other parents' demands for enriched learning for their gifted children. (Yet her expectations were misplaced: When her son was assessed for gifted programming, Barb reported that "what they said was that in fact he wasn't quite as brilliant as I thought.") Several of the Baywoods parents believed that their children qualify as gifted students. Of the 58 children among the interviewed participants, 10 (17%) were either attending programs for gifted students or had been tested for this qualification. One was in an International Baccalaureate (IB) program at a public school. Yet provisions for their capable children were, according to these parents, precisely where Pinecrest fell short. Holme (2002) discusses parallel findings in her group of 42 parents engaged in school choice.

[M]ost of these parents believed that their children were in some sense gifted and needed an academic environment with other high-achieving kids in order to be stimulated. By equating children of color with low academic achievement, these parents are able to express their concerns about diversity not in terms of



racial or class prejudice, but in terms of concerns about the academic and social needs of their own children. (p. 195)

Similar dynamics are at work among the Baywoods parents.

I have described some participants' concerns about deteriorating quality of education, insufficient teaching to their academically strong children, and the teachers' preoccupation with ESOL (English for Speakers of Other Languages) students and students with behavioural problems. Yet supporters of the school did not share these concerns. An example of a Baywoods parent who questioned the deterioration of educational standards for their children is Diane. On the one hand, she observed that "the immigrant population moving into the school has moved the Jewish population out." Yet, she rejected the assumption of deteriorating quality of the school as demonstrated by the school board's published report of province-wide testing in grades 3 and 6. She said that she had neither proof nor knowledge of worsening conditions. She also rejected the assumption that teaching in a classroom with ESOL students necessarily held back the others.

When we started in kindergarten and I looked at the grouping in my kid's class – my son, it would have been – now, I think he had maybe five Jewish kids within that class. And there were definitely children of obvious colour and different background[s]. A number of kids where English was a second language. I spoke to the kindergarten teacher and. . . I asked her if it was ever a problem for her and she told me right up front that generally the children who came in without English before Christmas were already caught up in the classroom. And after that she didn't need the resource teacher anymore. They were able to function with the rest of the kids. And that she often found that the immigrant population's children worked a lot harder to catch up than the [Baywoods] children. So, to me, that was good enough. I didn't have any worries and it's been that way through the rest of my kids' education at Pincrest. (Diane )

Hal's experiences are similar. When asked whether ESOL disrupts the classroom at all, he responded:

No, no, it doesn't. It doesn't because, as far as my kids – like, in [daughter's] class, there were very few that needed the ESL. Very few. And the teacher just went on. You know, it's amazing. She just went on and would go to them

individually at times and then – and she even had, like, the kids, help them. Which is great. So, it wasn't really a problem. No." (Hal)

Parents like Rhonda and Barb expressed specific concerns that Pinecrest was inattentive to their children's superior academic needs. Yet when Heidi sent all three of her children to private schools, she discovered that Pinecrest had prepared them adequately for the presumably greater demands and that "none of them suffered at all." Used as a barometer for the quality of education at Pinecrest, Heidi demonstrated to herself that her fear about Pinecrest was unfounded. Ruth provided evidence that the quality of education at Pinecrest was more than adequate: after completing grade 6, her son successfully passed an international entrance exam for an elite private school in the city.

For some of these parents, the anxiety of ensuring that their children get ahead may dissipate only after their children move on to the next level of schooling and prove that their education at Pinecrest was adequate. Through their school choice and the maintenance of their children's positioning in the school marketplace, they realized that educational quality at Pinecrest was not jeopardized after all. Whether this lesson translated to a defeat of related fears is uncertain. The Baywoods parents may be wondering about the risk of reproducing their class position and their whiteness. How can they be sure that their children will seize a future through whatever educational resources are available? There is no certainty, hence the anxiety of playing the school market. A parent must do whatever she or he can to shape favourable conditions for winning. The themes of distance and of maintenance of boundaries – psychic and ideational – persist here. They are expressed in words consistent with middle-class parenting: there is equal opportunity to compete for school qualifications in a non-discriminatory marketplace patronized by individualistic consumers.

#### THE MAINTENANCE OF CLASS AND WHITENESS: SCHOOL CHOICE AND COMPETITION

Middle-classness and whiteness are maintained to effect advantage or security in otherwise insecure conditions. The public school, an effective site in which to observe such activity, is sensitive to the state's growing

accommodation to markets and the shifting of responsibility for public goods to individuals and families. White, middle-class parents' preoccupation with securing their children's future through the right education converges with the commodification of education in the form of a proliferation of private school options, private tutoring businesses, charter schools, standardized testing, tax credits for private school attendance, and the state's campaign to position schools as the place to form young citizens prepared to compete (and win) in the global marketplace. These sentiments – and the anxiety they precipitate – are expressed well here by Miriam whose observations are remarkably self-reflective and anxious.

And it's not good enough to just get a mediocre education today. It's just not good enough. It's such a competitive world and you want to give your kids the best shot. And that's why we're – we as young parents today, we're struggling because – to the point where I think we overdo it, because we don't know what to do. It's not enough! You know, we don't know [how] to do enough for our kids. We want to expose them to everything and we're afraid that if we don't expose them to everything, they're just not gonna survive. . . . It's almost a competition – you know, who can, who can give their kids the most; who can put them in the most activities; who can put them in the best schools. The more you pay, the better the school. It's a big friggin rat race. And these kids are all becoming part of it. . . . (Miriam)

As positions of educational advantage are squeezed and the bond between educational credentials and good jobs erodes, these parents struggled to maintain their children's security. The outcome of the parents' anxious deliberations is a reproduction of whiteness and middle-classness. Accomplished through the practice of race and class, the parents' remarks made no mention of either factor. Naturalization, distancing, evasiveness, and neutrality are all instantiated here. Through insisting on the difference of the Kerrydale children and the entitlement of the Baywoods' children, rewards for the latter are rendered.

