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**REVUE
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**Identity and Culture Shock:
Aboriginal children and schooling in Australia**
GISELA KAPLAN & ANNE-KATRIN ECKERMANN

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Experiencing the New Geography in East Germany
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**Gender Relations Among Teachers:
A study of Ontario teachers in the 1930s**
CECILIA REYNOLDS & HARRY SMALLER

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EDITORIAL

ADDRESSING DIVERSITY, CHANGE, AND GENDER IN THE CLASSROOM

Most of us, since childhood, have been fascinated by stories about the Aboriginal, or native, peoples of Australia. Even so, few of us could envision the difficulties experienced by Aboriginal children as they enter the "white man's" school, unless we have made ourselves familiar with the education of Canada's own native population. Kaplan and Eckermann describe a fascinating study of Aboriginal children and the degree to which they experience identity problems and culture shock. It is an interesting parallel to North America's misunderstandings about the education of Native American children.

Equally as interesting is a study done by Mai and Burpee about the teaching of the "new geography" in East Germany. In some ways, Canadian educators may see some of their own future problems in keeping geography current as Canada, and especially Quebec, experience population shifts, socio-political changes, and, perhaps, even border shifts. East Germany, having experienced reunification with West Germany, provides a model for us as to problems to anticipate when textbook material must be adapted to many socio-political modifications.

A study conducted by Reynolds and Smaller on gender relations among Ontario teachers in the era of the 1930s gives us a picture of just how differently men and women teachers were treated, both salary-wise and socially. The study uses much "public material", such as newspaper items and school board records, to demonstrate what can now be clearly seen as discriminatory practices in terms of how men and women were recognized for their contributions to education.

Prof. Ivie applies the use of metaphors to the teaching of critical thinking. He has built his ideas on some of the current writings of people such as Joseph Campbell to show just how powerful metaphors

can be, and how much they shape an individual's critical thinking ability when these metaphors, or paradigms, dominate society's principal way of interpreting the world.

In the section, Reports from the Field, Prof. Duquette reports on a field study conducted with associate teachers and student teachers relative to their perceptions about the benefits of a professional development program – one that is considered a matter of partnership between the two groups.

The second report, written by Prof. Gurney, describes a project regarding the use of computers in the teaching of mathematics at a grade nine level. In summary, the report seems to indicate that gender may play a factor in some of the differences found.

W.M.T.

IDENTITY AND CULTURE SHOCK: ABORIGINAL CHILDREN AND SCHOOLING IN AUSTRALIA*

GISELA KAPLAN *University of New England (Australia)*

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ABSTRACT. This paper is based on funded research into socialization patterns of Aboriginal children and their transition from an all-Aboriginal preschool to a white primary school. Aboriginal children experience substantial difficulties in white schools and tend to drop out early. Research so far has shown that explanations of individual deficits, which are often alleged in the literature, are not the cause for dropping out. Rather, Aboriginal children suffer from severe culture shock when turned over to white schools, as a consequence of subtle but significant differences between Aboriginal and white socialization of children, even within the same town.

RÉSUMÉ. Cet article rend compte de recherches subventionnées portant sur les schémas de socialisation des enfants autochtones et sur leur passage d'un milieu préscolaire entièrement autochtone à l'école primaire blanche. Les enfants autochtones éprouvent de grandes difficultés dans les écoles blanches, d'où leur tendance au décrochage. Les recherches menées jusqu'à présent ont démontré que les déficits individuels auxquels ce phénomène est souvent attribué dans les publications ne sont pas la cause du décrochage scolaire. Cette tendance est plutôt due au choc culturel profond que les enfants autochtones subissent lorsqu'ils commencent à fréquenter l'école blanche, du fait des différences subtiles mais importantes qui distinguent les modes de socialisation des autochtones et des blancs au sein même d'une localité.

Australia has a persistent problem in living effectively with its indigenous populations of Aboriginal people. A high percentage of Aboriginal people are regarded as "problematic" within the context of the dominant white culture. In the interface of black and white Australian everyday life the assumptions made by white Australians about black Australians are based on deficiency models, either of a medical, scien-

*The original version of this paper was presented at the International Sociology Congress, Bielefeld, Germany, 19-22 July, 1994.

tific, or socio-psychological kind. This study is concerned with an examination of these deficiency models, not from the point of view of the white majority but from the point of view of the socialization of Aboriginal children and their experience once in contact with white school environments.

STAGES OF ABORIGINAL AND GOVERNMENTAL RELATIONS

To understand the nature of the relationship that exists between the Aboriginal people and white Australians, it is necessary to understand something of the history of indigenous people since colonization. Until the 1930s, Aboriginal people were segregated and "protected" on government reserves and missions under the Native Title Protection Acts enacted by each state government to "train", "civilize", "uplift", and "Christianize" the "Natives" (Reynolds, 1989; Rowley, 1971).

Assimilation became the unspoken policy (to be enacted in 1951) when in 1939 the then Minister of the Interior, T. McEwan, stated:

... The final object of the Government in its concern for these native people should be the raising of their status so as to entitle them by right, and by qualification to the ordinary rights of citizenship, and enable them to share with us the opportunities that are available in their own native land. (quoted in Rogers, 1973, p. 11)

Despite the sentiments and a clear recognition of "native lands", the 1930s and beyond saw an increase in the levels of control and subjugation of Aboriginal people. This was the period when self-supporting, independent Aboriginal people, who had escaped the influence of reserves under the policy that "training", by segregation and in isolation, was necessary before Aboriginal people could be admitted to citizenship and "equal opportunity" (Rowley, 1971; Quinlan, 1983). It was also the time when Aboriginal children were excluded from mainstream schools and forced to attend segregated, poorly staffed, and ill-equipped "black" schools, a policy which continued well in to the 1940s and 1950s (Eckermann et al., 1994; Harris, 1976).

In 1951 the Assimilation Policy became very clearly defined. It stated

... that all Aborigines shall attain the same manner of living as other Australians, enjoying the same rights and privileges, accepting the same responsibilities, observing the same customs and being influenced by the same beliefs, hopes and loyalties. (Lippmann, 1992, p. 38)

In reality, the policy continued the framework of protection and segregation because states continued to produce specific legislation to con-

trol, restrict, and dehumanize Aboriginal people. Thus the Northern Territory Welfare and Wards' Employment Ordinance (1953)

... made Aborigines wards of government, on the basis that they were so declared by the administration because of: (1) their manner of living; (2) their inability without assistance to manage their affairs; (3) their standard of social habit and behaviour; [and] (4) their personal associations. (Lippmann, 1992, p. 39)

Similar control was built into Native Welfare and Aboriginal and Islander Advancement Acts in Queensland (McCorquodale, 1987) throughout the 1950s, 1960s, and up to 1975, despite quite major federal government policy changes.

This latter period of assimilation saw Aboriginal children entering mainstream schools; it was also marked by the deficit model of education which squarely placed the "blame" for poor educational attainments of children from minorities on their socialization, family patterns, cultural traditions, and socio-economic situation (Eckermann & Kerr, 1979; Ryan, 1976). The influence of this educational model continues to plague Aboriginal education, teachers' philosophies, and teaching strategies (Eckermann, 1982, 1985, 1987).

In 1967 a national referendum gave the federal government power to legislate in Aboriginal affairs (1). In the same year (1967) government policy in relation to Aboriginal affairs changed to *integration*. In 1972 the prevailing view adopted by the Labour Government under Whitlam is best described as *self-determination*, only to be changed to *self-management* once the Liberal Party under Malcolm Fraser came to power in 1975. The dominant direction of self-management has not changed to this day under two consecutive Labour prime ministers, Bob Hawke and Paul Keating.

de Hoog and Sherwood (1979) distinguish these phases in Aboriginal affairs as follows:

Integration puts an emphasis on positive relations between the Aboriginal and white community, while recognizing that Aboriginal people may have different needs and aspirations in some aspects of their lives.

Self Determination takes these different needs and aspirations further, literally meaning that Aboriginal people should have the right to choose their own destiny, with Government help in an enabling role, providing finance, technical skills, and social and economic support.

Self Management, which is the current Federal policy, has somewhat similar stated aims, but stresses that Aboriginal groups must be held accountable for their decisions and management of finance. (pp. 30-31)

In principle, then, self-determination and now self-management should enable Aboriginal people to decide their own fate, and to make their choice of lifestyle, economic pursuit, political allegiance, cultural patterns whether they be "mainstream" Australian, "traditional", or a blending of both. In practice this continues to be difficult, given that when self-determination and self-management became the driving force in Aboriginal affairs almost 25% of all Aboriginal adults (over 15 years of age) had never attended school, and 40% had attended only primary school, while less than 2% actually attended Year 10 (Commission of Inquiry into Poverty, 1976, p. 10).

EDUCATION AND ABORIGINALITY

Although some progress has been made, the pattern of under-education persists, as Hughes points out in the National Aboriginal Education Policy:

... in the compulsory school years, 1 in 8 Aboriginal children aged 5 to 9 do not go to school or pre-school, and for those aged 10-15 years an appalling 1 in 6 do not have access to appropriate schooling. Moreover, access to and participation in education for Aborigines beyond the age of 15, whether in senior secondary school, technical and further education or higher education, remains at unacceptable low levels generally at rates some 3 to 5 times lower than for the community as a whole. (National Aboriginal Education Policy, 1989, p. 7)

Thus continuing assimilationist pressures tend to question and often abuse Aboriginal identity and cultural integrity (Eckermann, 1988). Together with a host of prejudices, they tug at the very value ascribed to their culture and in their "looking-glass self" (Cooley, 1956). These processes in turn lead to cultural insecurity and, at a personal level, often to severe stress and anxiety. Several writers (Eckermann et al., 1994; Kamien, 1975; Lickiss, 1971; Mitchell, 1978) have indicated that a substantial number of Aboriginal people, at least a third but often more, were and are affected by shyness, continual worry, xenophobia, and inadequacy as measured by the *Modified Cornell Medical Index Protocol* (Eckermann, 1988).

Among the many prejudices held, just one aspect is singled out here. This is concerned with the conceptualization and construction of aboriginality. There is a persistent assumption that there are "real" and "non-real" Aborigines. The "real" Aboriginal people are those who live their traditional-oriented lifestyle somewhere "out bush". The "non-real" ones are those who live in urban or rural situations. According to the 1991 census, by far the majority is in the latter category. White

perceptions of these groups tend to be that they have lost their indigenous culture and, often, that they are maladapted to white culture (Beckett, 1964; Inglis, 1964). A sense of loss of culture also permeates Aboriginal writing. Hence Colin Johnson argued in 1985:

I believe that we should *recapture* our history and culture . . . and if we do not do this, what shall we have? Culture is built on the faith of a people and the history of a people. [authors' emphasis]

However, a sense of culture loss does not necessarily mean and cannot be equated with the concept of a cultural *vacuum* (Eckermann, 1988). Some traditional practices may be defunct, and white settlement has been an undeniably destructive force of Aboriginal culture (Bryant, 1982), but does this mean that rural or urban Aboriginal groups now have *no* culture?

Ironically, while asking this question, Australia has been "aboriginalified" in many ways. Even at a time when Aboriginal people in Australia were thoroughly disenfranchised and muted, their culture seeped through to the Australian consciousness and, in many ways, has attained symbolic stature for white Australian culture in general. The most distinctive Australian culture symbols overseas are Aboriginal. Many of these today are practised by contemporary Aboriginal groups. Skills and knowledge are transferred from generation to generation, not just via art and dance but through the transmission of folklore. There is a body of knowledge that Aboriginal people share – one facet of it is the knowledge of their suffering since white settlement, the other has to do with the transmission of positive values. As Kerry Giles, an Aboriginal painter, put it: "Paintings are not just pretty pictures on the wall they are identity" (Giles, 1994). Both of those elements have helped to strengthen identity, have led to a politicization of Aboriginal thinking and, amidst personal life tragedies, they have fostered a new sense of pride. Consequently, it is not a matter of concluding that rural or urban Aboriginal groups live in a cultural vacuum but to focus attention on an analysis of their cultural transmission process.

The premise of the authors before commencing this study, then, was that rural and urban Aboriginal culture(s) is/are complex and intricate. By focusing on processes which strengthen particular values and beliefs, it is the authors' hope to identify how and why Aboriginal adults encourage and discourage particular behaviour patterns; and, further, how these may clash with the cultural patterns characteristic of mainstream society and, particularly, schools.

THE ABORIGINAL PRESCHOOL IN AUSTRALIA

From the turn of the century onwards the segregationist policies *ab ovo* implied that Aboriginal children would be educated separately from the Australian mainstream. It is doubtful, however, whether the schooling received in reserves and missions can be classified as "education". While attendance was in theory compulsory, these rules were never strictly enforced and many Aboriginal children (well into the 1970s) never received any education at all. Many only attended classes for four years. The standard and circumstances of educational delivery in those "schools" are by and large best described as appalling: overcrowded classes, containing children of all age groups; teachers who would stay for brief periods only; and a lack of adequate educational materials and of even rudimentary educational tools. In the 1970s, the Save the Children Fund intervened and began to open and run educational facilities for Aboriginal communities. The Save the Children Fund is a nonindigenous organization, and it retained control of these preschools until 1989 when it gradually handed over control to Aboriginal management committees. This pattern has also characterized the preschool at which this study has been conducted.

THE PROJECT: CULTURE AND EDUCATION

Perhaps in no other area are social and cultural values displayed so openly and so meticulously reinforced as they are in the education and care of children. This study, still in progress, concerns parental attitudes toward the behaviour of children in two clearly identifiable sets of behaviours, judged either as "acceptable" or as "unacceptable". Disciplines relevant to the study of socialization, by and large, have taken their models for assessment of acceptable and unacceptable behaviours from the dominant culture. Unwittingly or knowingly, these models may have prejudged indigenous culture in ways that may have led to an acceptance of standards of child psychopathology not relevant to Aboriginal people, even though those standards are applied uniformly.

Recognition of the need for a cross-cultural approach has motivated some investigators (e.g., Weisz et al., 1988) to study child behaviour across ethnic and national boundaries. So far, studies by several teams have investigated socialization patterns in the Netherlands and in West Germany (Achenbach, Verhulst, Baron, & Avenhuis, 1987; Achenbach, Verhulst, Baron, & Althaus, 1987), in Thailand (Weisz et al., 1988), and in Jamaica and the United States (Lambert et al., 1989, 1990).

These studies have indicated that the prevailing values of society may lead adults to discourage certain kinds of child behaviour while condoning or facilitating other behaviour. For instance, Jamaican culture, predominately Afro-British in its traditions, is strongly committed to nonaggression in child behaviour. Jamaican adults are quite intolerant of "rude", i.e., aggressive, abusive, or disrespectful behaviour in their children (Clarke, 1957; Cohen, 1956; Lambert et al., 1989; Winkle, 1961). Children are admonished against being "rude" and risking punishment (Kerr, 1963). If Jamaican culture discourages aggression and other similar externalized forms of behaviour in children, Jamaican youngsters may develop internalized problems instead. The studies by Lambert et al. (1989, 1990) confirm this hypothesis. Thus cultures may differ with respect to behaviour type, with certain types of child problem behaviour arousing greater concern in some cultures than in others (Weisz et al., 1988).