A consequence of these dynamics is the manufacture of social distance between the Baywoods and Kerrydale groups. The Baywoods parents' personal experiences with children from Kerrydale were limited to casual interactions with some of their children's friends. There was

almost no personal knowledge, friendships, nor cooperation between Baywoods parents and Kerrydale parents. The Baywoods parents we interviewed had little empirical basis for their claims. Their inconsistencies are revealing. How can ESOL be an enormous problem for teachers *and* of no consequence? How can parents talk about the low calibre of students and of high test scores for the school? How can they characterize the families in Kerrydale as refugees alien to Western culture and as underemployed professionals qualified to work but dependent on welfare? The conceptualizations about the large and diverse groups they live alongside were based on presumption and little else.

Another form of this distance is the detachment from the consequences of social inequalities reproduced through the school choices of the Baywoods parents. The advantages of an elite private school education were self-evident for many of the parents. Here, two parents describe their observations of these well-resourced schools:

When [son] went to Linwood Heights, he had a whole computer lab and he loved computers . . . just the facilities are so much greater in the private schools. That's another thing that influenced us. Like, I went to Laurelgates' open house last week. They have a science lab with a laptop for every other child. I mean, I'm paying for this but it's just the advantage of, you know, of having such great facilities. (Heidi )

[W]hen you walk around, they have these amazing facilities. He would like to go there. Like, I would like to go there. It's amazing. The science labs have snakes and lizards and they have like such a rich learning environment that you could – like, in their English class they have little tables with all lamps. Like the teacher doesn't put on the fluorescent lights . . . the art room has a skylight. It's all natural light coming in. You walk around, you think, oh man, just go here, it would just make learning so much more of an experience. (Ruth)

With their abundant and valuable equipment, the attractions of the elite private school are obvious. They are a clear passage to admission to choice universities and jobs, and parents can rest assured that the student body is homogeneous in the ways that count for their children's success. Such schools market themselves in their brochures and tours for prospective students, and these Baywoods parents were predictably responsive to their appeal. It is difficult to imagine a parent who would

not be enthusiastic about such schools. It is tempting to assume that such campaigns are delivered without any question of who gets to attend them. However, privilege cannot always take its seamless reproduction for granted. Miriam, a Pinecrest critic, provided an instructive contradiction. Well aware of her peers' preference for private schools, Miriam herself chose a Jewish day school for one of her children. Yet, she anticipated the outcome of such decisions to abandon public schools for private ones. In the excerpt below, she departed from the self-evident choice for private schooling where children, like hers, would socialize only with others like themselves. Although she had accepted this option as a way of maintaining desirable social outcomes (whiteness and middle-classness), she also considered its negative implications.

[P]arents from here on in, will – private schools will be the only way of educating your children. . . . Which means that the only people attending those public schools (pause) are people that are coming from lower income families. Which is very sad. . . . [I]f our Board of Education or our government continues to not support our educational system, then those lower income children will not have the same calibre of education than – of the children that are going to private schools. (Miriam)

Miriam knew the arrangement was relational; indeed, she spoke of it as a zero-sum game. One side's gain was the other's loss. She anticipated the reproduction of social inequalities across groups and she was troubled by it although she assumed universality among parents like herself who preferred private schools. She assumed consensus about the deteriorating quality of public schools and the ultimate bifurcation of the system into private schools for the privileged classes and public schools for everyone else. But she was not speaking for all parents. She realized that low-income families were excluded from making the same choices for "the best education" and pronounces this forecast as "sad."

How may educators explain such holes in the picture of the reproduction of middle-class whiteness among the Baywoods' parents? Describing the "moral balancing act" performed by parents involved in school choice, Ball (2003, p. 66) argues that middle-class parents neither defend class segregation in schools nor ignore the impact their decisions have on reproducing social inequalities. He prefers to regard the parents

as acting “within unclear and contradictory values systems which are complexly and unevenly related to our social practices” (p. 114). In practice, middle-class parents support the principle of inclusion *and* desire their child’s success in a competitive environment. As a result, parents end up working against the principle of equality to ensure their class interests. Some research shows this very explicitly. Wells and Oakes (1998) show how middle-class parents may work in jobs related to the promotion of equity but still expect their children to get special treatment at school. Their actions can involve the thwarting of detracking programs that benefit racialized students. Middle-class parents’ values and actions conflict: one serves the conservation of distance and difference; the other serves integration and equity. Hence there is a “mass of contradictions which set pragmatism and love against principles and the impersonal standpoint” (Ball, 2003, p. 146).

#### CONCLUSION

When these parents were children, Pinecrest School was highly regarded. Several of them attested to that on the basis of personal experience. There would have been little doubt of their enrolment in an elementary school located only a few blocks from home and where they would meet all their friends. As adults, many of the parents were eager to send their own children there. However, by 2000, only 29 per cent of their children attended with their parents’ unequivocal approval; 41 per cent of them could very well have been elsewhere given their parents’ preferences.<sup>9</sup> How did the parents respond to this transformation? This article has shown how social difference is constructed and how it is excluded especially as an obstruction to their children’s academic goals. In these activities, the Baywoods parents expressed their class position and worked their class positioning to redefine their place within the school. The practice, relationality, and maintenance of their class and their whiteness present the range of their positions.

A salient theme throughout the interview data is not denial or neutrality, nor is it straightforward expression of privilege or colour-blindness. What is most striking is the distance at which the Baywoods parents stand in relation to the families from Kerrydale. They regard themselves as significantly different in most respects. I have noted how

the construction of difference serves as a rationale for critical assessments of Pinecrest School. Yet when examining this claim of difference more closely, I find a paradox emerges when comparing Baywoods and Kerrydale families. Recent immigrants to Canada, 73 per cent of whom are visible minorities (McIsaac, 2003), have higher educational attainment than Canadian-born citizens. For year 2000, Citizenship and Immigration Canada (2001, pp. 9, 27) shows that 49 per cent of principal applicants and dependants arrived in the city with Bachelors degrees or higher. The figure for Canada is 44 per cent. This advantage, however, does not translate into higher incomes nor occupational opportunities (Kazempur & Halli, 2000; Kunz, Milan, & Schetagne, 2000; Reitz, 2001).<sup>10</sup> This statistic means that the families who settle in Kerrydale are very likely middle-class as measured through (original) professional occupation and education level, but they are underemployed with low incomes.

Middle-classness is not all that Kerrydale parents share with Baywoods parents. Research shows that immigrants value education highly and regard it as essential for the social mobility of their children (Bankston & Zhou, 2002; Kao, 2002) Commonalities penetrate more deeply as well. Collective memories of immigration, residential segregation, underemployment, and discrimination are retained by Jews, too. Throughout their history, Jews have been cast as a group whose status as insider/outsider changed in relation to the meaning placed on factors like their religion, their occupations, their bodies, and even their politics, whether socialist or capitalist, because Jews are framed as symbols of both. Because of historical purges and current resentment against them, an unequivocal whiteness is difficult to attribute to the Jews. For Britzman (1998), "the idea of the Jew as 'white' in both North America and Europe is barely fifty years old" – since the Holocaust (p. 104).

Given the Jewish collective memory of oppression, something may impede some Jews' ability to extend social justice to other groups. For most Jews, whiteness facilitates their denial and distance from their own racialization. It suppresses a collective memory that could be valuable in joining with others such as those in Kerrydale in their struggles for equity. A selective withdrawal from such memories upholds commitments to individualism detached from history and biography (Simon, 2000). The consequence is that Jews hold themselves up as the image of

the self-made citizen who conquered barriers and made it. Hal identifies one consequence of this [outlook](#) in the following excerpt.

If you're Jewish, or my age, it was like my grandparents and their grandparents that immigrated. My mother was born here, my father moved here when he was two. It'd be a very similar to some of the small kids there [in Kerrydale]. My father was born in [Europe], he moved here when he was two. They didn't have anything. Were they stupid or ignorant because they spoke [a European language] and [the others] didn't? No, they worked hard and achieved something. Just like these immigrant people. But I think that's what my friends lose track of. (Hal)

Hal perceptively turns to the loss of the Jewish immigrant memory with its experiences of poverty, foreignness, and struggle. Like most of the Jewish families in Baywoods, he can only count two generations since having "made it" in Canada. He is aware that attributing Jewish success to hard work, dedication to education, and high expectations implies a detachment from the kind of conditions Jews faced, as discussed by Steinberg (1981): when and where the Jews arrived here; the opening up of universities; the need for skilled labour; benevolent societies to assist needy Jewish families; Jews' experience in fighting discrimination and with living in exile. Forgetfulness about the material and cultural forces that enabled Jewish social mobility – and distance from the current conditions of underemployment and discrimination against new immigrants – supports the differentiation that Baywoods parents make of Kerrydale children. The inclusion of Kerrydale at Pinecrest School represents an opportunity for Baywoods parents to create positive relationships, but it is an opportunity they miss due to their success at social integration, in other words, due to their whiteness and middle-classness. As a result, they engage in difference-making (practice) and in evaluating their needs relative to that of others (relationality). Finally, they are invested in the active reproduction of their raced, classed, and ethnic selfhood in the arena of school choice (maintenance). The process is as uncertain as it is compelling.



## ACKNOWLEDGEMENTS

I acknowledge the research assistance of Jessica Ringrose in obtaining these data, and to SSHRC for providing research funding. Queen's University funded the research assistance of Georgina Blanchard and Lauren Perry. Many thanks to librarian and documents unit head, Jeff Moon, for training and for assistance in the collection of data appearing in this article. Thanks also to Bonnie Stewart of the Office of Research Services.

## NOTES

<sup>1</sup> My use of the category of middle class derives from current British sociology and is discussed in the literature review section of this article. This approach may diverge from the one prevalent in Canadian research on middle-class formation, especially in social history. See for example, Darroch (1999) or Holman (2002).

<sup>2</sup> In the interest of confidentiality, I have withheld this reference.

<sup>3</sup> One document suggests (see endnote #2) that non-Jewish families preferred to send their children to private schools, presumably the elite institutions, and the Catholic schools located in the district.

<sup>4</sup> Data were not collected on socio-economic status (SES) as conventionally measured by parents' occupation, income, and educational attainment. Therefore, no formal comparison is made. The identification of SES for Canadian immigrants like those in Kerrydale is complex and influenced by such factors including as "push" and "pull" as well as settlement issues such as fluctuations in the labour market, the correspondence between job availability and immigration policy, recognition of foreign credentials, and discrimination in applying for jobs. No further effort to elaborate on the inequalities between the two groups is made in this article. For analytic purposes, my focus is on the Baywoods parents.

<sup>5</sup> Two couples participated and with one, the husband and wife were interviewed together. Most of the interviews were conducted by Jessica Ringrose, my research assistant at the time. I gratefully acknowledge Jessica's input into all phases of this project.

<sup>6</sup> This is not to suggest that rubrics of class and whiteness exhaust the meaning of identity for my participants or the dimensions that inform their choices. As others have noted, there are class, race, and gender dimensions to choice (Ball, Bowe, & Gewirtz, 1996; Dehli, 2000; Griffith & Smith, 2005). This

issue raises intersectionality as a methodological approach to the analysis of inequalities as noted in the introduction to this article.

<sup>7</sup> Some good yet diverse examples of books on white racialization are the social historical work of David Roediger (1991) and Matthew Frye Jacobson (1999), studies in English literature by Toni Morrison (1993) and Valerie Babb (1998), cultural studies by Mike Hill (2004) and Vron Ware and Les Back (2002), and George Yancy's (2004) collection of essays in philosophy.