METHODOLOGY

Minimbah, an Aboriginal preschool in a university town in New South Wales, was chosen as the site for conducting the present study. The town has a population of about 20,000 swelled in number by university students during the academic year. The Aboriginal population is about 1200. From 1963 to 1989 Minimbah Preschool was funded and run by the Save the Children Fund with its stated purpose being that of improving the educational opportunities for Aboriginal children who lived in the adjacent Aboriginal reserve. The preschool was at first directed by a non-Aboriginal teacher and Aboriginal "assistants". In 1989, however, the school was handed over to an Aboriginal Management Committee, which appointed an Aboriginal specialist in early childhood education as the school's first director. The staff employed at Minimbah consists of one Aboriginal teacher and five Aboriginal education workers, and additional support staff, such as administrative assistant, handyman, and nutritional worker. Part-time non-Aboriginal staff is occasionally employed for specific purposes. Hence, when this study began in early 1992, the school had been operating as a self-managed, Aboriginal educational facility for three years. Currently, the school serves seventy Aboriginal children. Parents are integral to the school's operations and they serve on committees, participate in school activities, and take part in community oriented in-services and workshops.

This study focuses on the Aboriginal children, of both sexes, aged 3 to 5 years, attending Minimbah Aboriginal Preschool. The purpose of this

study is to facilitate the understanding of culturally acceptable and nonacceptable behaviour in this age group. Previous research (Eckermann, 1977, 1980) indicates that Aboriginal parents clearly distinguish phases in child development and attach quite different expectations of child behaviour to each phase, which they support with varying levels of suppression of facilitation and varying levels of adult distress thresholds.

Minimbah provides a unique opportunity to explore with teachers and parents Aboriginal cultural transmission because the school caters to Aboriginal children, many of whom are growing up in the all-Aboriginal environment of the local reserve; because staff at the preschool are predominantly Aboriginal; and because the school is under the control of an Aboriginal Management Committee. Consequently children attending this school are at an age and in an environment which does not include substantial exposure to non-Aboriginal expectations of behaviour and socialization.

Indeed, Minimbah can be described as an Aboriginal "culturally safe" environment. Thus this environment was chosen because it is culturally safe and it was done with the full collaboration of its director and parents. "Cultural safety" is achieved when the reality of the child is acknowledged and teachers reflect back to the children. Eckermann et al. (1994) adapted the concept of cultural safety from Ramsden (1994) and have argued that:

Cultural safety . . . is the need to be recognized within the [education] system and to be assured that the system reflects something of you, your culture, your language, your customs, attitudes, belief and preferred ways of doing things. (Eckermann et al., 1994, p. 215)

Progressively, over the past 10-15 years, educators have come to realize that a cultural difference model of education must also meet the cognitive differences which children bring to the classroom (Christie et al., 1987; Harris & Malin, 1994). Such cognitive differences are based in culture and formed, in the first instance, by primary socialization (Eckermann, 1994). Consequently, if we are to understand the preferred ways in which children learn, interact, are motivated and communicate, then we, as teachers, must understand much more about the socialization practices which predispose children towards such preferences.

Over the past three years the approach used in this study has been that of filming groups of children at the school for a minimum of one week at various points of their activities. These "uncut" videos are then

reviewed to pin-point particular segments of interactions which could well be considered "unacceptable" within the mainstream system. These segments are then edited out and reviewed in workshop sessions to determine whether actions are really "unacceptable" in terms of the Aboriginal parents' and teachers' perceptions. If they are, we explore how they would go about modifying such behaviours. If they are not considered problematic, we discuss why we believe they might be considered to be so within a non-Aboriginal setting.

In 1994 we had the opportunity to follow some of the children into mainstream schools and to observe all interactions over at least one week to cover various aspects of their activities. These data await analysis. Discussions with teachers will highlight how children "fit" into mainstream activities and to what extent they may be subject to culture shock and its implications (e.g., withdrawal, aggression, avoidance).

It has been argued elsewhere (Eckermann et al., 1993) that film is an extremely useful tool in studying children's behaviour. At the moment we are focusing on "non-acceptable" behaviours because these will cause the children problems in mainstream schools. The majority of behaviours which have been recorded so far are, however, extraordinarily supportive. We will review the original videos again and again and discuss with Aboriginal parents and teachers the values, traditions, and beliefs which underlie such behaviours, how they are reinforced in the home, and how they may be built upon with the mainstream education system. Further, the videos provide a rich source of comparison between Aboriginal and non-Aboriginal teaching styles. We believe that non-Aboriginal teachers can learn much from the culturally safe practices observed at Minimbah.

DISCUSSION: THE INFLUENCE OF CULTURE SHOCK

Our work so far has convinced us that one of the major stumbling blocks in many Aboriginal children's successful participation and achievement in education is intensive and prolonged culture shock engendered by conflict between the values, traditions, language, customs, and routines of their homes and those of mainstream schools (Eckermann, 1994).

In our observations within the Aboriginal environment we have seen none of that "excessive shyness" and poor attendance that appears to characterize Aboriginal student behaviour in white classrooms (McInerny, 1991). Our work to date indicates that within a culturally

safe environment, Aboriginal children's behaviour is characterized by (1) boisterous physical activity, (2) boisterous, noisy use of Aboriginal rather than standard English, (3) physical touching, sharing, and cuddling, (4) teasing and mild physical aggression between same sex peers and relatives, (5) expectations of touching and cuddling from adults, (6) withdrawal from an interaction which has become boring or stressful by simply walking away, and (7) noncompliance with adult instructions unless the child wishes to comply.

These behaviours are not considered rude or dangerous or distracting – they are simply judged by parents and teachers to be appropriate within the framework of children's rights for that particular age group. Such rights are, however, culturally defined and concomitant behaviour may be quite unacceptable within mainstream education. When children experience censure for behaviour which is acceptable within their own community they are exposed to culture shock.

Culture shock occurs when "well established habits no longer have expected consequences" (Bochner, 1982, p. 17). It is that feeling of uneasiness, anxiety, and stress which arises when suddenly all our familiar cues, language, interpersonal relationships, tastes, and actions appear to be out of place, suspect, or even inappropriate and we must reassess our behaviours in the light of foreign expectations.

It could perhaps be argued that all children experience a measure of culture shock when they enter school. Eckermann (1994) has argued that those who share most, in terms of language, values, and experience, with the established school environment are likely to adjust most quickly and find learning in such an environment most rewarding. However, those children who share least with the environment of the school are likely to experience acute and prolonged culture shock which will inevitably influence the development and expression of their abilities and their enjoyment of the learning process.

Teachers are quite aware of the emotional trauma and economic plight of refugee children and their parents and the need to support them emotionally during this period of rapid adjustment that is complicated by a traumatic history of war and disruption (Eckermann, 1994). However, children belonging to less recent arrivals, second generation immigrant children who have grown up predominantly within their own cultural group, or those who belong to minorities which are not highly valued in Australian society, e.g., Aboriginal children, suffer significant, and frequently prolonged, culture shock. These children are also

transformed from being valued, knowledgeable, and acceptable members of their communities to "novices" within the new environment.

Brink and Saunders (1976) identify five major stressors that create culture shock when minority group members experience hospitalization. We would argue that the same stressors operate when Aboriginal children and their parents come into contact with the white school system. Figure 1 illustrates the stressors and their interrelationships. We have summarized Brink and Saunders' (1976) analysis of factors characteristic of the five cross-cultural stressors within institutions, such as schools, and have supplemented these by indicating the concerns and reactions of Aboriginal children and parents.

Figure 1 shows that the five major stressors of culture shock are: mechanical differences, patterns of communication, attitudes and beliefs, customs, and isolation. Let us consider each of these briefly in turn.

MECHANICAL DIFFERENCES

The physical environment of the school as well as the routines, technology, and patterns of movement are developed to ensure smooth organization and appropriate facilities for children as well as teachers. These routines and the associated constraints of movement, expression, and behaviour are culturally determined. While most Anglo-Australian children and parents are socialized to expect such routines, Aboriginal children may find them to be intolerably constraining. This is particularly so when, in an Aboriginal environment, children are thought to have particular rights, e.g., the right not to listen to directives or the right to withdraw from activities. Mechanical differences become particularly confusing when prevailing patterns and kinds of communication are foreign.

COMMUNICATION

All schools endeavour to enhance communication between teachers and students, as well as between students and students, by helping children to acquire the necessary language skills as quickly as possible. This need is as important for Aboriginal children, who speak English as a second dialect, as it is for any immigrant children. Further, research generally acknowledges that such skills are best acquired by building on the strengths of the children's first language. Communication, however, includes more than spoken or written language. It encompasses

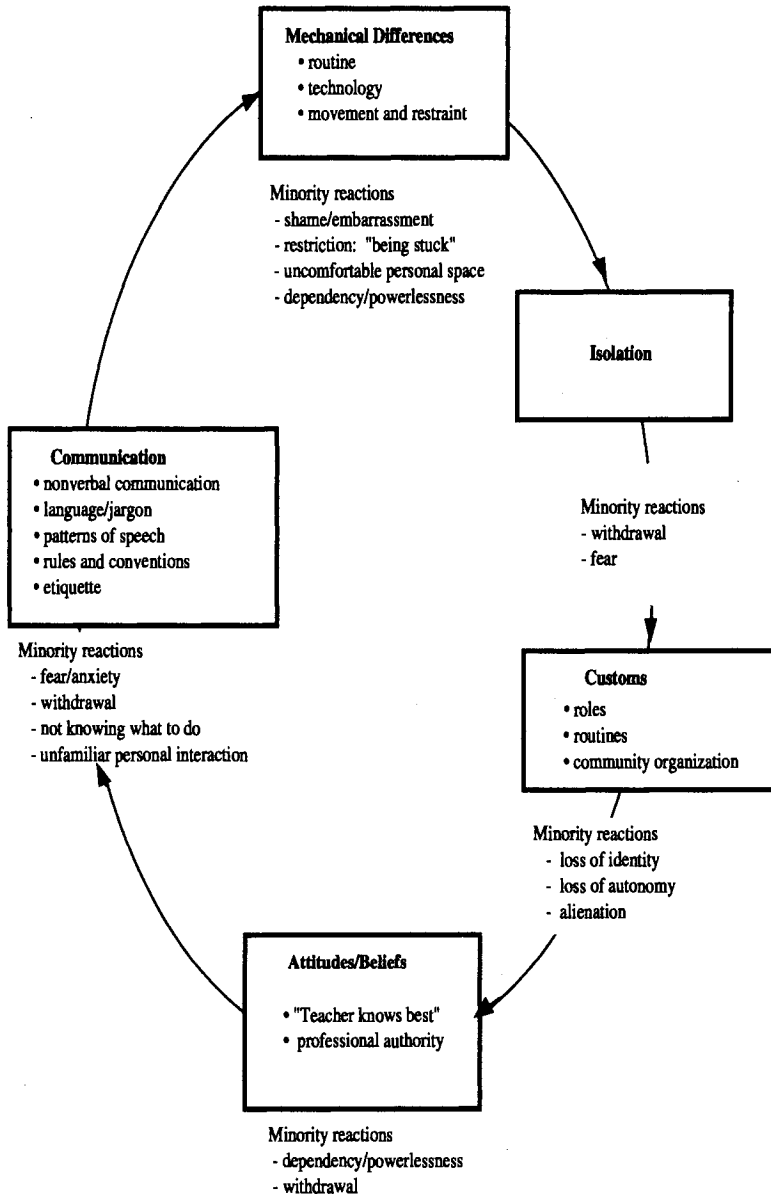


FIGURE 1. The five major stressors of culture shock and their possible implications for nurses in remote Aboriginal communities (Eckermann, 1994; adapted from Eckermann et al., 1994)

nonverbal communication, the rules and conventions of how we interact and with whom, as well as etiquette.

Clearly these unspoken aspects of communication vary significantly between Aboriginal and non-Aboriginal cultures (Eades, 1991). They are extremely subtle. Consequently transgression is easy, and because these unspoken aspects of communication are so closely tied to values about what is acceptable behaviour and what is not, transgression, even unintentional transgression, can cause serious offense. Our data indicate that Aboriginal English is frequently difficult to understand, and consequently often interpreted as "broken" English, which gives this language low status. Further, nonverbal communications are frequently "missed" and when cues are misinterpreted, children are often confused.

ATTITUDES AND BELIEFS

In order to function, schools, like any other institutions, must establish and pursue strong lines of professional authority. Inherent in any school system are also prevailing attitudes and beliefs about how children learn, what they should learn, and in what way learning experiences should be structured. Such attitudes and beliefs are translated into school policies and classroom organization, as well as philosophies of teaching and learning, which are definitely grounded in Anglo-Australian traditions. The persistence with which school attitudes and beliefs are maintained and the extent to which schools fail to take note of the varying attitudes and beliefs of parents and children will create conflict. Within such conflict, participants operate from different power positions (Eckermann, 1994). Parents and children, particularly those with communication difficulties and from a nonvalued Aboriginal background, are dependent on schools. Their only option of registering protest is to withdraw.

CUSTOMS

Based on evolved patterns of communication, attitudes, and beliefs, schools operate within a framework of established customs. As Brink and Saunders (1976) point out:

Customary, expected and/or anticipated patterns of behaviour differ between . . . [school] and home and must be learned. Although this stressor is directly related to the system of communication, the entire concept of reciprocal role relationships enters in. In particular, sex-linked roles and relationships must be established in the new setting.

New roles and systems of etiquette are often implicit rules of behaviour rather than explicit. Class and status, . . . kinship networks, and indeed the entire social structure, need to be understood to determine where one fits within the framework. (p. 129)

Thus customary peer behaviour among Aboriginal children may be interpreted as aggression by non-Aboriginal children and teachers.

The stressors discussed above combine to create the enormously frightening barrier of isolation.

ISOLATION

Parents and children who find it difficult to communicate, who feel alienated from a system whose rules and conventions they do not understand, and who are unfamiliar with the routines, expectations, and language of the institution, will be affected by a feeling of isolation, a feeling that little or nothing in the environment is a reflection of self, or of the familiar and known. Brink and Saunders (1976) state that:

In addition to the isolation experienced in relation to the communication barrier, there remains the sense of isolation inherent in any situation totally populated by strangers. When an individual enters the field alone, or even with such significant others as spouse or nuclear family, the friendlessness and non-relatedness to the immediate population is apparent. The distance between self and significant others is magnified and/or distorted. . . . Making friends, becoming important or relevant to someone in the new situation is a time-consuming, often lonely task. (p. 128)

This becomes a particularly important stressor for Minimbah children when they move from a predominantly Aboriginal environment to mainstream schools where they become part of a minority.

We already know from the literature that in culturally safe environments children are healthier, more adventurous, and productive because, to use a jargon term, their identity has been validated. At Minimbah, Aboriginal children are taught largely by Aboriginal teachers, and their parents also come in and assist in the running of the preschool. Although strategies exist to cushion some of the effects of culture shock by creating a warm, safe, supportive environment, by making use of specialist teachers, and by encouraging community participation, the whole process of culture shock and the level of not just intellectual but also emotional adaptation, which this requires from even very young children, needs to be addressed much more rigorously and systematically. Most of all, its impact on urban and rural Aboriginal

children needs to be carefully analyzed. Culture shock and its related stress and anxiety may well be one of the major factors inhibiting Aboriginal children's ability to achieve in the school situation. It may also be the catalyst for "unacceptable" behaviours within mainstream schools.

Tatz (1979) suggested fifteen years ago that "voluntary separatism" may be a precondition for acceptance by non-Aboriginal Australia. We like to turn his argument around and say that "voluntary separatism" in the educational field is perhaps the most promising road to take to enable the future generations of Aboriginal Australians to gain and maintain a positive identity. Positive identity of Aboriginality may be held by a large number of Aboriginal people but it is often sorely tested in everyday life.

Although our study is still in progress, it is clear that whatever problems occur later in the students' school careers are not comfortably attributable to individuals. This is not an issue of individuals or of a whole group of people being unable to achieve. We know that Aboriginal students are not nearly represented well enough in the educational system, but we also know that up to now little effort has been made across the continent to create culturally safe environments for Aboriginal children. Conforming to white school also means conforming to its prejudices, and no one can seriously doubt that conformity based on such a premise does not augur well for individual development and identity formation.

NOTE

1. For the first time (1967) legislation enabled Aboriginal people to be counted in a national census. In a sense, this was a hallmark year. It is still at times falsely claimed in Australian popular discourse that Aboriginal people became Australian citizens at that time. This is a misconception. Aboriginal people were British subjects since Lord Glenelg decreed so in 1836. However, this fact tended to be conveniently forgotten and the decree was ineffectual. Many restrictions were placed on Aboriginal people which effectively denied citizenship rights. To name just a few examples, Aboriginal people could not give evidence in court; their customs, language, and values were not recognized; and they were unable to vote. In practice, they were treated and regarded as part of the flora and fauna. For a select few, it was always possible to gain so-called "exemption papers" from the 1930s onward. In New South Wales this practice stopped around 1961-2 but continued operating in Queensland, for instance, right up to the early 1970s. Exemption papers, jokingly called "dog's licenses" by Aboriginal activists, officially bestowed citizenship rights to individuals, be this for specific services (such as serving in the army during the world wars) or by recommendation from "reputable" white Australians, but these citizenship rights were not transferable to members of the family and offspring. The population of Aborigines continued to decline largely through diseases, stress, and also through white homicides. From the estimated one million Aboriginal people living in Australia at the time of the first white settlement in 1788, the Aboriginal population had plummeted to about 70,000 by the late 1800s and these conditions gave the justification for rounding up Aborigines

in reserves. These "protection laws", while varying from state to state, operated well into the 1950s. As said before, in 1951 the first concerted effort was made to regard Aborigines not as fragmented splinter groups but as one people. Policy decisions, reflecting this change, were initiated by the various State Ministers of Aboriginal Affairs in joint meetings in Darwin. Hence, these policies were borne out of discussions of the states and were not a matter for the federal government to decide. The National Referendum of 1967 was sought by the government in order to effect constitutional changes. Eleven questions were asked, two of them referring to the Aboriginal people. According to the constitution, Aboriginal groups were not permitted to be counted in the national census and the federal government was not allowed to legislate on Aboriginal affairs. The two questions relating to Aborigines were therefore concerned with seeking permission from the non-indigenous people of Australia to take over legislative functions for Aborigines from the states. Both were granted. Especially in the 1960s, but even before that, Aboriginal people began to mobilize politically. In a combined effort, Aboriginal organization and non-Aboriginal organization sympathetic to the plight of Aborigines achieved this victory in 1967.

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EXPERIENCING THE NEW GEOGRAPHY IN EAST GERMANY

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ABSTRACT. Following reunification in 1989, East German schools underwent a complete reorganization based on the West German model. This dramatically affected curriculum guidelines and teaching materials. According to a series of structured interviews with geography teachers in several East Saxony schools, it was found that reaction to these far-reaching changes has been mixed. Classroom management has become more difficult. More importantly the study reveals a wide discrepancy between East and West schools in the emphasis given to geography – the East focusing on physical geography and the West on social issues and values problem-solving. Although making considerable efforts to adjust, East German geography teachers face an understandable disorientation and express irritation at some of the changes they have been forced to make.

RÉSUMÉ. À la suite de la réunification des deux Allemagnes en 1989, les écoles de l'Allemagne de l'Est ont été intégralement réorganisées selon le modèle ouest-allemand. Cette réorganisation a profondément modifié les lignes directrices visant les programmes d'études et les matériels didactiques. Grâce à une série d'entrevues structurées avec des professeurs de géographie de plusieurs écoles de Saxe orientale, on a constaté que ces modifications profondes ont suscité des réactions mitigées. La gestion de la classe est devenue plus difficile. Fait plus important, l'étude a fait ressortir une différence profonde entre les écoles de l'Est et de l'Ouest en ce qui a trait à l'importance accordée à la géographie, l'Est privilégiant la géographie physique, l'Ouest les questions sociales et la résolution de problèmes faisant intervenir des valeurs. Malgré de grands efforts d'adaptation, les professeurs de géographie est-allemands sont naturellement désorientés et se disent contrariés par certaines modifications qui leur ont été imposées.

In 1990, education in East Germany underwent swift reorganization resulting from centralized socialist to decentralized federal government. Virtually all aspects of the school system, including school hierarchy, administration, and curriculum underwent revision and reorganization to remake the educational system in the mould of West Germany. The revision of curriculum guidelines by the individual re-established *Länder*

(provinces) in itself affords a unique opportunity to study the attitudes and reactions of geography teachers to the changes relating to the new curriculum and the new conditions for teaching and learning after 1990.

In order to understand how geography teachers perceive these changes, we will first briefly characterize teaching during the socialist period, i.e., prior to unification, to shed light on the difficulties of getting adjusted to the now thoroughly new type of teacher role. The focus will then be how geography teachers view and react to current working conditions, how they judge the quality of the new guidelines and working material, and how they cope with the new challenge of more "open" didactic concepts in geography. To our knowledge there has been no published research yet on the subject. Related studies include an interview with an East German teacher (Social Education, 1993) and changes that have affected other school subjects such as the teaching of modern languages (Klapper, 1992), history (Borries, 1992), and physics (Jonas, 1992).

The data were collected in July 1993 in semi-structured interviews with teachers from rural and small-town secondary schools (grades 5 - 10) in East Saxony. The interviews, which each took up to two hours, were conducted by both authors in collaboration with six geography teachers, all of whom had several years of classroom experience, both prior and after unification. Due to the size of the sample, the research results are exploratory in character; more empirical research will be necessary on the issue. It should be noted that qualitative interviews seemed more appropriate for this type of issue, that is, one which emphasizes the subjectivity of individual perception. Indeed, many of our results on geography-teaching accord well with findings from other more general research on changing teaching and learning conditions in East Germany (e. g., Reh & Tillmann, 1994; Kuban, 1991).

TEACHING IN EAST GERMANY: CHANGING ROLES AND SCHOOLS

Prior to unification, schools played an important role in the socialist state ideology. Not only were teachers expected to influence their students in the sense of establishing communist values through virtually all subjects, including, of course, geography. The principles of Marxism-Leninism were also transmitted in situations that reached far beyond classes. Schools and teachers played their role in propaganda for and activities in communist youth organizations and premilitary training, as well as selecting school graduates to become officers or teachers,

not to speak of *Staatsbürgerkunde*. This school subject was primarily ideological in character in that it focused on the ideas of Marxism-Leninism, the leading role of the Soviet Union inside the communist bloc, and, of course, the "capitalist threat" from West Germany as the realm of fascism, unemployment, poverty, and crime, to counterbalance the glittering (West) television messages of a better life in the West.

These political commitments to which all teachers were subject accorded with a centralized school system, in which pupils as well as teachers found themselves as controlled objects in a tight hierarchy rather than as active and creative subjects in a process of mutual understanding, teaching, and learning. As may be expected in a society in which the one unitary political party claimed leadership, the relationship between teacher and student was, generally speaking, authoritarian in character. This quality was mirrored and supported by the central role teachers took in learning processes. Learning methods that allowed for more student activity, such as group work or practical work outside the classroom, were rare.

Prior to unification there was only one central curriculum per school subject and grade for the whole country, and along with it was only one state-licensed textbook accompanied by teaching material. The content of curricula, textbooks, and teaching material (with often clear instructions for individual classes) seemed to convey the idea of clear-cut pedagogic principles. Indeed, public discourse upon didactic concepts, as far as what was published in journals, tended to focus on the issue of how to implement the one existing "true" concept in order to reach an even higher standard of "effectivity" of learning. No wonder that teaching was very much centered on primarily cognitive objectives that made it easy for teachers to mark student learning, which, in turn, provided data to be used to prove the school's standard as a socialist institution.

Unification brought about drastic changes in virtually all aspects of the school system, and teaching and learning in it. This paper will be restricted to the more common impact before the focus is shifted to specific conditions in geography classes at secondary schools in East Germany. The transformation process has in fact gone so far as to cause individual crises among many teachers in the sense of insecure professional roles, if not identity crises. The reasons for this situation are manifold and complex (Reh & Tillman, 1994). Like a wide proportion of East Germans in general, teachers frequently have the feeling of having been made victims of an anonymous political process, particularly when there is a latent threat of dismissal. But also teachers who

enjoy renewed contracts as civil servants find it difficult to become adjusted to dramatically new conditions. To conform with the West German school system, the administration of schools has now been reorganized by *Länder* (federal provinces) which has meant the very rapid introduction of new curricula, textbooks, and instructional material.

As well, at the secondary school level, the former unitary (one-for-all) polytechnic school (grades 4-10) has now been succeeded by two parallel varieties of schools (*Gymnasium* for better students and *Mittelschule* for the remainder) that are thought to suit different gifts and abilities best, and each type of school has its own curriculum or guidelines.

What however, above all, contributes to the above adjustment problems is the unprecedented openness of the new guidelines (Reh & Tillman, 1994). In contrast to times prior to unification, teachers now have to make their own thematic and methodological decisions on the basis of new didactic principles, such as self-reliability, creativity, ability to express criticism, and tolerance, and, what is more, to orient themselves in terms of topicality and students' interests. All this has called for a new quality profile on the part of the teacher to cope with openness in school education (Schmidt & Schmidt, 1991).

It is, in fact, the new lack of clear instructions and guidelines that teachers in East Germany complain about most since unification. Another matter of concern has been the lack of discipline on the part of the students which, at least to some extent, may well be considered to reflect a new characteristic of the relationship between teacher and student, one that leaves less room for the old authoritarian teacher role in favour of more student participation (Reh & Tillmann, 1994).

EXPERIENCING THE NEW GEOGRAPHY

Acceptance of the new guidelines

In general, the interviewed teachers seemed comfortable with the revision process and with the guidelines themselves, although there were some critical comments about the emphasis on human geography, as will be shown later. The general assent, however, was remarkable since there was a virtual lack of consultation, and the teachers seemed to have been uninformed about the committee's composition. Under the German Democratic Republic (GDR) regime, teachers were accustomed to a consultation stage for the draft guidelines and were individually surveyed for their opinion. In contrast, obviously due to time

pressure, the revision committee was only able to solicit opinion for the draft guidelines at workshops and other meetings, and therefore it effectively canvassed the viewpoints of only a small sample of geography teachers. The teachers assumed that the committee's composition included curriculum experts from Saxony, as well as from Bavaria and Baden-Württemberg, the two West German provinces that assisted during the transition period after unification. Notwithstanding the lack of organized consultation, the interviewed teachers appeared to accept the revision process with equanimity.

After unification, and especially after introduction of the new guidelines, the degree of cooperation and collaboration among teachers was high. For example, the *Gymnasium* teachers had organized several internal meetings during the previous year to discuss the guidelines, how to implement them, and to decide what teaching material might be needed. However, as teachers throughout the region were left to interpret the guidelines as best they might, teachers at the *Gymnasium* admitted to feelings of insecurity about the process of adapting to change, especially in this early stage. Repeatedly they expressed uncertainty about their ability and role in exercising their responsibilities adequately and in meeting the expectations of their educational authorities. At different times they expressed their preference for a greater degree of prescription which, together with the provision of concrete examples, would help them more clearly identify the main focal points of the guidelines.

The lack of specific guidelines for the most senior *Gymnasium* years (11th and 12th grades) seriously worried the teachers who prepared students for the *Arbitur* (12th grade school leaving examination), since they faced the uncertainty about what exactly to teach their classes before publication of these guidelines. Specific mention was made of the guidelines for some of the major topics in the *Kurssystem* of grades 11 and 12 (specialized courses). One of these was landscape ecology which especially worried the *Gymnasium* teachers. They felt that in a complex interdisciplinary subject such as this, the topics were presented in so abstract a manner that preparation for this subject would require substantial study and work on their part. They conveyed the impression that the topic would overtax teachers in terms of their own training and preparation.

Textbooks and instruction materials

Of all the new teaching conditions after unification teachers seemed most enthusiastic about textbooks and instruction materials. Right after unification, textbooks of the various West German publishers

entered the schools in different quantities provided through private and individual channels as gifts from the publishers, from West German partner schools, and as official purchase orders. Lacking funds, parents had been persuaded to help schools purchase West German atlases.

In every case, the main problem was a shortage of textbooks caused by restricted budgets. School authorities were making a valiant effort to purchase new textbooks, but with so many competing requests, budgets permitted only single class sets, and in one case, a half-class set. Logistically this meant that along with other instructional materials, 15 to 30 textbooks had to be transported to each class since, as another change in school structure, teachers had lost the timetabling of classes held in a central geography classroom.

A second problem was the complaint that West German publishers resisted requests to modify existing textbooks to include major exemplars taken from East Germany. One frequently mentioned example concerned the importance of brown coal mining in Saxony, in fact only a few kilometres away, while the textbook elaborated on brown coal mining in West Germany (near Cologne) (Heimat & Welt, 1993). This point of irritation evidently stemmed from hurt regional pride which has come up in some areas of East Germany (Mai, 1993). The protest becomes more plausible, however, if one considers that brown coal mining is a major economic feature in this area and should form part of the students' regional experience when studying geography.

Teachers strongly supported the use of audio-visual materials to help their students develop a more accurate mental understanding of geographic concepts and unfamiliar landscapes. Indeed, as soon as unification was announced, schools rushed to order a wide range of audio-visual instructional materials which had been previously unavailable to them. Teachers particularly appreciate videotapes that are now available for classroom use through the community education resource centre located in a nearby town. Also, schools have their own video recorders to facilitate the use of TV programmes for geography education.

Due to budget limitations schools could not normally afford standing orders of geography magazines, such as *Geographische Rundschau*, *Praxis Geographie*, and *Geographie Heute*, but a few teachers subscribed to them privately and circulated copies among their colleagues. The articles that seem to be most popular are those with clear-cut suggestions as to how to operationalize didactic concepts in teaching units, including statistics, graphs, copies of exercises, crossword puzzles, and simulation games.

Continuity and new concepts

Prior to unification, geography guidelines followed a concept of combined regional and physical geography with some selected chapters on economic geography which focused on the Soviet Union (grade 7), the Comecon and capitalist countries of Western Europe, and the United States (Barth, 1990). The new guidelines resemble the old ones in that the contents of geography classes over the years gradually moved away from Germany to more distant countries and continents while becoming conceptually more complex. Apart from this, although physical geography is still relevant, the new guidelines follow the concept of new geography by aiming at objectives such as the competence of problem-solving with respect to geographic issues, responsibility for the quality of the environment, peaceful understanding, and tolerance towards other cultures and values (*Sächsisches Staatsministerium für Kultus*, 1992).

In our interviews teachers repeatedly complained about the "political message" of the new guidelines, and some recognized similarities to the old ones in this regard. They referred to unpopular socialist undertones, especially in teaching economic geography, prior to unification and felt there was more or less no difference with only a shift in regional emphasis from the GDR, the USSR, and the Comecon to the united Germany, Western Europe, and the United States. In other words, some of the interviewees, despite the drastic changes in the political system, observed a continuation of the teachers' old political mission in the sense of propagating state ideology. During the socialist period, geography teachers indicated, they evaded political issues by escaping into physical and descriptive regional geography. In this way they avoided the interest that would have been manifest by the political authorities had they taught economic or social geography. Since unification they continue to feel that their subject should be free from any political content or mission. Generally speaking, geography is perceived to be a politically "neutral" subject.