<sup>8</sup> All names of participants are pseudonyms.

<sup>9</sup> Because the group interviewed for this project was small, I make no claims about generalizability to all the parents at Pinecrest or to other parent groups.

<sup>10</sup> There is some debate in Canadian research on reasons for this. The research cited suggests discrimination. Others, however, argue that socio-economic status is the more meaningful factor to explain persistent inequalities rather than ethnicity alone (especially when reduced to a general category). Examples of such work include Isajiw, Sev'er, and Driedger (1993), McAll (1990), and Tepperman (1975). More recently, see Liodakis (2003), and Hum and Simpson (1999).

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## *Book Reviews / Recensions*

Sandra Chafouleas, T. Chris Riley-Tillman, and George Sugai. (2007). *School-Based Behavioral Assessment: Informing Intervention and Instruction*. New York: The Guilford Press. 148 pages. ISBN: 13: 978-1-59385-494-2 (paperback).

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When teaching preservice courses in educational psychology and special education, I often ask my students about their concerns in regards to public education in Canada. Not surprisingly, the responses they give encompass such issues as including exceptional students in regular classrooms, motivating children, and improving their teaching craft. Yet, the most oft voiced matters I hear from those I teach revolve around dealing with difficult students and pupil assessment. In retrospect, I too had a similar preoccupation with both of these topics when I was completing my teacher training, and I still find myself grappling with them. Given the multi-dimensional and fast-paced nature of a typical classroom, where the capacity for one individual to monitor all the children under his or her charge is constantly tested on a near daily basis, efforts aimed at regulating student behavior are invaluable.

In *School-Based Behavioral Assessment: Informing Intervention and Instruction*, Chafouleas and her colleagues offer a cogent approach to using assessment as a means to address the academic and behavioral challenges that some children face. This practical book offers an informative over-view of the current practices used in behavioral assessment. In addition, and perhaps more importantly, it provides a thoughtful and careful analysis of how assessment data can be used to develop effective intervention programs for those with behavioral difficulties. The authors outline helpful suggestions as to what types of behavioral data are needed in various contexts, as well as the measures that should be employed. Of course, a typical question that arises at the



conclusion of data collection is what to do with all the material that has been amassed. In this regard, the text is particularly useful because it outlines easy-to-follow guidelines about how to organize and interpret assessment data, with the end goal being improved student behavior. Of course, this is important in creating a classroom climate where teachers can teach, and students can learn.

In examining *School-Based Behavioral Assessment: Informing Intervention and Instruction* with a critical eye, the research that informs this work appears sound and current. The book is logically organized, and one of its greatest strengths is its readability. Even someone unfamiliar with behavioral assessment could pick up this work, and upon completion, possess a workable understanding of the topic, including the important role it can play in improving the professional practice of teaching. Perhaps the careful and diligent manner by which the authors devote specific attention to defining even basic terms and procedures facilitates in the reading of this work. Adding to this is the final chapter of the book, in which a question and answer format is adopted. By providing copious yet simple responses to some of the most important and vexing questions that practitioners might have, the authors take what could be a complex issue, and break it down to its very base. Although this may seem like a minor point, being able to fully understand the words of a writer adds to the appreciation one has for a particular work, and thus Chafouleas, Riley-Tillman, and Sugai should be commended for producing a book that both novices and experts alike can absorb and benefit from. Adding to its overall appeal is the use of case examples throughout the discussion. These real-life scenarios, while putting a human face on the sterile issues under discussion, also serve to effectively illustrate how one might go about conducting a behavior assessment, and the procedures involved in interpreting and utilizing the collected data. A last point that is worth noting is the reproducible checklists and forms that are interspersed throughout the book. These are very valuable resources, and would certainly be most appreciated by practitioners already involved in, or considering undertaking, a behavioral assessment.

Although this book is American, the problems associated with the behavior of some students in the classroom know no boundaries.

Consequently, this work will appeal to a Canadian audience. In fact, after having read *School-Based Behavioral Assessment: Informing Intervention and Instruction*, I was left with the feeling that the ideas put forth could be readily applied in schools and classrooms in this country. Although the target audience for this book is decidedly practitioners, I also believe that there are some grounds for considering its possible use in a university or college setting. Although not an academic book per se, students enrolled in undergraduate teacher training programs, as well as those taking graduate courses in educational psychology or special education, may find it useful. In fact, this book would be a wonderful companion piece for these students in their quest for answers to such fundamental questions as what causes students to behave in certain ways, and what can teachers do about it.

In sum, *School-Based Behavioral Assessment: Informing Intervention and Instruction* is a thoughtful and informative work. Owing to the obvious importance attached to creating learning environments, where positive behavior is encouraged and fostered, and where all students may learn and reach their full potential, this book is timely, and quite pertinent. As such, it will ultimately appeal to a wide audience to include all those who may be interested or engaged in the education of children.

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Michael Scheifer with Cynthia Martiny. (2006). *Talking about Feelings and Values with Children*. Calgary, AB: Detselig Enterprises Ltd. 210 pages. ISBN: 1-155059-303-X (paperback)

Jayne Hudson, Saskatoon Public School Board, Saskatoon, Saskatchewan

The authors' stated purposes for writing this book are "to help children become good people, to help them in choosing to do the right thing." As well they want to "provide material focusing on the age group 0 to 5" and to "provide specific advice, exercises, and questions that can be used to help develop good judgment and empathy." The target audiences are educators and parents.

Although the information offered in this book is intellectually stimulating, the authors write in a style that is extremely stilted and, at times, difficult to follow. Educators could find the information helpful but many parents would get lost in the minutiae of authors and experts. As well, I am left to wonder why Skinner's ideas and quotes are so prevalent. The book reads like a textbook and the authors seem to be carrying on a philosophical debate rather than providing useful information for parents.