Most interviewed teachers shared the view that they now have to teach too much of a "problem-based geography". This applies to grades 11 and 12 of the *Gymnasium*, which includes topics about the global issues of developing countries and resource exploitation, and also energy policy, industrial geography, urban renewal, urban land-use conflicts, living conditions in slums, and so on. One teacher observed that some topics, such as living conditions in American cities, that focus on urban blight and slums as presented in the new textbooks, actually appeared to recur from the old guidelines with virtually the same critical undertone. She

(the interviewee) thought the chapter on the United States was so amorphous, lacking structure or discernible objectives, that she in fact chose to return to her old textbook used before unification.

Most teachers complained about the general and vague character of the present guidelines, for they say "they permit too much freedom" for teachers, in contrast to the old guidelines which were much clearer about what one had to do: "*Our own (GDR) guidelines were clearer.*" Although the new guidelines indicate general objectives, most teachers miss concrete and especially cognitive objectives for grades and individual teaching units. The outcome of this is that when teachers now have to take over another class they must first check where students are, because one can no longer tell from the guidelines.

What aggravates insecurity on the part of the teacher is the lack of compatibility of guidelines and textbooks. Of course, textbooks are somehow based on the guidelines and do indeed provide potential ways of interpreting them. But the fact is that there is now a number of different books available for the same grade, each with a different approach and set of topics, together with other teaching material, such as overheads, slides, and videos. The choice still confuses teachers, most of whom still prefer unequivocal didactic concepts and prescriptions for each teaching unit.

In our interviews teachers revealed a striking lack of understanding of and for modern concepts of geography teaching on the basis of human or social geography. To most of them, physical and regional geography still represent the "true geography", while problem-oriented geography is widely considered "optional" (Fuhrmann, 1991). In fact, despite all of the motivation among teachers, especially at the *Gymnasium*, to adjust to the new teaching and learning conditions, the elementary features of the new geography reflected in the open (i.e., more democratic) character of the curriculum, and in objectives that are to develop skills and values in the students which help them solve individual and social problems, are not yet well understood and emotionally accepted. This may explain remarks like the one on the alleged lack of a consistent concept for presenting contents in a textbook: "Sometimes one picks out volcanoes, sometimes religion and faith, because there is so wide a range to cover. It used to be dreary [prior to unification], now it is so arbitrary."

Our findings suggested that teachers lack a basic awareness of pedagogical writings about modern concepts of teaching geography as a school

subject. None of them named or described any pedagogical source in the teaching of geography from his or her initial teacher training or from workshops after unification. So, generally speaking, geography teachers in East Germany are facing a situation which necessarily overtaxes many of them. A new form of geography, with concepts that are still basically strange to them, has been introduced into curriculum guidelines, textbooks, and teaching material without the teachers' general appreciation and understanding. Nevertheless, geography teachers are endeavouring to adjust themselves to new conditions. They make use of bits and pieces of a new concept as described in the guidelines and teaching materials, although this may add to their insecurity and confusion since didactic concepts, as with any theoretical concept for that matter, have to be appreciated and fully understood before application. In West Germany it took many years of discussion of the new geography curriculum in order to do away with the old descriptive regional concept of geography teaching (see Schultze, 1979), and, above all, to convince teachers in the classrooms. It will take more years to convince teachers in East Germany of a concept that certainly has to be perceived as their own before it will be accepted. So far there has been virtually no comparable open discussion about modern geography amongst teachers in East Germany. Consequently there will have to be improved conditions that will enable all teachers to attend workshops and other in-service training to learn about the philosophy of the new geography. The new training must go beyond the construction of teaching units, their implementation, and the compilation of available teaching materials. Serious attempts must be made to render the new geography into a didactic concept that is consistent and intelligible so that it becomes alive and acceptable for East German teachers.

Teachers indicated, in their interviews with us, the type of school geography that will survive as long as this is not achieved. As teacher training in the GDR required either mathematics, biology, or physical training as a second subject in combination with geography, teachers developed a post-war notion of geography as a science which, as such, has impeded the current shift of attention in favour of social or human geography. Following unification, this tendency was definitely enhanced by the viewpoint of many teachers, that is, that problem issues convey a political message of some sort. Thus, after their experience from the socialist period, teachers tend to discredit human geography, preferring instead to choose the allegedly neutral realm of clear cause-and-effect geography, i. e., of physical and regional geography, and along with it a focus on land formation, holistic landscape interpretation, and place

location. The guidelines, open as they are, appear to facilitate this withdrawal into the "true geography". Even so, the influence of the new geography may be difficult to evade since conflicting human interests and values can hardly be sidestepped when teaching about complex subjects such as landscape ecology in grades 11 and 12.

Coping with open teaching and learning

When "the wall" between East and West Germany came down and the borders became permeable, geography almost overnight became more popular among students, since traveling came to be enjoyed as a major asset of liberty after unification. Indeed, geography became, to an unprecedented degree, a matter of one's own experience that way. After holidays students returned to report their impressions from travels to West Germany and abroad, and teachers found it easy to motivate students and stimulate discussion in classes.

The question arises as to what extent the new conditions for teaching and learning have had an impact on the development of new forms of teaching and learning. Right after unification teachers were encouraged to try out more liberal (i.e., student-oriented) forms of teaching and, indeed, most of the teachers we interviewed stated they had experimented with this approach. Teachers were now able to observe West German classes, but found that deviating from teacher-centered learning produced such "chaotic" results in the classroom as to negate any advantages for the students (see Reh & Tillmann, 1994). As one teacher put it: "I would rather retain the reins on the students." However, one has to be careful not to exclusively attribute this preference of teacher-oriented styles of learning to the old socialist authoritarian role of the teacher. One certainly has to take into account that student behaviour changed drastically after unification, and teachers felt they had to react to this trend. Teachers above all complained about effects of family disintegration due to now high unemployment amongst parents, about the consequences of excessive television, and the increase of rudeness, consumerism, and even occasional vandalism.

We also noticed a striking reluctance on the part of teachers to integrate practical elements of out-of-school learning. Most teachers preferred to shun the expense of time and preparation for outdoor activities, such as field trips to a nearby brown coal pit or a factory, although they conceded this would be an effective way of learning. It appears first of all that practical fieldwork was still unpopular among teachers because there was virtually no experience of these methods from socialist

times. This does not mean that field trips and student investigations were not permitted but rather they constituted an object of political suspicion which no one cared to arouse. Apart from this, teachers referred to a general precaution about the use of questionnaire surveys as a method of collecting data about critical issues, such as pollution. The authorities similarly treated large-scale maps as confidential documents, that is, not available for nonmilitary uses like local geographical studies in schools.

CONCLUSION

In our interviews with teachers they generally stated their appreciation for the opportunity for a new type of geography to emerge after the political overthrow of the social government. Nevertheless, despite remarkable motivation to support a new start, there are clear signs of irritation and disorientation among geography teachers in East Germany. Wide discontent was articulated with regard to basic elements of the concept of the new geography such as problem orientation of content, the thematic emphasis on social issues, and practical elements in data collection.

It appears that the introduction of new geography was made too quickly, like so many aspects of the whole social transformation process for that matter, for teachers to become convinced about the values and assets of new approaches to the subject. One might doubt that teachers would be able to cope with the overnight introduction of the market system with all its social and mental side-effects, but in hindsight the reformed geography guidelines themselves were clearly far from understood and accepted by teachers on their day of publication.

What has to be taken most seriously is the striking lack of understanding among teachers towards a modern geography as a pedagogical tool to strengthen the students' autonomy in school and society alike. As long as teachers perceive aspects of the guidelines as a mere replacement of state ideology (Stock & Tiedtke, 1992) and as long as teachers evade social issues by retreating into physical and regional geography as the "true geography", an intensive discourse is needed. This discourse should promote the educational contribution of geography to a democratic society in which geographic competence and skills play a necessary role.

No doubt, like other aspects of the transformation process, becoming adjusted to the new geography will take time not only for the sake of discussing the new concept but also to operationalize its philosophy by

creatively and practically trying out its potential. Indeed, only favourable teaching and learning experience will prove the quality of the new geography, the acceptance of which would, then, in the long run necessarily turn teacher-student relations into a more self-determinant, cooperative, and less authoritarian one.

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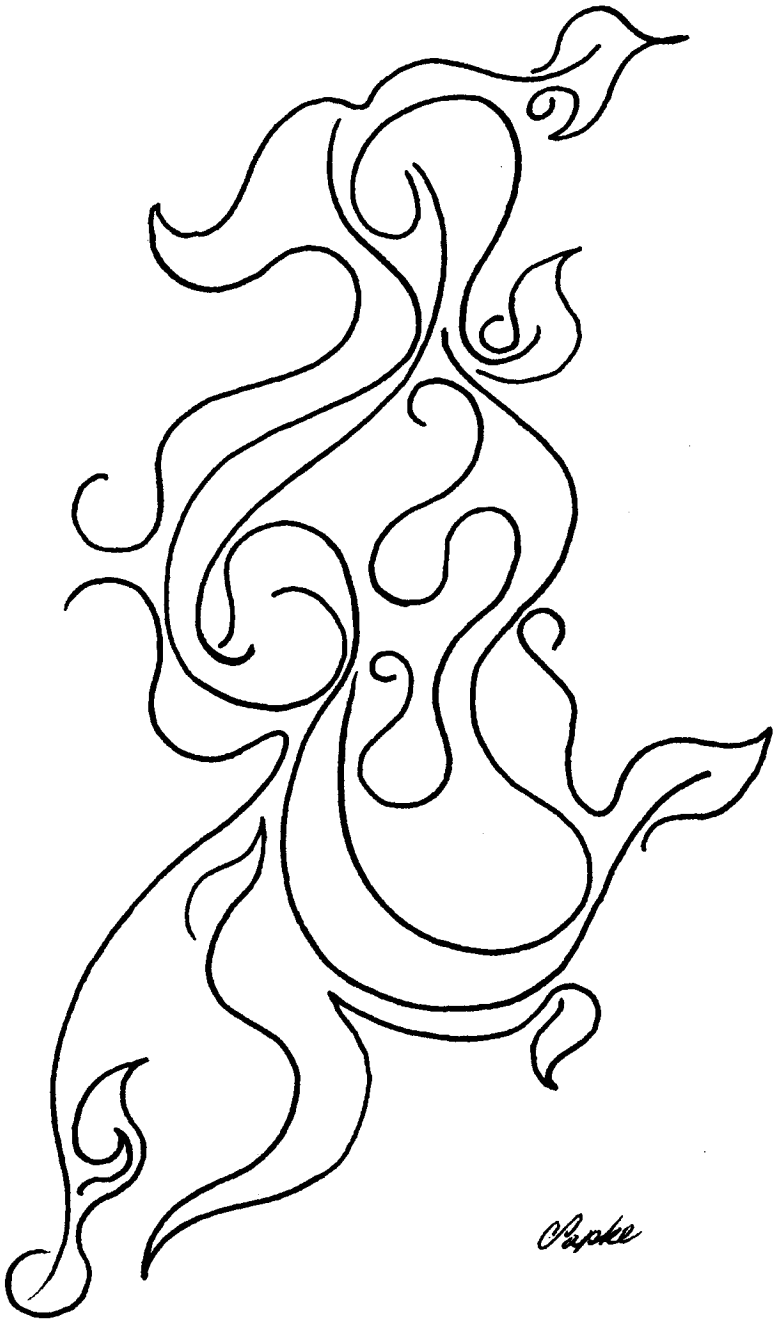
Experiencing the New Geography in East Germany

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GENDER RELATIONS AMONG TEACHERS: A STUDY OF ONTARIO TEACHERS IN THE 1930s*

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ABSTRACT. Gender relations have played an important role in the development of school systems in Canada. This paper describes and analyzes specific ways in which discriminatory relations were constructed, and subsequently restructured, for women and men teachers in Ontario during the depression years of the 1930s – in particular, in relation to salaries, job tenure, and pensions. Given the recent calls for “restructuring” of schooling and teaching, “lessons” from the 1930s may well prove informative in strategizing for (or against) contemporary change initiatives.

RÉSUMÉ. Les relations entre les sexes ont joué un rôle important dans l'évolution des systèmes scolaires au Canada. Cet article décrit et analyse divers modes précis qui ont régi l'établissement puis la restructuration de rapports discriminatoires entre les enseignantes et les enseignants ontariens durant la grande crise des années 1930, particulièrement en ce qui a trait aux salaires, à la permanence et aux retraites. Au vu de la “restructuration” du système scolaire et de l'enseignement que certains appellent de leurs vœux, les leçons tirées de l'expérience des années 30 pourraient se révéler utiles à la formulation de stratégies favorables (ou hostiles) aux mesures actuellement proposées.

On June 12, 1936, the *Toronto Daily Star* reported that Miss Alice Wilson was retiring after 28 years as head of the department of modern languages at Riverdale Collegiate. She was to be the guest of honour at a dinner given by her women colleagues at the University Women's Club. Miss Wilson, the article went on, would be wearing “a blue gown, and carrying pink roses given to her by her colleagues”.

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The following day, June 13, 1936, *The Daily Mail and Empire*, another Toronto paper, reported that after 26 years at Jarvis Collegiate, Dr. Edwin Austin Hardy gave his final lesson before his retirement. We are told that "his grey-haired colleague, Mr. C. H. Barnes" joshed with him and then "turned on his heel least Dr. Hardy discern the moistness in his eyes". The article quotes Dr. Hardy's final words to his students, lines from one of Kipling's poems:

And no one shall work for money, and no one shall work for fame,
But each for the joy of the working, and each, in his separate star,
Shall draw the Thing as he sees It for the God of Things as They Are!
(see Kipling, 1892)

These two articles indicate how clearly the lives of men and women teachers of this time period revolved around accepted notions of gender appropriate behaviours. Alice Wilson dined with her female friends, while Edwin Austin Hardy joshed with his male colleague. We are told what Alice wore and about what Edwin said.

None of this may surprise us, since other newspaper clippings from the era are rife with references to separate "gendered identities" for male and female students. We are told about school girls demonstrating folk-dancing (*The Globe*, April 9, 1936) while boys play in the band (*The Telegram*, April 9, 1936). We learn about aircraft instruction for males (*The Telegram*, June 10, 1936) and weaving and canning skill development for females (*Toronto Daily Star*, Sept. 14, 1935). There are "son's nights" (*Toronto Daily Star*, Dec. 13, 1938) and "grade mothers acting as tea hostesses" (*The Globe and Mail*, Nov. 5, 1938).

Another newspaper article of that era mentions a controversy over "sex separation in north end collegiates", and contains a quote from the principal, Col. F. H. Wood:

I believe that boys and girls should grow up together. It is part of their education in life to live and play and study together. It is a healthier state of affairs than to keep them separated. (*Toronto Daily Star*, Sept. 28, 1935)

However, despite this claim about the desirability of having male and female students working together in harmony, it is abundantly clear that explicit policies of the Toronto Board of Education ensured that teachers were differentially treated on the basis of their gender – conditions which were highly unlikely to have favoured harmony among males and females, or encouraged them to see each other as equal colleagues. One long-standing policy was that of salary differentials for

men and women teachers and administration staff, an issue raised repeatedly by teachers and trustees since the 1890s (1). The other policy concerned the compulsory, but differential, retirement ages for men and women teachers, and the controversy that raged in 1935 and 1936 about enforcing those by-laws without granting customary extensions.

It is the purpose of this paper, then, to examine in some detail the nature of these discriminatory practices, and to speculate both on the reasons for their existence, as well as their effects on the lives and work of teachers and on schooling generally. Before entering into this discussion, however, it may be informative to examine what more we have been able to uncover about Alice Wilson and Edwin Hardy. In many ways the similarities and differences in their lives, both within and outside of their workplaces, suggest close parallels to many primary and secondary school teachers during these times – lives which were highly determined on the basis of one particular personal characteristic: gender.

As historians have often noted (Cott & Pleck, 1979; Prentice, Bourne, Brandt, Light, Mitchinson, & Black, 1989; Prentice & Theobald, 1991), women's lives often prove much more difficult to uncover than those of their male colleagues – for a number of reasons, their "voices" are much more "silent". This is certainly the case with Alice Wilson. There is little evidence of her contribution to the students of Toronto, or her life in general, over her 31 years of teaching, other than occasional statements in the annals of the Toronto Board of Education. The board minutes for 1889 tell us that she began teaching in that city in that year, in a "junior second" class (equivalent to today's "grade three") at Victoria Street School in the inner-city (Toronto Board of Education [TBE], 1889). That she was assigned to one of the lower grades was completely understandable. For many decades, the Toronto Board had a strict practice of assigning women to teach at this level – classes which often contained 60, 70, or more students. By comparison, male teachers were assigned the higher grades, which invariably consisted of a much smaller number of pupils (cf. Johnston, Semple, & Gray, 1932).

Gender discrimination was also clearly evident in relation to the remuneration which teachers received from the Toronto Board, and Alice Wilson was no exception. Her starting salary was \$324 per year – very similar to that which her female colleagues earned, but considerably less than the \$750 regularly earned by most male classroom teachers in Toronto Board Schools (regardless of their level of experience), and less than one-quarter of the \$1438 earned by the male principal of the school (TBE, 1889).

Alice Wilson remained at Victoria Street School for four years, transferring to a "junior first" (grade one) class in the third year. By her final year, her salary had increased to \$372. In September of 1893, the Board minutes note the receipt of a letter from Alice Wilson, "tendering her resignation".

Why she resigned after such a relatively short time is unclear. To be sure, during these times a number of female teachers left their classrooms after teaching for only a few years. On the one hand, marriage has often been cited as the main reason for this occurrence – understandably, considering that the idea of married women teaching was usually frowned upon, and in fact was soon to be banned outright by the Toronto Board (a policy that was kept on the books and enforced from 1925 to 1946) (Reynolds, 1990a). However, Toronto Board minutes make it abundantly clear that young women left teaching for other reasons, for example, in many cases in order to care for parents and/or other family members (Smaller, 1991). In addition, other sources suggest that low salaries and poor working conditions, the lack of opportunities for promotion, and the general social relations which women teachers suffered at their workplaces, often made other types of paid work more attractive (Prentice, 1985).

Whatever Alice Wilson's reasons may have been for leaving the primary school classroom in 1903, in one significant way her career change did prove different than many other of her colleagues. Four years later, in April of 1907, she was rehired by the Toronto Board and appointed head of the department of modern languages at Jameson Avenue Collegiate "for one year in the absence of Miss Hitchcock", at a salary of \$1400 (TBE, 1907). Given this turn of events, it is possible to speculate that she was financially able to spend the intervening four years in continuing her own schooling, earning the Bachelor of Arts degree that qualified her to teach at the secondary school level where conditions of teaching were, by most reports, considerably better, and salaries much higher, than in the lower grades. In any event, it is clear that she made a good impression on her superiors at Jameson, for the following year she was appointed to a permanent teaching position at Riverdale Collegiate (TBE, 1908) where she remained continuously until she retired 29 years later, in June of 1936. In spite of her efforts over the years, however, little else is known about her life and work, other than the hint, in a short newspaper article concerning the retirement party given in her honour by her female colleagues, that she occupied "a distinguished place among fellow-teachers throughout Ontario" (*Toronto Daily Star*, June 12, 1936).

By comparison, Edwin Austin Hardy O.B.E. was a well-known figure among the educational elite of Ontario, and certainly treated as an equal within this group. His 26 years of teaching at Jarvis Collegiate, the last of almost 50 years teaching in total, reflected a work-life which only males, for the most part, could expect to undertake during these times. In addition to his classroom duties, he was a founding member of the Toronto High School Teachers' Association in 1903, and the Ontario Secondary School Teachers' Federation (OSSTF) in 1919. His interest in writing and publishing extended well beyond his classroom – he was an active member and president of the Canadian Authors' Association, and edited the OSSTF journal for a seven-year period, from 1927 to 1934. His interests and activities in teacher federation work did not stop at Ontario's borders. In the early 1920s he helped found the Canadian Teachers' Federation, and in 1934 he was elected treasurer of the World Federation of Education Associations (WFEA), a post he maintained for a number of years (Robinson, 1971). As compared to Alice Wilson, whose record of post-retirement activities has not been made apparent, Edwin Hardy continued in the spotlight after leaving teaching – officiating at the WFEA convention in Japan the following year, and taking office as a publicly elected Toronto school board trustee in January of 1938 (2).

Clearly, in comparing Alice Wilson and Edwin Hardy, it would be fruitless to attempt to identify any specific reasons as the "prime" cause for the differences which developed as their lives and careers unfolded. However, it would be equally difficult to suggest that gender did not play an important part in the overall equation – the possibility, for example, of the advantages in early schooling which young males often received during these times (Houston & Prentice, 1988), and the relative freedom from domestic duties which males (married or otherwise) usually enjoyed, thus allowing considerably more time for after-work pursuits such as further education, teacher association work, and engaging in the activities of other voluntary organizations. Certainly, being a male teacher in the employ of the Toronto Board of Education resulted in considerable advantage, and it is to two of these specific male advantages we now turn for discussion, that of differential salaries and differential retirement policies.

Gender disparity in teachers' salaries in Toronto existed from at least the early 1850s. At that time, the political and economic elite were becoming increasingly threatened by social unrest among poor immigrants and the poor working class in general. State controlled schooling was seen as a means by which the children of these families could be

properly socialized (Houston, 1982), and in 1851 a centralized, city-wide school board was established, to replace the loose network of locally-controlled schoolhouses. Equally "creative" was the solution developed for moderating the costs of what would otherwise be a very expensive endeavour. Within each elementary school a staffing hierarchy was put into place, where a few, but relatively well-paid, male staff would supervise a much larger number of very poorly remunerated women teachers. Given the limited opportunities for paid employment for women during these times, the strategy was highly "successful".

To be sure, the school board was careful never to state overtly that males were to earn more than females. However, the practice of determining salary on the basis of level of grade taught, and ensuring that only males taught the higher grades, ensured absolute discrimination between the sexes. In 1870, for example, salaries of women in the Board ranged from \$220-400, while those of their male colleagues were in the \$600-700 range. By 1881, these differences had actually widened, from \$200-600 for women and \$750-1100 for men (TBE, 1870). In 1885, 196 of the 202 women teachers in the Toronto Board were in the classroom, with titles such as "female assistants," "female junior assistants," "senior female assistants," and "female teachers". By comparison, every male teacher that year, regardless of seniority, held a position either of "principal" or "assistant master", and all were assigned to classes containing only senior students (TBE, 1885; Bryans, 1974). (Reference has already been made above to the much larger class sizes in the lower grades.)

Determined to eliminate these discriminatory practices, women elementary school teachers in Toronto founded their own association in 1885 (3). However, while small successes were achieved along the way, it was to take many decades before their struggles were to lead to significant success. For example, after six fruitless years of attempting to convince board trustees to alter the salary situation (TBE, 1891), a number of members of the Women Teachers' Association involved themselves directly with the 1891 municipal elections (4). In conjunction with the Women's Enfranchisement Association, they were successful in assisting three women to be elected to the Toronto Public School Board for the first time (5). Fresh from these victories, the women launched another appeal to increase salaries which had not been changed in a number of years. During the annual salary deliberations in the spring of 1892, they attended a number of Board meetings, supported by at least one newspaper in the city.

Gender Relations Among Teachers

The plucky representatives of the women teachers employed in the Public schools of Toronto who on Monday interviewed a committee of the School Board with respect to their salaries have right and reason on their side when they ask for an increase in pay. (*The Toronto Daily Mail*, Mar. 17, 1892)

In spite of this support however, and in spite of their presence, *en masse*, when the matter was discussed at the Board meeting the following week, their requests were turned down. Indeed, they were quickly to learn that they could not count on the support of all the newspapers in the city. Earlier in their lobbying sessions, *The Toronto Daily News* had been quite vicious in its assessment of the situation. In an editorial entitled "Well Enough Paid Now," the paper stated that

The lady teachers do not seem to have any just ground for complaint with their lot as it is. . . . [They] have nothing to complain of. And even if they had a substantial grievance, their case would be less strong because of the gross indelicacy shown in attempting to terrorize the members of the board by attending the meetings *en masse* when the salary question is up. (Feb. 25, 1892)

Based on these early experiences, members of the Toronto Women Teachers' Association continued to struggle over the ensuing decades against the Board's discriminatory practices, with varying success (6).

With the onslaught of the Depression in the 1930s, things turned again for the worst. While all teachers were affected, there is no doubt that women teachers (and especially those working in rural areas) suffered disproportionately. For example, as compared to the provincial average for an elementary teacher in 1936-37 of \$1242, the average rural female teachers received only \$650.86, with many earning only \$300 per year. Three years later, this average figure had increased marginally to \$729 per annum (Ontario Department of Education 1938; Carr, 1935, 1940). While Toronto women teachers did benefit from some protection against the arbitrary job losses and individualized salary cuts which afflicted their sisters in small, rural communities, other Toronto Board policies and practices certainly affected their material well-being during the 1930s. Average salaries for women elementary school teachers remained much below those of their male colleagues, and in spite of the passage of several decades, there was still little change in the traditional gender-based hierarchies within the staff of each school in the city (Reynolds, 1990b). Indeed, given the continual exhortation by the local media on the school board to cut back on school expenditures, to hire more males (including veterans of the First World War), and to lower teachers'

pensions, women teachers (employed or otherwise) must have felt themselves to be on very tenuous grounds indeed (7). Mention has already been made of the Toronto Board's explicit policy requiring women teachers to resign immediately upon getting married. Judging from anecdotal reports, many other school boards in the province also enforced such policies, whether or not they were explicitly written down (e. g., French, 1968).

Pensions were another aspect of the Ontario schooling system wherein women teachers suffered considerable inequality. Like the discrimination they suffered in relation to salaries and job security, women teachers in the 1930s found that the province's pension plan, and the ways it was linked to individual board employment practices, left them in a disadvantaged position compared to their male colleagues. These pension differences, like other aspects of the schooling, were grounded historically in the early years of the state common school system. A brief historical overview is informative as a backdrop to understanding the situation for women in the 1930s.

Although unknown in North America before the 1850s, pensions for teachers and other state officials had been in existence in a number of western European countries since the mid-eighteenth century and were advocated in Upper Canada at least as early as 1839 (Hodgins, 1895). By 1853, Egerton Ryerson, the Chief Superintendent of Education for Ontario between 1844 and 1876, was able to convince the provincial legislature to approve the first such scheme (8), subsequently boasting in his 1855 annual report that

... it is honourable to Upper Canada to be the first province, or state, in America in which any public provision whatever is made in aid of the support of Common School Teachers when they shall have become worn out in the service of their country. (Quoted in Hodgins, 1895)

Unfortunately for the "worn out" teachers, however, the plan was never adequately funded by the government. In fact, it was financially based on the hopes of signing up an adequate number of voluntary contributors in order to remain solvent. Clearly, many teachers were quick to perceive the inherent instability of this approach to funding a pension plan, and were understandably reluctant to participate. The plan therefore soon developed an aura of instability and impermanence (9). Further, while women teachers were not formally prevented from taking part, it would appear that few, if any, women did (10). It is not unlikely that their low salaries would have made it difficult to make the

annual payments required – even if they believed that their tenure of employment was secure enough to ensure that they would be able to teach sufficient numbers of years to qualify for the plan (Danylewycz, Light, & Prentice, 1983).

As a result of the inherent instability of the plan, those few teachers who did contribute found that, at retirement time, only a very limited amount of money was available to them from the fund (11). Further, efforts by the government to shore up the plan, including making it compulsory for all male (but not female) elementary school teachers in 1871, and lowering the retirement age to 60 in 1873 did little to ensure its viability (12). By 1885, the fund was closed off to new members, and over the ensuing decades, remaining members either withdrew from the fund, or eventually retired and collected what little moneys were left for each retiree.

For several decades, teachers across the province were left with no possibility of an organized and state-supported pension plan. To some extent, their colleagues in Toronto were marginally more fortunate; after a very shaky start (13), the Board agreed in June of 1912 to establish a pension plan. Henceforth, all teachers were required to contribute annually 2% of their salary to the fund. Upon retiring, they would be eligible for an annual pension payment, based on one percent of their final salary, multiplied by the number of years they had contributed to the fund (14). The following January, the Board agreed to distribute copies of the details of the new plan to all teachers, and to establish a committee of trustees to process pension applications from teachers (TBE, 1913).

Like its provincial counterpart, however the Toronto Board's plan also encompassed a glaring inequity, in relation to gender. Although they paid equally into the fund and, in theory, had the right to the same pension benefits, women were required to retire from teaching at the age of 60, while their male counterparts did not have to do so until 65. In at least three ways, this constituted a serious financial liability for women. First, they were automatically cut off from teaching on a full salary, and forced onto a much reduced pension sum, five years earlier than men. Secondly, because pensions were determined solely by the number of years worked, women teachers were denied five years of contributions towards establishing a final pension amount. Finally, given that women teachers earned much less than their male colleagues overall, this difference would continue to be reflected in their pension

payments, for as long as they lived. As we shall see, this inequity was to remain for several decades, in spite of repeated contestation.

In 1917, after a number of years of increasingly intense pressure mounted by teachers on the Ontario government, a new provincial pension plan was put into effect. In order to qualify for a full pension, teachers were required to have taught for at least forty years; pension payments were based on a formula which took into consideration both the number of teaching years, and the salary earned during the retiree's final ten years of teaching. In addition, teachers who had taught for a minimum of thirty years before retiring were eligible to a reduced pension (Government of Ontario, 1917).

While this new provincial pension plan contained no overtly discriminatory aspects for women (15), provincial regulations did not require local school boards to end their own discriminatory practices relating to conditions of employment for its teachers. As a result, from the inception of the provincial plan of 1917, to well into the 1960s, the Toronto Board continued its policy of requiring women teachers to retire earlier than their male colleagues, thus seriously affecting the pension possibilities for many.

By the mid-1930s, in the middle of the Depression years, pressure was once again mounted on the Board to alter its retirement policies. Unfortunately for women teacher, however, these pressures came just as strongly from those wishing to enhance the discriminatory aspects, in the name of financial economies, as those who wished to end them. In February 1936, board officials announced that \$70,000 per year could be saved if the board turned down all teachers at the retirement age who requested one-year contract extensions in order to become eligible for pensions (16). Although a motion to this effect failed at the time (*The Telegram*, Mar. 8, 1935), by the next school year trustees were implementing it in practice – in one well-publicized case, voting 11 to 5 against permitting a 62-year-old female teacher (a widow with two children, who had been teaching for the Board for 26 years) to teach for one further year, so that she might be eligible for a pension which would have paid her \$265 annually (17). By June of 1936, the trustees voted 11 to 7 to eliminate the policy allowing them even the possibility of making exceptions in needy cases. Trustee Dr. Butt, who had moved a similar motion at an earlier meeting, was quoted in the *Toronto Daily Star* on April 17, 1936, as

... urg[ing] that young people should be given a chance and that while many teachers may be in financial difficulties at the time of retirement, there must be some consideration for others.