Part one focuses on values: definition of values and moral values, discussion on relativism and objectivity, and ideas on how to talk about values. Part two examines the "core" values of honesty, politeness, and responsibility. Part three examines what the authors describe as a caring child. Part four considers the difficult topics of marriage, divorce, separation, illness, "touching," and religion.

At times gems are found in this text. The stories to illustrate points are especially helpful as are some of the exercises that give the reader an opportunity to think through the positive and negatives of a situation. The authors provide readers a perfunctory look at history and give some interesting research findings.

Part one raises some concepts that parents will find useful in considering how to teach their children about such things as judgment and the limitations of rules. Part two poses such questions as "is stealing or cheating always wrong" or "why should we keep our promises (or should we always)." As well, the authors present an interlude that has the reader think through teaching children about there being "a time to speak and a time to be silent." In other words they invite readers to consider what "proper" behavior is. In part three the authors delve into the arena of emotions. They highlight the need for individuals to be aware of their own emotions in order to become a moral person – a person who is in control of his or her emotions and aware of the emotions of others. The particularly difficult topics included in part four are covered in a brief and cursory manner. The authors do not give these topics the care and time they deserve. Instead they have skimmed the top of each subject without developing any meaningful ways to help parents or educators address these vital issues with children.

Although educators could use this book as a source for filling the gaps other text may have created (as suggested in the introduction), the authors have missed an excellent opportunity to provide parents with the help they might need to address the vital topic of helping children become “good” and “happy” people.

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Harold Pearse. (Ed.). (2006). *From Drawing to Visual Culture: A History of Art Education in Canada*. Montreal & Kingston, ON: McGill-Queen's University Press. 304 pages. ISBN: 978-0-7735-3070-6 (hardback)

David Pariser, Art Education Department, Concordia University

To clear the decks I confess to being neither a philosopher, nor a historian. So this review is based on my perspective as an art educator with a special predilection for developmental psychology and an all-encompassing weakness for Liberal Humanism. Having made my confession – if not my penance, I can now proceed with my comments on this very useful and varied offering (among the first, according to Pearse) on the history of Canadian art education.

The book will interest a wide spectrum of readers because it offers a rich variety of topics and voices – male and female, doctrinaire and dispassionate. The reader will also be privileged to view the history of Canadian art education from the macro perspective as in Stirling's examination of some four decades of art education in Quebec and Ontario, and from up close, as in Stephenson's rich and detailed study of a half century of visual arts teaching in one Vancouver junior high school. The majority of these historical essays are dense with facts and sober in tone with little in the way of rhetorical flourish or ideological baggage. But some, such as Panayotidis' essay on art education and social reconstruction fairly bristle with suppressed indignation at the errors of the past. Equally pungent, though not as ideologically driven, is Clark's jeremiad on the failures and promises of our discipline in Ontario in the last half of the twentieth century. Pearse's introduction provides a helpful conceptual and chronological framework, within which to situate

each chapter. He identifies four relevant periods in Canadian art education: from the Colonial period until the early 1800's – during which time art education was largely a matter of apprenticeship in skills for men and refined domestic activity for women; from 1845-1900, when the arts (primarily drawing) were encouraged for practical and vocational reasons; from 1900-1937, a period when the model for art students, at whatever level, was the adult professional artist; from 1937-1956, a period which Pearse identifies with the phenomenon of "The Child as Artist." One of the clearest conceptual motifs in this history is how North American and European art education during the last half of the nineteenth century was fed by two major streams that ran parallel to each other, and that sometimes merged: industrial drawing and "academic" drawing. The one provided practical training for those eager to earn a living as draughtsmen for industry, while the other was intended to have a morally "uplifting" effect by making students articulate in the refinements of drawing, and appreciative of great European art.

Here, in brief is a summary of the contributions of the nine authors. Chalmers, Stirling, and Pearse present careful, detailed historical discussions that focus respectively on institutional, structural, and biographical material to illuminate the nature of art education in Nova Scotia, Quebec, and Ontario during a period spanning the mid-nineteenth to the mid-twentieth century. Clark presents an additional and rather pointed examination of the recent history of art education in Ontario, with special attention to the stifling effects of certain of the great universities. Panayotides examines Canadian social history from 1920 to 1950. According to Panayotidis, during this period, some artists and art educators drew on liberal humanist values to curry favor with the dominant culture and to promote crass Canadian nationalism. Lemerise and Sherman shed a special light on art education in Quebec, during a time when Modernism began to make inroads in that province's art-world. The two authors also trace the simultaneous advent in Quebec of the notion of the child as artist. Stephenson provides a richly detailed and documented investigation of art instruction at one Vancouver junior high. She covers almost 50 years in the history of the school, and presents readers with vignettes of the art teachers who worked during

this period. Zuk and Dalton's chapter on the impact of radio and television on art education in this country is a useful survey of a potentially rich topic. Given the importance of these two media in unifying Canada, it seems an excellent idea to examine the broadcast materials that have been unearthed.

Most of the authors organize their historical investigations around a thesis. Chalmers documents the fortunes of the Mechanics' Institute of Barrie Ontario in which working-class men were trained in the arts, particularly drawing. In outlining the internal and external political forces that shaped the institution, he suggests that although its overt purpose was to provide instruction in the arts, its covert purpose was to socialize and defuse the a-social and potentially disruptive potentials of the male students who might otherwise drift into debauchery and unwholesome politics.

Stirling's two closely written chapters demonstrate (among many other things) how the South Kensington System, as promoted by the Englishman Walter Smith, was propagated at the post-secondary level in Ontario and Quebec. Stirling's time frame spans the 1870s until the first decade of the twentieth century. He presents historical facts in a way that suggests interesting cause and effect connections. In one instance, Stirling notes the effects of the poor showing that British designers made in the Great Exhibition of 1851. It was widely acknowledged that British design was just not up to snuff in comparison with the offerings from the rest of Europe and especially from France. The net result was to galvanize British design education and instruction in drawing so as to assuage national pride. From this emerged the South Kensington System of instruction which took North America by storm. The Exhibition of 1851 was to British art education what Sputnik was to American science education.