Clearly, there were also significant financial gains to be made for the Board by forcing into retirement more highly paid senior teachers, and replacing them with low-paid neophytes. However, according to newspaper reports at the time, trustees also had yet another reason for taking this drastic step, that is, in retaliation for comments, purportedly made by teachers at a retirement dinner, questioning the fairness of the trustees' earlier actions against individual requests for extensions of their teaching contracts (*The Telegram and Toronto Daily Star*, June 19, 1936).

Women teachers were clearly disadvantaged by these retirement policies. Throughout the nineteenth century, and well into the twentieth, relatively fewer female teachers found themselves eligible for pensions. Further, those who did, received pensions which were considerably less valuable than those of their male counterparts (based as they were on continuity of employment and on the salaries they earned during their teaching years). As it turned out, even Alice Wilson, who for years occupied the relatively advantaged position as head of a department in a secondary school, was required to retire with fewer years of teaching credits than her male colleague, Edwin Hardy. Therefore, the pension, which she was to collect for the rest of her life, would have been considerably less than Hardy's. Although considerable pressure was brought to bear by teachers and individual trustees on the Toronto Board of Education throughout the 1930s, to equalize the retirement age for all teachers, these discriminatory practices were to continue until the 1960s.

CONCLUSIONS

Our discussion has traced the persistence over time of discriminatory policies regarding salaries and pensions which favoured male teachers in the Toronto Board of Education in the 1930s. These policies can be thought of as part of what Tyack and Tobin (1994) call the "grammar of schooling", that is, "the regular structures and rules that organize the work of instruction" (p. 454). Clearly, these structures and rules positioned male and female teachers in separate and unequal spheres. Women teachers were to be subordinates under the control of males who were their superordinates. Women were to carry out the decisions

made by men at a variety of levels within the school system. Women were deemed to be temporary workers who would leave teaching upon marriage, and men were deemed to be breadwinners for their families, regardless of their actual family status, and thus would stay in teaching to have careers. Because they were more permanent members of the teaching force, men would be more likely than women to seek roles as school administrators, and they were also seen as more suited to those roles. Women were the weaker sex and would need the protection of male teachers. Women might not be strong enough to handle the older children or to mete out the necessary discipline, and thus men were more often assigned to the senior classes and placed in control of "dangerous" areas, such as the boys' yard or the boys' basement (Reynolds, 1987). Men and women who taught did not always accept such "positionings", but separate and unequal spheres, matching this description and based on gender, were strongly supported by a generally accepted ideology of domesticity in the larger society of this period.

As we have argued in this paper, such positionings for teachers were also supported by local school board policies and practices, such as those we have described for the Toronto Board of Education, relative to salaries and pensions. In the centrally controlled schooling systems which developed in Ontario from the mid-nineteenth century on, the "grammar of schooling" included a staffing hierarchy which was strongly based on gender. Almost all those who held supervisory roles were men and most of those who taught young children were women. Because salaries were pegged to grade levels and designated roles, that hierarchy meant that most male teachers made more money for their work in schools than did most female teachers. This fact did not go unnoticed by the women who began over this period to meet within the newly formed Women's Teachers' Associations (WTA) to seek improvement for women teachers.

Along with improved salaries, these women teachers also wanted improved pensions for women teachers. As we have discussed, although ostensibly the provincial plan that was established over these years placed the same requirements on men and women, local policies often meant that the outcomes concerning pension benefits were quite different for men than for women teachers. Women were less likely, as we have seen, to have made salaries equal to those of men. They were seldom given "extensions" allowing them to teach beyond required retirement age limits set within the board and, indeed, those limits were different for men and women and allowed men longer teaching careers

upon which their pensions could be based. Once again the hierarchy and the different positions available to men and women within that hierarchy supported advantages to men and disadvantages for women teachers.

Reformers who noted this discrimination based on gender and who tried to alter the "grammar of schooling" in the period met with limited success. Women in the WTA were told that they had nothing to complain about in comparison to women in other roles in society at that time. They were also criticized in the press for the "indelicacy" of their behaviour in coming to meetings *en masse* to support improved salaries for women teachers.

When it came to pensions, reformers were told that men and women had the same requirements and the same rights to benefits. They had only to behave in the same ways in order to reap the same rewards. As we have seen, however, inequities in salaries and in positioning within the hierarchy made a difference. Also, policies in many local boards against allowing married women to teach, and specifying earlier retirement ages for women teachers, meant that females were seldom able to enjoy the same pension levels as those of their male peers. When men and women teachers complained about their pensions, they were told to be more considerate of others in the labour force. Indeed, by the late 1930s such consideration meant that they were encouraged, or required, to give up their jobs so that young teachers could have a better chance for employment.

Our discussion of policies and positioning also makes clear that the "grammar of schooling", its regular structures and rules, became particularly resistant to challenges for reform during periods of economic downturn and low teacher demand, such as was experienced in the 1930s. Hard-fought gains which teachers had made during earlier times of relative prosperity, and the high demand for teachers, were open to reconsideration when the overall system sought to "rationalize" its existence. When resources became scarce, competition between men and women teachers increased. Competition within the teacher workforce also increased on grounds other than gender, as newcomers vied with veterans, elementary schools competed with secondary schools, and administrators and teachers struggled for what resources were available. This struggle, at so many levels within the teacher workforce, mitigated against their cooperation in terms of reforms relating to salaries, pensions, and other material conditions. It also diverted their attention away from inequities and discrimination etched into the

regular structures and rules of the continuing grammar of the school system.

NOTES

1. See, for example, Trustee Dr. Minerva Reid's comments at school board meetings during 1935 and 1936 (Toronto Board of Education [TBE] Minutes).

2. Where he quickly took an outspoken leadership position in favour of cuts to teachers' salaries and educational expenditures generally, as well as continuing discriminatory retirement practices against women teachers in the Board. See, for example, *Toronto Daily Star*, March 3, 1938.

3. In fact, the women involved had already had some experience with the successes of collective action. Six years previously, in 1879, some had balked at a Board demand that they "muster with their classes" (*Canadian Educational Monthly*, 1 (10), Oct. 1879, p. 528) for a civic parade being held in honour of the Governor-General. It was an action which, after much attention from the Board and the local press (*The Globe*, Sept. 18, Oct. 2, Nov. 6, 1879) proved successful, in spite of criticism in at least one journal that their actions posed the

danger . . . of encouraging a disregard of constituted authority, and of weakening the claims of school discipline in the case of those who should be the first to respect and maintain them; . . . [and of] placing oneself heedlessly out of accord with one's professional brethren [sic] (*Canadian Educational Monthly*, 1 (10), 529, Oct. 1879).

A similar event occurred four years later, in 1883, when a number of women teachers had attended a meeting of the Toronto Board in order to request a raise in salary. While they were not successful at that time, once again they did gain some publicity in the press for their actions (*The Telegram*, Feb. 22, 1883).

4. In 1891, for example, the executive of the women's association presented a petition to the Board, signed by 361 women teachers in the city. See TBE Minutes, 1891, pp. 133-134.

5. Not to be pursued here, unfortunately, is the relation of these women teachers, and their organization, to the organizations and activities of the contemporary women's movement. See, for example, *Themes* (Prentice) and *Virtuous Women* (Bryans).

6. See, for example, *Virtuous Women* (Bryans).

7. The marriage ban has already been mentioned in this regard. See, for example, *Toronto Star*, Aug. 25, 1938; *The Telegram*, Mar. 20, May 18, 1936; *The Daily Mail and Empire*, Mar. 20, 1936.

8. See the *Documentary History of Education in Upper Canada* [DHE], Vol. 11, p. 289. That the motivations for this plan were not solely humanitarian in nature, was made clear by the comments of the Council of Public Instruction at the time. The plan, they stated, "will prove a strong ground of encouragement to many to enter a profession hitherto but ill-required, while it cannot fail to provoke increased zeal and exertions on the part of those already engaged therein" (DHE, Vol. 10, p. 163).

9. Ryerson, of course, saw things differently. In his 1871 *Annual Report* he complained that "the Legislature performed its part generously, but the teachers, except in a very few isolated cases, failed to do theirs" (p. 47).

10. For example, during most of the years in the two decades between 1853 and 1873 there were approximately equal numbers of male and female teachers in the public elementary schools of the province. By 1873, however, only 5 percent (15 of 292) of all teachers

pensioned to date under the plan were women (*Annual Report*, Toronto Board of Education, 1853, p. 28; 1873, p. 195).

11. In addition, there were many other drawbacks for teachers. Pensions were only available to teachers who had "devoted the greater part of their lives to teaching" or those who were no longer physically capable of teaching. While no specific number of teaching years was stipulated, many early recipients of the pensions reported having taught 40 to 50 years, and even those qualifying during the first year of the plan under the poor health category, reported having taught an average of over 20 years (Smaller, H. [Dec. 1993], Teachers and schools in early Ontario, *Ontario History*, 85 (4). Other qualifying criteria included an annual letter of reference from a religious or other official, attesting to a "good moral character, and sober steady habits" (*Annual Report*, 1871, p. 51). It was also proved very difficult, and expensive, for teachers in rural areas to collect their annual pension payment.

12. See the *Documentary History of Education in Upper Canada*, Vol. 22, p. 279; Vol. 23, p. 126.

13. In 1883, for example, Trustee Ogden submitted a notice-of-motion at the Toronto Board to "supplement" pensions of retiring city teachers – only to withdraw the motion two months later (TBE Minutes, 1883, pp. 26, 65).

14. There were also provisions for smaller pensions for those who were to retire in the ensuing ten years, and as a result would otherwise not be teaching long enough to build up complete pension credits (Toronto Board of Education Minutes, 1912, Appendix, pp. 570-573).

15. Clearly, however, many women teachers – especially those in rural areas – were unable to benefit from pension plans over the years because of the tenuousness of their employment conditions.

16. See *The Telegram*, Feb. 22, 1935. A Board by-law expressly allowed trustees this option of extending contracts past official retirement age, and it was often exercised in needy cases. The "savings" would have presumably been realized by hiring younger and cheaper teachers in their place.

17. See *The Telegram*, Mar. 4, 1936. See also reports in the *Toronto Daily Star* of March 4 and 5, 1936. This action was taken, in spite of a Board by-law which specifically allowed trustees the option of extending retirement dates of individual teachers so requesting.

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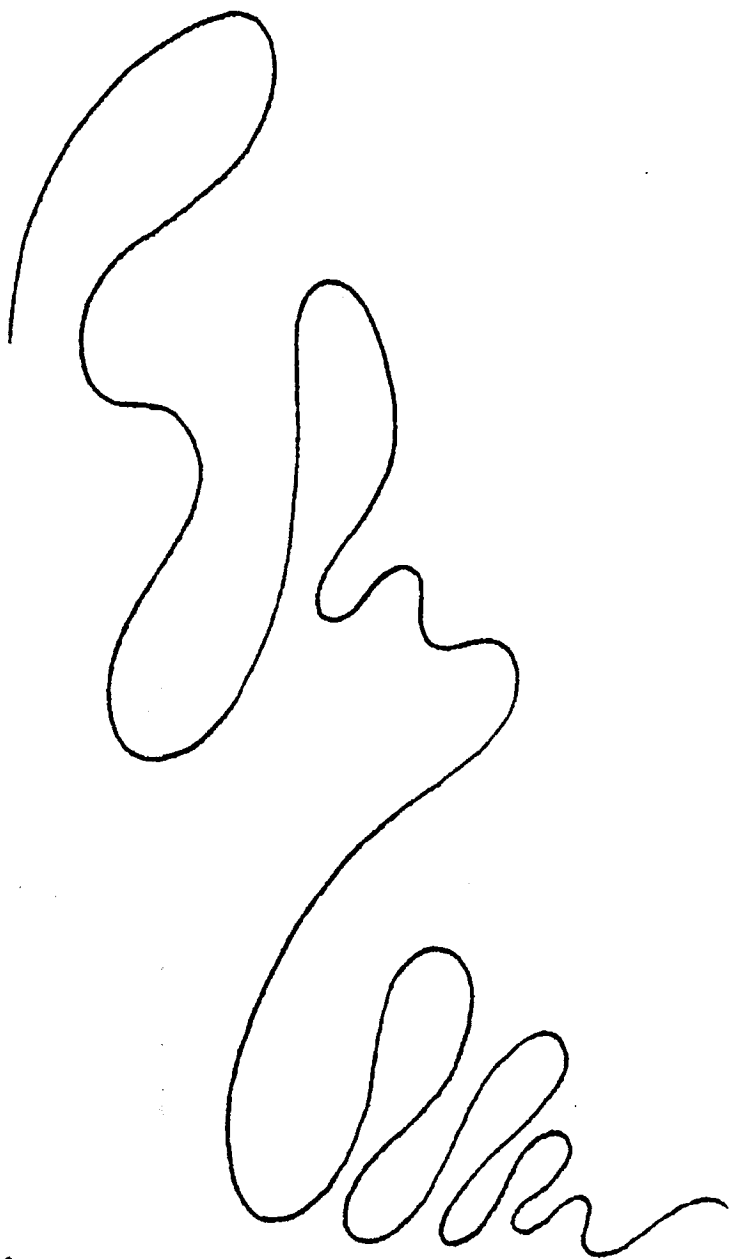
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METAPHORS: TOOLS FOR CRITICAL THINKING

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ABSTRACT. There is a large body of literature about the importance of teaching critical thinking skills and many different approaches have been advanced for teaching it. Little attention, however, has been devoted to the use of metaphor as an analytical tool. The following article utilizes the theories advanced by Campbell, Jung, and Bruner as they relate to a general understanding of how metaphor shapes human thought. The utopian garden (Eden) has been selected as an example of what Jung calls an archetype. This particular archetype is traced through three different historical ages (Biblical, Enlightenment, and New Age psychotherapy) in order to illustrate how each age has reconstructed the archetype to reflect its own metaphors. The utopian garden archetype contains within itself two implicit questions: Why did humanity leave an ideal garden? And how can we find our way back?

RÉSUMÉ. Des très nombreuses études traitent de l'importance que revêt l'enseignement de la pensée critique et des différentes approches proposées pour cet enseignement. Toutefois, peu de chercheurs se sont intéressés à la métaphore en tant qu'outil d'analyse. Cet article s'appuie sur les théories proposées par Campbell, Jung et Bruner dans la mesure où celles-ci se rapportent à une compréhension générale du rôle que la métaphore joue dans le façonnement de la pensée humaine. L'utopie du paradis terrestre y est utilisée pour illustrer ce que Jung appelle un archétype. Cet archétype particulier est examiné dans trois contextes historiques, à savoir l'époque biblique, le Siècle des lumières et la psychothérapie dite "du nouvel âge", afin d'illustrer comment chaque période reformule l'archétype en fonction de ses propres métaphores. L'archétype du paradis terrestre recouvre deux questions implicites: pourquoi l'humanité a-t-elle quitté ce lieu idéal? Comment faire pour retrouver ce paradis?