Pearse looks at the period from 1900 to 1905 in three provinces, Nova Scotia, Ontario, and British Columbia, and asks: "What has changed in the teaching of art in the schools?" As a focus for this sketch he chooses three educators, each from a different province: Nova Scotia, Ontario, and British Columbia. Using archival material, Pearse shows that little has changed in how the arts are taught and supported by school systems. School boards then, as now, give lip service to the importance of the arts,

but little is done at the fiscal or structural level to recognize them as bona fide subjects. The arts are justified in the curriculum for their practical/vocational pay off – much as they were at the turn of the century. And then, as now, generalist teachers with no art background are expected to teach art to elementary level children.

Lemerise and Sherman present an in-depth look at the symbiotic relationship between the much-heralded notion of the child as artist and Modernist aesthetics that took hold in Quebec art education from the 1930s on. The authors provide a valuable service by giving readers a fine-grained view of the principal players on the Quebec art scene, (artists, critics, educators) who, while battling against the strictures of academic art, also became champions of child art. The material in this chapter functions as a companion piece to Fineberg's (1997) groundbreaking discussion of how the monumental "moderns" (e.g., Klee, Miro, Muntter, Picasso) appropriated young children's visual syntax and imagery.

Panayotides critically examines Canadian social history from 1920 to 1950 and explodes the balloon of the social reconstructionists. Much of the chapter is devoted to suggesting that the rhetoric of democracy and social reconstruction, employed by artists and other "culturati" during this period, was in fact merely a cover for their positions of social and economic privilege. This chapter suffers from the inherent contradictions that frequently come when one adopts a post-modern stance. For example: the author disdains the modern notion of "universal values" that "transcend all social and cultural differences" (p. 152). Yet, it is clear that the author does believe in gender equality because she approvingly refers to the discourse promulgated by the Women's Art Association of Canada. The efforts of these women had a "progressive" effect on a male-dominated climate, bringing to the fore feminine experience and challenging conventional notions of domesticity. Clearly, feminizing the prevailing discourse is an instance of putting in place a "universal value" and that, too, sounds like progress to me.

Stephenson's chapter on art learning in a Vancouver school from 1920 to 1950 is an excellent companion piece to the more sweeping historical panoramas offered by Chalmers, Pearse, Stirling, Lemerise, and Sherman. Here readers find a meticulous case study that illustrates

how some of the larger trends in art education trickled down to the grass roots. For me, this is one of the richest offerings in the collection because the methods used by Stephenson include historiographic research and ethnography. Readers develop a sense for the social climate of the school and the handful of art teachers who taught there. What is also evident is that the teachers rather than the curriculum ultimately determine the success or failure of the educational enterprise. Readers learn how Ms. Creedman – a study hall teacher – handled a young man who was not doing his homework, but was drawing cartoons instead. In the best pedagogical tradition, Ms. Creedman noted that this young man had a gift and instead of punishing him for lack of scholarly enthusiasm, she introduced him to the hallowed pages of the *New Yorker*. Such a move on the part of a teacher has little to do with the official curriculum and a lot more to do with the teacher's intuitive feeling for what Duckworth (1996) calls "the having of wonderful ideas" – that is, supporting ideas that arise out of a student's discoveries and enthusiasms, those things that make up key moments in a person's intellectual development. Stephens' skillful use of school-house ephemera such as yearbooks and club rosters calls to mind another art educator/historian Korzenik (1985) who made equally good use of ephemera and drawing books to tell an equally small-scale story of art in the lives of a nineteenth century New Hampshire family.

Zuk and Dalton's examination of the impact of instructional radio and television programming on arts education appears to be a first pass over virgin territory. Because the programs reached a wide swath of the population, one could document the outcome of this "natural experiment" in verbal and visual motivation. The authors present a first cut through these data and offer some preliminary observations. Many interesting discoveries doubtless await the industrious researcher. One noteworthy fact caught my attention. It turns out that when one compares the art work done in Alberta classrooms while the children listened to an art broadcast with art done in the same classrooms in the absence of a broadcast, there is a clear difference in quality – art work inspired by the radio program seems superior. If this observation holds up, it is a nice demonstration of the power of good verbal "motivation,"



a useful reminder that teachers may not always need contemporary visual aids such as DVD's and web-based images to get good results.

This book begins to fill a long-felt need for historical scholarship, but as Pearse's closing words make clear, there are plenty of lacunae in the present volume that will require further scholarship and further publications. Pearse mentions the most glaring omission: the absence of Native voices in this discussion. Omissions and all, with this publication, the history of Canadian art education comes of age.

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Glen Aikenhead. (2006). *Science Education for Everyday Life: Evidence-Based Practice*. London, ON: The Althouse Press. 176 pages. ISBN 0-920354-61-0

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Glen Aikenhead's *Science Education for Everyday Life: Evidence-Based Practice* focuses on research results of an alternative science education curriculum that treats science education as a human endeavour. He clearly defines the dichotomies of goals, values, and ideologies of the humanistic perspectives found in the science education literature. Through this humanistic perspective, Aikenhead seamlessly links incongruent perspectives that actually share common assumptions and commitments, including multicultural science education, Indigenous knowledge and dissemination, Aboriginal science, and feminist science, along with applications of science, technology, and society.

Reflecting on the debate between educational relevance of science education and its political reality, Aikenhead effectively argues the need to reexamine assumptions that govern decisions about science

instruction, curriculum, and science education research. Beginning with a historical view of the introduction to humanistic perspectives, he takes the reader through a timeline of political and cultural influences on the development of science to date. He emphasizes the distinction between pipeline and humanitarian science emerging through a comparison of “indigenous and Western science philosophy.” He pursues his argument by identifying the major factors that impact on universal implementation of a humanitarian curriculum, such as the *intended*, the *taught*, and the *learned* curriculum (p. 5). Through an extensive review of international research, Aikenhead moves the reader towards the humanitarian approach.