Much has been written about the importance of teaching critical thinking skills. Critical thinking is vital for the well-being of a democracy. Thomas Jefferson advised, "A democracy cannot survive unthinking citizens" (Beyer, 1995, p. 2). Many different approaches have been

advanced for teaching critical thinking, but little attention, however, has been devoted to the use of metaphor as an analytical tool. Metaphor is a powerful tool for unlocking abstract ideas. There is a simple metaphor lurking behind every complex theory. Each field of inquiry – history, science, politics, religion – nurtures its own stock of preferred metaphors. Metaphor can assist us in disclosing the meanings tucked away inside competing ideologies. The following article illustrates how metaphor can serve as a useful tool for advancing critical thinking skills.

CRITICAL THINKING, REFLECTIVE THINKING

What is critical thinking? Ennis (1987) offers the following definition: "Critical thinking is reasonable reflective thinking that is focused on deciding what to believe or do" (p. 10). Ennis' definition stresses the importance of reflective thought. What takes place in the mind when we think reflectively? John Locke describes reflective thinking in the following words: "That notice which the mind takes of its own operations and the manner of them" (Baldwin, 1960, p. 435). Reflection, in other words, is thinking "turning back" upon itself. There is a subtle metaphor contained in the word "reflection." The *Dictionary of Philosophy and Psychology* explains, "The metaphor implied in the term reflection is that of 'turning back' upon something" (Baldwin, 1960, p. 436). We think reflectively whenever we "turn back" upon or call into question the assumptions, premises, or presuppositions underlying our thought. The purpose of such thinking is to establish clear and logical connections between beginning premises, relevant facts, and warranted conclusions. The reflective thinker is someone who bases his or her opinions on sound logic and substantive information.

Critical thinking is reflective thinking. We think reflectively whenever we reach back and carefully examine the assumptions underlying our most cherished ideas. "Identifying and challenging the assumptions by which we live," says Brookfield (1987), "is central to thinking critically" (p. 89). The present article, for example, is based on three working assumptions: (1) that there is a mental activity that can be identified as critical thinking; (2) that cultivating such thinking is a worthwhile objective; and (3) that metaphor can be used as a tool for developing such thinking.

Howard Gardner (1993) questions whether skills developed in one domain of knowledge can be transferred into another. He believes critical thinking can only express itself within a particular domain of

knowledge. "The kind of thinking required to analyze a fugue is simply different from that involved in observing and categorizing different animal species, or scrutinizing a poem, or debugging a program, or choreographing and analyzing a new dance" (p. 44). Each domain of knowledge elicits its own individual style of thinking. The transfer of skills from one domain into another, Gardner believes, is narrowly limited. "There is little reason to think that training of critical thinking in one of these domains provides significant 'savings' when one enters another domain" (p. 44). Becoming a critical thinker is largely a matter of developing the habits of mind that have proven themselves useful within a particular domain. Gardner is willing to concede, however, that "if the lessons of critical thinking are deliberately revisited in each of the relevant classes or exercises" a more "reflective" quality of mind may emerge (p. 44).

Gardner will have no disagreement about the idea that critical thinking cannot be prepackaged and distributed wholesale. If we wish to think critically about science, literature, or art, we must first master the basic concepts and facts within each discipline. Expertise in one field of inquiry does not guarantee critical thinking within another. (Linus Pauling's crusade to promote massive doses of vitamin C is a case in point.) Though Gardner's interpretation of transfer is a parsimonious one (both Vygotsky and Bruner are more charitable), nevertheless, he does not close the door completely on the possibility of our developing "reflectiveness" as a habit of mind. "There is nothing in the inherent nature of habit," Dewey (1959) reminds us, "that prevents intelligent method from becoming itself habitual" (pp. 100-101). Reflective thinking revolves around the habit of critically examining the basic assumptions underlying a pattern of thought. Assumptions, in turn, are frequently expressed in the language of metaphor. (Newton's cosmology, for instance, is based on a mechanistic metaphor.) Metaphor offers us a reflective tool which can be used to analyze basic assumptions. Forming the habit of selectively evaluating metaphors is an important step in developing a reflective mind.

DEFINITIONS

A Texas billboard reads, "What is a metaphor?" The answer given, "A place for horses to graze." (Meadow for.) Webster (1964) offers a different definition: "A figure of speech denoting by a word or phrase usually one kind of object or idea in place of another to suggest a likeness or analogy between them" (p. 1420). Webster goes on to

explain that the concept of metaphor includes "a compressed simile that makes explicit an implied comparison." Metaphor, as it is used throughout this article, is consistent with Webster's definition. Similes, analogies, parables, fairy tales, jokes, cartoons, and other forms of symbolic and suggestive thinking all fall under the general rubric of metaphor.

Root metaphors

Stephen Pepper (1972) in his book, *World Hypotheses*, presents a persuasive case for how root metaphors facilitate reflective thinking. There is a simple root metaphor lying at the heart of every complex system of thought. "A world hypothesis is determined by its root metaphor" (p. 96). Not all root metaphors, however, are of equal worth. Some are more fruitful, expansive than others. "These survive in comparison with the others and generate the relatively adequate world theories" (p. 2). Root metaphors are useful tools for analyzing abstract systems of thought. They are keys for "unlocking the doors of those cognitive closets which constitute the literature of structural hypotheses in philosophy and science" (p. 149). Being able to analyze root metaphors is an essential step in becoming a critical thinker.

Simple metaphors

Lakoff and Johnson (1980) have written extensively about the power of metaphor. They support the thesis that most thought is metaphorical. "Metaphor is pervasive in everyday life, not just in language but in thought and action" (p. 3). Simple metaphors are created whenever we speak of one thing as if it were another. General Sherman bequeathed to us a colorful metaphor, "War is hell!" His metaphor carries with it all of the mindlessness of a modern battlefield. Metaphor may reveal significant and surprising truths. Take, for example, Einstein's famous metaphor, "God does not play dice with the universe." The metaphor expresses Einstein's frustrations with the theory of quantum mechanics. He was not sure he wanted to exchange a stable and predictable universe for one based on statistical probabilities. Jesus advised, "No one puts new wine into old wineskins" (Mark 2:22, New Revised Standard Version). The fermenting wine will burst the skins. New ideas have similar effects on hard and frozen minds. Does this metaphor remind you of anyone you know? "If your only tool is a hammer, every problem looks like a nail." My father was a man of grim determination. All problems required a liberal application of cursing. The language of education is replete with metaphors. I have heard teachers say, "This school is a zoo." What is the metaphor telling us? If the school is a zoo,

then the children must be wild and untamed animals. The teachers, on the other hand, are animal trainers. They come to school armed with chairs and whips, protecting themselves from claw and fang while training the unfriendly little beasts. What an unpleasant thought. Perhaps we should entertain a more inviting metaphor.

Complex metaphor.

Mythology is a rich source of metaphor. "A myth," according to *The Encyclopedia of Philosophy* (Edwards, 1967), "can be roughly described as an extended metaphor, and its accompanying ritual as a dramatized figure of speech" (p. 288). Joseph Campbell has written eloquently about myth and ritual. His book, *The Hero with a Thousand Faces* (1968), argues that mythology furnishes the foundation for human thought. "Religions, philosophies, arts, the social forms of primitive and historic man, prime discoveries in science and technology, the very dreams that blister sleep, boil up from the basic, magic ring of myth" (p. 3). Mythology offers metaphorical explanations for the great mysteries of life. Myth, Campbell (1991) tells us, provides "a map or picture of the universe and allows us to see ourselves in relationship to nature" (p. 56). The problem with the modern world is we wish to interpret "spiritual mythological symbols as though they were references to historical events" (p. 172). A narrow literalism blinds us to the deeper meanings metaphor has to offer. "Heaven," for example, "is a symbol of the eternal life that is within you" (p. 76). All the heavens and all the hells, including their respective metaphors, are tucked away inside of ourselves.

Mythology reflects universal themes running through human experience. One of these themes revolves around the adventures of a cultural hero or heroine. The heroic figure, Campbell (1988) explains, is a person who is able to rise above the normal limitations of human experience. He or she gives his or her life over to something bigger than himself or herself. The heroic adventure begins with someone who has lost something or who is lacking some necessary quality in his or her life. Such a person takes "off on a series of adventures beyond the ordinary, either to recover what has been lost or to discover some life-giving elixir" (p. 123). The heroic adventure is symbolic of the human struggle in this world. The human infant is totally dependent upon others. "Childhood," Campbell (1988) reminds us, "is a condition of dependency under someone's protection and supervision" (p. 124). In order to declare our independence, we must assume the responsibility for our own lives. Independence requires an act of courage. The right

of passage from childhood to adulthood in primitive societies is symbolized by the puberty ritual. The old passes away in order to make room for the new. "That's the basic motif of the universal hero journey leaving one condition and finding the source of life to bring forth into a richer or mature condition" (p. 124). Life affords everyone the opportunity to make his or her own hero journey.

Archetypes and the structure of thought

Metaphors belong to the same class of psychic phenomena as myths, dreams, and parables. They all speak a common symbolic language. Carl Jung (1959) believes humanity shares in a mythopoeic level of mind. He calls this level the collective unconscious. The unconscious mind generates primeval images or archetypes. Jung's archetypes are similar to Plato's Forms. Both perform the function of providing the mind with an "a priori" structure. Archetypes are like flexible molds into which cultural experiences are poured, "not determined as regards their content, but only as regards their form and then only to a very limited degree" (p. 79). They furnish the themes underlying mythology – the exploits of a cultural hero, the redeeming powers of a virgin goddess, or the triumph of the forces of good over those of evil. Only a small fraction of human thought is ordered according to rational principles. The great bulk of the mind is preoccupied with dreams, myths, and fantasies. Jung contends that life is lived archetypically. Archetypes are primordial metaphors (or at least the shells for such metaphors). They furnish the underlying structure around which we organize our thinking.

Jerome S. Bruner (1965), like Campbell and Jung, is interested in discovering the structure of thought. Bruner believes each field of inquiry is composed of a handful of basic ideas, and that these basic ideas furnish the structural principles around which a field of knowledge is organized. "The basic ideas that lie at the heart of all science and mathematics and the basic themes that give form to life and literature are as simple as they are powerful" (pp. 12-13). Basic ideas permit us to condense factual information into generalized principles. The interesting thing about human perception is not that our senses tell us so much but that they tell us so little. Mind has the capacity for extrapolating a great deal of information from a few scraps of sense data. Humans are not only able to deal with the information at hand, but they are able to go far beyond the evidence given. "The testimony of the senses," says Bruner (1983), "seems less like the primary stuff of knowledge than like fodder for testing hypotheses that precede sense" (p. 66). Mind pos-

sesses its own rational powers for sorting and classifying experience, thus turning physical stimuli into knowledge.

Knowledge, Bruner (1979) contends, is a model we construct in our heads in order to give meaning and regularity to experience. Reality is never experienced face-to-face. The "real" is always filtered through a mind already programmed with organizing ideas. "We invent concepts such as force in physics, the bond in chemistry, motives in psychology, style in literature as means to the end of comprehension" (p. 120). Mind uses a variety of prosthetic devices as tools for thought. Among these, Bruner (1971) tells us, "are pictorial and diagrammatic conventions as well, theories, myths, modes of reckoning and ordering" (p. 7). Intellectual models are our guiding metaphors, devices for condensing and refining experience. Models permit us to predict and regulate the world around us. "We do the greater part of our work by manipulating our representations or models of reality rather than by acting directly on the world itself" (p. 7).

ROLE OF METAPHOR IN THOUGHT

Thus far this article has centered its attention on two general questions: (1) What is the nature of critical thinking? And (2) how does metaphor shape or influence thought? Having explored these questions, we need to turn to a third question: (3) What is the role of metaphor in promoting reflective thinking? In order to address this question, one archetype (the utopian garden) has been selected for metaphorical analysis. (The annals of thought offer many interesting archetypes: the cultural hero, Ulysses, Jesus, Lincoln; the redeeming powers of a virgin goddess, the Virgin Mary, Joan of Arc, Mother Theresa; and stories, such as *Cinderella*, the fairy-tale, *The Book of Esther*, and *The Bridges of Madison County*, only to mention a few.) The utopian garden archetype will be traced through three different historical ages: Biblical, Enlightenment, and New Age psychotherapy. By comparing the metaphors used in these three different ages, we will be able to see how assumptions become translated into complex patterns of thought. The ability to identify assumptions is an essential step in becoming a reflective thinker.

Biblical

The Bible is a wonderful source of metaphor. One of the most vivid and compelling stories is the one told about the garden of Eden. The story explains how given such a glorious beginning ("God saw everything that he had made, and indeed, it was very good") things so quickly went

wrong (Genesis 2:3). The problem began with Adam's and Eve's fall from grace. The first parents, though they were given free run of a utopian garden, were not able to obey one simple rule: "But of the tree of knowledge of good and evil you shall not eat, for in the day that you eat of it you shall die" (Genesis 2:17). The fruit on the tree in the center of the garden looked too delicious to pass by. With a little coaxing from the snake (Satan), Adam and Eve ate the fruit. God was displeased with their disobedience. Adam and Eve were banished from the garden. "Therefore the Lord God sent him (Adam) forth from the garden of Eden, to till the ground from which he was taken" (Genesis 3:23). Eve's lot was to suffer "pangs in child birth."

The first parents had committed the original sin. Humanity, through its foolishness, had alienated itself from God. Life in the perfect garden had been lost forever. How could humanity atone for its sins, restore itself to God's good graces, and return once more to living in a paradisiacal garden? Christian theology formulated an answer to this problem. Michael Grant (1992) in his book, *Jesus: An Historian's Review of the Gospels*, offers the thesis that Jesus' central teaching was the arrival of the Kingdom of God. Jesus believed his earthly mission was to initiate God's kingdom, here and now. Jesus' crucifixion raised many fundamental questions. One question was where is the Kingdom of God? Paul, through his ministry and letters, offered an answer to this question. For Paul the life and death of Jesus Christ was the central event in human history. Jesus' crucifixion had atoned for the sin of Adam and Eve. "Therefore just as one man's trespass led to condemnation for all, so one man's act of righteousness leads to justification and life for all" (Romans 5:18). Paul removed the Kingdom of God from the earthly realm and established it on a spiritual plane. "Flesh and blood cannot inherit the Kingdom of God, nor does the perishable inherit the imperishable" (1 Corinthians 15:50). For Paul, only one road led to the Kingdom of God, the road mapped out by faith in Jesus Christ. "A person is justified not by the works of the law but through faith in Jesus Christ" (Galatians 2:15). Faith in Jesus Christ would return mankind to a spiritual garden.

Enlightenment

The utopian garden archetype was revisited by Jean Jacques Rousseau in his political discourses. Rousseau's (1974) *Social Contract* tells us about mankind's "fall from grace." Humanity once lived in a state of nature, a primeval utopia where things were simple and pure. There

were "no houses, huts, or property of any kind, so that everyone slept wherever he happened to be" (p. 157). The family was the only institution. There was universal freedom and equality. Why, then, if things were so perfect, did humanity leave the state of nature? Foolishness, pure and simple! One day a "non-reflective" savage decided to stake off a piece of property and build a fence. "The first man who, having enclosed a piece of land, took it into his head to say, 'This is mine,' and found people simple enough to believe him, was the true founder of civil society" (p. 173). The others, rather than rising up in indignation, went along with the hoax. "The human race would have been spared endless crimes, wars, murders, and horrors if someone had pulled up the stakes or filled in the ditch and cried out to his fellow men, 'do not listen to this impostor!'" (p. 173). Thus private property (original sin) caused humanity to leave the state of nature (Eden). To more completely utilize private property, humanity devised two complementary skills, metallurgy and agriculture. These skills "made men civilized and brought on the downfall of the human race" (p. 180).