Chapter 3, the *intended* curriculum, unravels research that focuses on four forces around the educational reliability of a curriculum policy that supports humanistic perspectives in school science over “pipeline” science education: the failures of the traditional science curriculum; the use of science in extracurricular contexts; the cultural relevance of content; and the processes for developing curriculum policy. The *taught* curriculum, Chapter 4, highlights the innovative classroom materials that support humanistic perspectives and hook teachers’ interest and provides resources. Chapter 5, the *taught* curriculum continued, examines teachers’ orientations to a humanistic approach to science teaching. With the challenges of working with teachers who come from an empirical reductionist viewpoint, Aikenhead provides these teachers with large-scale evidence that holds promise to support their transformation to a holistic, humanistic viewpoint. The *learned* curriculum, Chapter 6, explores researched techniques for humanistic content. Supported by a myriad of research, the author focuses on student-oriented learning outcomes, motivation to learn, and the impact of a humanistic approach on their decision-making skills development.

Reinforcing the focus of humanitarian science in Chapter 7, Aikenhead reminds the reader that humanitarian science education’s goal is to develop the students’ self-identity. The dominant pipeline ideology, which Aikenhead calls “playing Fatima’s rule,” a coping strategy for immediate and not long-term outcomes, is pinned against the view of teaching and learning as cultural transmission and acquisition of science (p.107). Aikenhead effectively defends the latter

with support from decades of research showing an incompatibility between students' self-identities and their views of Western science, school science, and their science teachers. The notion of cultural border crossing is emphasized to suggest that students who feel school science is a foreign type of culture must form new self-identities to achieve the goals of the traditional science curriculum. Accordingly, students can achieve empowerment, interest, and success through what Aikenhead notes as an "emerging complex field of culture studies in science education" (p. 126). This area of research is in its infancy and raises many questions left un-answered.

In his steadfast manner, Aikenhead looks forward in his final chapter advising researchers to advance political credibility for humanistic research and political change. Here he notes that teachers are pivotal to the politics. "The complexities of teaching are now appreciated using heuristic models . . . teacher practical knowledge, educational worldview, teacher context knowledge, and culture brokering" (p. 129). Exploration in this venue will give insight into how to change a *taught* curriculum. The political credibility will be further enhanced by action research and research partnerships with stakeholders influencing policy decision making – schools, universities, and community leaders. Further, Aikenhead ends with a powerful message supported by Fensham (2004): "Educational research cannot by itself solve problems for science education. It can, however, increase our community's problem-solving capacity by sharpening our thinking, directing attention to issues, and encouraging debate" (p. 13). Thus, his quest is to invigorate researchers to humanize school science in the context of students' everyday lives.

As a former high-school science teacher and school counselor, I am an advocate of humanitarian science. Now as a professor of preservice science education, I see a very dichotomous world around me. Aikenhead has opened my mind to the world of "culture broker" as science teacher. I am uneasy defending this book because Aikenhead argues Western science education programs as totally ineffective. As with any argument, the strengths of Western science education should not be forgotten and celebrated in the development of a humanistic cultural approach to science education. Having said this, Aikenhead does highlight the challenges and risks involved in his dichotomous

approach. Further as clearly threaded throughout the book, the key to success is in understanding the students' perspective.

This timely book provides the necessary research support, encourages further research, and invites policy makers to see the need for educational change. It addresses many of the issues related to why students fail, why students drop out of science, and why student success initiatives are moving education from a curricular focus on the goals of the discipline to the goals of student achievement, efficacy, and social justice.

In just 176 pages, Aikenhead has more than 40 pages of references, years of research, and a requisite book for science education researchers, particularly teacher educators. It is an impressive, readable text that should be part of any science educator's library.

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R. Ommer with the Coasts under Stress Research Project Team. (2007). *Coasts Under Stress: Restructuring and Social-Ecological Health*. Montreal & Kingston: McGill-Queens University Press. ISBN: 0 7735 3225 0 (paperback), 592 pages.

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When I did fieldwork on educational issues in a coastal community, I had a difficult time getting people to talk about schooling without linking the discussion to the fishery and to the land (Corbett, 2007). I came to see that education cannot, and should not, be lifted out of the context of the economic, social, and natural spaces in which it is experienced. Education is not a neutral process that happens in some standardized location, for instance in the autonomous psychology of an individual head. Education is one way to look at how people living in a particular geography learn things, and indeed, how they are invited to

learn an approved roster of things in school. In the same way, the core concept of health is employed in Rosemary Ommert et al.'s *Coasts Under Stress* in a broad, multifaceted way.

Perhaps in coastal places it is easier to understand that health involves the condition of the sea, the land, the animals, and of the people. When the ocean is unhealthy, people in coastal communities suffer as the cod moratorium has so powerfully demonstrated. Along the seacoast, these diverse elements meet, quite literally, where the land meets the ocean. To say that virtually every aspect of contemporary life in coastal communities can be characterized by the term "stress" is pretty much obvious. To say that the fishery has been mismanaged historically is beyond question in most coastal communities and this working place-based knowledge represents a deep backdrop against which modern life has played out. Young people leave their communities, key natural systems are threatened, traditional industries stumble, new industries like offshore oil offer uncertain hope, and climate change foreshadows possible disaster.

A lot of discrete studies have been building a patch-work composite picture of the challenges faced by people living in coastal communities, and I would include my own work in this often disjointed collage of analysis that engages particular sub-elements of the social ecology of places adjacent to the Atlantic and Pacific oceans. Beginning with a broad definition of health, *Coasts Under Stress* is an ambitious, interdisciplinary analysis of the health of selected coastal communities in British Columbia and Newfoundland – the historic and contemporary legacy of environmental degradation and the exploitation of resource stocks associated with generations of industrial harvesting, linking these practices to corollary impact on human health, and then, ultimately offering a positive, passionately argued way forward.

The methodology employed in this project utilizes the broad expertise of a team of researchers representing the natural and social sciences. The team defines health in terms of interdependences and complex human and ecological relationships. What emerges from this analysis is a picture of enormous complexity that leads ironically to some remarkably uniform and stark results in diverse coastal communities. In these communities, the health of natural systems is threatened, often to

the point of collapse by a legacy of industrial resource exploitation and increasing concentration of the ownership of harvesting capacity. Not only is *Coasts Under Stress* a complex interdisciplinary analysis, it also combines a wide range of quantitative data with qualitative analysis that provide a narrative grounding in the lifeworld of Canadian coastal communities. Methodologically, this work is groundbreaking and it represents, in my opinion, the kind of detailed, policy relevant, multi-dimensional research that should be emerging from major inter-university projects.

The first part of the book, fairly straight-forward – “How we got here: Historical restructuring and its social-ecological legacy” – is the historical story of the fishery and forest products industries recorded in Chapters 2 to 4. Big players bought or forced small operators out of business, and the environment suffered damage that is irreparable. The relatively autonomous small operator has been forced out of these industries, or at best, pushed to the margins. Environmental and human health has suffered as a result. The cod moratorium, which shut down the core industry in the Newfoundland economy, and which resulted from years of state-supported over-fishing, illustrates the intimate connection between coordinated, highly mechanized, technologically sophisticated resource extraction and the compromised physical and emotional health of communities and individuals living in coastal places. The instructive analysis of mining in Chapter 5 shows the similarity between the extraction of non-renewable resources and the mismanagement of renewable resources. This reaches the reality that the urban core has understood diverse rural and coastal regions from the perspective as places whose meaning and value lie only in the raw materials they produce.

The second part of the book analyses the human costs of the development of industrial resource extraction and how the process has restructured not only the environmental and economic context, but also institutional evolution (e.g. health care, unemployment and population health indicators [Chapters 7 and 8], education [Chapter 11]), and lifeworlds (e.g. social capital and resilience [Chapter 9], nutrition and diet [Chapter 10]). In this section the researchers make the case that the environmental degradation documented in Part 1 is mirrored in terms of

population health and education in coastal communities. Work routines, food supplies, ways of learning through experience, or ideas of wise use have been challenged by steadily increasing (largely urban) demand for the resources that have been abundant in coastal communities for generations. The steady escalation of mechanized industrial extraction has just as steadily reduced both resource stocks and the number of people required to do the work of harvesting. The results, rather predictably, are depopulation, continued addiction to staples production, under-funded health and education systems attempting to deal with multiple restructuring induced social problems, all resulting in, "both poorer health and greater mental stress" (p. 239).

The third section of *Coasts Under Stress* addresses a series of linked solutions to the challenges identified above. Fundamentally, the solutions have to do with a) economic diversification and movement away from reliance on intensive staples exploitation; b) developing and enhancing local knowledge, resilience, and social capital already present in coastal communities; c) sensible and careful development and management of established and emerging resource industries like tidal power, aquaculture, offshore oil, and gas; d) a coordinated approach to governance of the interconnected nature of human activity and natural systems (e.g. coastal zone management). The general vision is one that positions coastal communities at the centre as legitimate places that are intrinsically valuable environments and sensitive multi-dimensional ecologies rather than as peripheral resource containers available for exploitation by urban interests.

The book points toward a new role for government, the key space in which the Coasts Under Stress team seems to find hope. Government can potentially manage competing interests and particularly the predictably morbid influences of resource policy designed in the interests of powerful corporate players whose predominantly urban share-holders have little stake in the health of coastal communities. Those who can, and who should be trusted to steer policy, are the resilient, hard-working, and resourceful people who have survived crisis after crisis and who have persevered in Canada's coastal communities in spite of the agency of the Canadian state and not because of it. This is not just an issue for coastal communities themselves, nor is it simply a rural

problem. Indeed the argument is that fisheries, forest, and mining regulation (or the lack of it) combined with the introduction of increasingly mechanized industrial harvesting technologies have created the conditions for rural degradation, depopulation, and what Ommer et al. call the "slow cataclysm" (p. 445) of both rural and urban decay. In contrast to currently ascendant neoliberal governance models that rely on ideologically driven notions that support privatization, globalization, and unfettered market forces (often employing partial, suspect, and fouled data) to guide economic and environmental policy, Ommer et al. write, "those who are most dependent on a particular local healthy ecosystem are the best bet for protecting them" (p. 441).

There is a long history of marginalization of rural, northern, and coastal communities both in Canada and beyond. This historical narrative has constructed a generic imaginary space that locates rurality on the periphery and receding into the past. By contrast, this book positions coastal communities as places that might be developed as legitimate, multi-dimensional, living spaces and as places where rural citizens are treated as knowledgeable agents who have a vested interest in acting as stewards of land and sea. Although Ommer's book is not fundamentally about education, this analysis echoes the work of place-based educators and ecopedagogues like Paul Theobald (1997), David Gruenewald and Gregory Smith (2008), and Chet Bowers (2006), who have been arguing for an approach to education that begins with place and that at the same time honours the "commons" or the non-commodified relationships that sit outside neoliberal markets.

*Coast Under Stress* is a remarkable book that will serve as a model for multidisciplinary social and natural science research that investigates thematically complex ecological problems. Canadian author Yan Martel has been sending Stephen Harper books he thinks the Prime Minister ought to read. *Coasts Under Stress* would be my choice for Harper. Ommer and the Coasts Under Stress team have put together a complex, profound, carefully rendered, scholarly, yet passionate book that ought to be read by academics, policy analysts, politicians, and anyone concerned with those resilient and bountiful places where the land meets the sea.



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*Revised September 30, 2005*

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Révisé le 30 septembre 2005