How can humanity find its way back to the perfect garden? Rousseau's (1979) answer is contained in his classic work on education, *Emile*. The story of *Emile* centers around the ideal, though hypothetical, education of a little boy. *Emile* is reared in the countryside away from the corrupting influences of civilized life. "Civil man is born, lives, and dies in slavery" (p. 42). Only one person is allowed to come into contact with *Emile*, his tutor. The tutor's role is very simple, that is, seeing that *Emile* does not come into contact with anything bad. *Emile*, like a natural savage, is allowed to learn everything from his own personal experiences. *Emile* studies what he desires to know when he desires to know it. When *Emile* is ready to learn geometry, he teaches it to himself. The tutor never instructs *Emile* in anything. The whole of education is guided by the child's nature. "In choosing objects to imitate," declares Rousseau (1979), "I would always take nature as my model" (p. 345). This is because "childhood has its ways of seeing, thinking, and feeling which are proper to it" (p. 96). For the first twenty years of life, *Emile* lives happily in his country home. He shows little interest in other people. At the age of twenty, however, *Emile* enters into manhood. (Rousseau refers to *Emile* as a savage who is equipped to live in civil society.) *Emile* is now ready to seek a mate. As luck would have it, there is a young woman, Sophie, who lives not far from where *Emile* has grown up. Sophie's father is a simple innkeeper. Sophie has been reared according to the principles of little girl rearing, which, incidentally, are different from those of little boy rearing. Sophie's

talents and abilities complement perfectly those possessed by Emile. The two young people are made for one another. Emile and Sophie marry and rear their children as they themselves were reared, following nature. Thus humanity, through education, atones for its sin (private property) and returns to the utopian garden, nature.

New Age

Marianne Williamson's (1994) best selling book, *A Return to Love*, provides us with a modern version of the utopian garden archetype. The story is told in the language of New Age (spiritual) psychotherapy. Williamson divides the life of the individual into three distinct stages: childhood, adolescence, and adulthood. Each stage has its overarching theme. Childhood is the first stage. "When we were born," says Williamson, "we were programmed perfectly. We had a natural tendency to focus on love" (p. 14). Childhood is a happy time of life. Children, metaphorically, are living in "the garden of Eden." They have a holistic view of life. The world is filled with wonder and magic. Each day brings forth the discovery of something exciting and wonderful. (Williamson's characterization of childhood as a time of happiness may more nearly reflect her own experiences than those of other children around the world.) This happy world, unfortunately, ends all too soon.

The child's world is swept away by the second stage of development, adolescence. "Why is it," asks Williamson (1994), "that we reached a certain age, looked around, and the enchantment was gone" (p. 14)? We learned to think unnaturally. We were taught the concepts of "competition, struggle, sickness, finite resources, limitations, guilt, bad, death, scarcity, and loss" (p. 14). We learn we are "not quite good enough the way we are" (p. 20). Adolescence is a time of dissatisfaction with ourselves and with others. This negative energy frequently follows us into our adult years. "By my mid-twenties," Williamson confesses, "I was a total mess" (p. 13). The adolescent, without realizing it, has wandered out of the garden.

How can we find our way back into the metaphorical garden? The answer lies in the third stage. The adult seeks to rediscover the "spiritual centredness" he or she knew as a child. Williamson (1994) found her way back into the garden by studying *A Course in Miracles* (which is a spiritual, self-help book that combines Christian concepts, eastern mysticism, and modern psychotherapy [1992, pp. 7-13]). "I felt I had come home" (Williamson, 1994, p. 15). *A Course in Miracles* was not just another book. "This was my personal teacher, my path out of hell" (p. 15). What was the lesson Williamson learned? Love, pure and simple! "Love is what we were born with. Fear is what we have learned

here. The spiritual journey is the relinquishing or unlearning of fear and the acceptance of love back into our hearts" (p. 20). The road to healing is one of rediscovering the child who lives inside. We have to return to the "enchanted realm that we knew as children. Our childlike self is the deepest level of our being. It is who we really are" (p. 22). When we wandered out of the garden, we "strayed from God, or wandered away from love" (p. 22). *A Course in Miracles* provided Williamson with a way of returning to love. Where is the mystical garden – the loving place of our childhood years? Right where it has always been, tucked away inside ourselves. The utopian garden can be ours if only we have the courage to take the journey of love.

Summary

Critical thinking highlights the importance of reflective thought. We think reflectively whenever we carefully examine the assumptions underlying our beliefs. Assumptions, in turn, are frequently expressed in the language of metaphor, hence metaphor offers us a useful tool for analyzing complex systems of thought. (Stephen Pepper refers to this as the root metaphor method.) Forming the habit of analyzing metaphors is an essential step in becoming a reflective thinker. Both Campbell (mythology) and Jung (archetypes) agree there is an "a priori" structure underlying the reoccurring themes in human experience. Bruner makes similar claims for the structure of knowledge. He believes all knowledge is organized around a handful of unifying ideas. These ideas provide a field of knowledge with its distinctive structure, hence, if we wish to think critically, we must come to grips with the key ideas underlying the structure of knowledge. Campbell's, Jung's, and Bruner's theories all make abundant use of metaphor. Metaphor is the measure of mind! In order to illustrate how metaphor may be used as a tool for unlocking complex ideas, the utopian garden archetype has been examined reflectively in three different intellectual ages: Biblical, Enlightenment, and New Age psychotherapy. Each age has recast the perfect garden archetype in the language of its own metaphors. These metaphors explain why mankind left an ideal garden and what humanity must do if it wishes to rediscover its utopian beginnings.

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PARTNERSHIPS IN PRESERVICE EDUCATION: PERCEPTIONS OF ASSOCIATE TEACHERS AND STUDENT TEACHERS

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ABSTRACT. The purpose of this study is to describe the differences in perceptions between associate teachers and student teachers in regard to a post-degree, one-year, school-based teacher education program, based on the responses to similar questionnaires given to associate teachers and student teachers. There were differences in perceptions between the two groups in the following areas: benefits to pupils, benefits to student teachers, benefits to associate teachers, benefits for the school, and negative elements for pupils. Some of these differences may be attributed to stages in one's career and the quality of the relationships between the associate teacher and the student teacher.

RÉSUMÉ. Cette étude décrit les différences de perception relevées dans les réponses fournies par des professeurs auxiliaires et des professeurs stagiaires à un questionnaire similaire portant sur un programme complémentaire de formation des maîtres d'une durée d'un an offert en milieu scolaire. Ces différences de perception avaient trait aux éléments suivants: utilité du programme pour les élèves, pour les professeurs stagiaires, pour les professeurs auxiliaires et pour l'école, et inconvénients pour les élèves. Certaines des différences observées pourraient être attribuables au stade de la carrière et à la qualité des relations établies entre le professeur auxiliaire et le professeur stagiaire.

Recent reform in teacher education programs in Britain, and in North America, has taken a school-based approach. In Britain responsibility for initial teacher training has been devolved from the universities to the schools. However, Hannan (1995) reports little support for this model of preservice education on the following grounds: insufficient funding and lack of teacher expertise and time to provide a teacher education program rooted in theory and linked with classroom practice. A study conducted by Poppleton and Pullin (1992) reported similar findings as well as the concern among teachers that the transfer of initial teacher training from the universities to the schools is the first step in the deprofessionalizing of teaching.

In North America restructuring of teacher education is linked to school reform and the professionalization of teachers. Reform in preservice education is structured on the establishment of the Professional Development School (PDS). Lieberman and Miller (1990) describe the agenda of the PDS: (1) to provide a context for reforming educational practices, (2) to contribute to the preservice education of teachers and to induct them into the teaching profession, and (3) to provide for continuing development and professional growth of experienced teachers. In a PDS, practitioners and professors work in partnership to implement this agenda for joint-renewal. What distinguishes the PDS movement from other models of reform is that it focuses on teacher preparation as a vehicle for restructuring (Ross, 1995).

In the United States a number of PDSs have been established on the basis of a partnership between the faculties and the schools. Darling Hammond (1990) provides a rich source of case studies on some of these PDSs. In Canada one model of a PDS involves university-based programs with value-added practice. Student teachers are urged to participate in the life of the school and teachers are encouraged to become involved in thoughtful discussions about teaching and learning (McNay & Cole, 1992; Duquette & Cook, 1994).

Another approach to professional development schools in Canada is the school-based teacher education program offered at the University of Ottawa in which the Faculty of Education collaborates with local schools in the delivery of a one-year preservice program. The program involves approximately 60 student teachers and an equal number of associate teachers in up to 30 schools. Pairs of student teachers work with teachers in their assigned schools, spending about 80% of their preservice year in the classroom. The theory is given during seminars, workshops, and lectures. Faculty advisors and associate teachers assist the students in linking the theory with on-going practice. Graduates of this program have an understanding of theory, and are skilled in classroom practice.

The results of the studies done on the elementary school-based program revealed, among other things, differences in the perceptions of associate teachers and student teachers. In a study done by MacDonald, McKinnon, Joyce, and Gurney (1992), it was found that associate teachers and student teachers perceived different institutional constraints as important. For teachers the lack of time to meet with students was a problem. The most important institutional constraint for

student teachers was their minimal role in effecting change in schools. Interestingly, for student teachers the need to clarify and standardize the role of their associate teachers was critical. However, associate teachers did not report a need for clarification on this matter.

In another study of the elementary on-site program, differences in perceptions between teachers and student teachers were also noted (Duquette, 1993). The two groups were asked to respond to a questionnaire about the program, which was based on Rogers' (1983) five characteristics and eleven dimensions of an innovation. For associate teachers the social prestige of being involved in the first year of implementation of this innovative program was significant. However, for student teachers the convenience of being in one school was important. Interestingly, some students expressed concerns about their relationship with their teacher, which they felt were mainly due to poorly defined roles for associates. However, not one teacher reported that the relationship with the student was a problem.

The study reported in this article also involves the perceptions of associate teachers and student teachers involved in a school-based program (on-site program), but this study was conducted at the secondary level, rather than at the elementary level. The secondary program is operated in partnership with local boards of education, the Ministry of Education and Training, the federations, and the university. The secondary on-site program is based on four guiding principles: knowledge of theory and research; skill in the technical components of teaching; inquiry related to the classroom, school, and societal contexts; and reflection on how theory and research are linked with practice in which knowledge-in-action is developed. These principles provide a foundation for the organization and implementation of the program.

The students spend four days in the schools and one day at the university per week. In the schools they are assigned to one or two associate teachers per semester on the basis of subject specialty. The students gradually assume most of the classroom responsibilities. Their associate teachers teach them the methodology courses in their subject discipline (e.g., how to teach math at the intermediate level), and they evaluate the practice teaching sessions. Students are placed in the schools from opening day in September until the end of April. During the year each student teacher is assigned to at least two associate teachers in two different subject areas. Theory is taught by a faculty member one day a week at the university. Topics in the foundations and methods courses

in the traditional program have been integrated into one course for the purpose of this program. Students are expected to do the assigned readings and to integrate observations of practice with the theory and research.

The purpose of this study was to examine the differences in perceptions between associate teachers and student teachers participating in the secondary school-based teacher education program (on-site program). The research questions are as follows:

1. Are there differences in the perceptions between associate teachers and student teachers regarding the positive and negative elements of the school-based program?
2. What is the nature of the differences in perceptions between the two groups of participants at the secondary level?
3. How do these perceptions relate to previous studies at the elementary level?

SUBJECTS AND QUESTIONNAIRES

Associate teachers

The sample consisted of 21 associate teachers (seven female and 14 male) whose teaching experience ranged from one year to 32 years. The average number of years of experience was 22 years. The highest degree obtained by 14 associate teachers was at the Bachelor's level. One teacher held a Master's in his discipline, and six had an M.Ed. Seven of the associate teachers reported that they had specialists qualifications in their subject area, and two held principal's qualifications. Some (15 of 21) of the associate teachers indicated that they had previously worked with student teachers. Almost half of the associate teachers (10 of 21) reported that they are over 50 years of age. Eight are between 41 and 50, and three reported that they are between 26 and 40.

In April all 33 associate teachers were asked to complete a questionnaire, which consisted of five parts. The first section included seven questions to provide demographic information (sex, number of years teaching, highest degree, other professional qualifications, age range, reasons for becoming involved in the on-site program, and if they had previously worked with student teachers). Part two required associate teachers to comment on the benefits of the program under five headings: pupils, student teachers, the school, associate teachers, and other. In part three respondents were asked to state the negative elements of

the program under the same headings as for part two. In the fourth section associate teachers were asked to list ways the on-site program could be improved. All items in parts two, three, and four were open-ended. The fifth component was composed of eleven items. For seven of these questions associate teachers were required to evaluate the program and the learning of the student teachers. The items included an overall rating of the program; comparisons of these student teachers with previous cohorts of University of Ottawa student teachers (practical skills, knowledge of educational theory, knowledge of adolescents, knowledge of school board practices), usefulness of the student handouts that were distributed, and usefulness of the weekly visits by the faculty member. Respondents answered the above items using a five-point Likert scale. Associate teachers were also asked if they would be willing to become involved in the program next year and if they would recommend the program to colleagues. Responses for these two items were in a Yes or No format. There was also an item in which teachers were asked to rate their own learning from involvement in the program (using a five-point Likert scale). For the final item, respondents were invited to comment further on the on-site program. Questionnaires were read and edited by two associate teachers to ensure appropriateness of language and content validity.

The faculty member distributed the questionnaires to the associate teachers during the first week of April. An instruction sheet was included, and the faculty member explained the instructions orally to many of the associate teachers. Associate teachers were to complete the items and return the form to the faculty member using the attached self-addressed envelope.

Student teachers

Eleven of the 12 student teachers in the program completed the questionnaire. Of the student cohort there were nine females and two males. The highest degree earned by ten of the students was at the Bachelor's level and one held a Master's degree in his subject area. Ten of the students indicated that they had previously worked in a school, and five reported that they had previously worked in a mentor-style relationship. The students ranged in age between 23 years and 46 years. The average age for this group was 30 years.

The questionnaire for the student teachers consisted of five sections. The first part contained four items designed to produce demographic data. Questions in parts two, three, and four were exactly the same as

for the associate teachers, producing data on benefits, negative elements, and suggestions for improvement. The fifth section consisted of three quantitative items in which students were required to evaluate the program, their preparedness to teach, and the usefulness of the on-campus classes. The response scale for the first and third, respectively, of these items was a five-point Likert scale. A Yes or No response scale was used for the second of these items. Four of the items in this section required the respondents to rate themselves on their practical teaching and classroom skills; knowledge of educational theory; knowledge of adolescents; and knowledge of school and board practices, the community, and educational issues. A five-point Likert scale was used for these items. One item required student teachers to state which elements of the on-campus classes were useful. For another item students reported areas in which they felt their preservice teacher education left them poorly prepared. The final item required the students to indicate whether they would recommend that other student teachers become involved in the on-site program (Yes or No).

The questionnaires were distributed at the end of the last class during the fourth week in April. Instructions were given by the faculty member, and students completed the questionnaires before they left the class.

Data analysis

The data produced from both questionnaires were analyzed in similar ways. The quantitative data were analyzed descriptively to produce means, standard deviations, and, for some items, frequency counts. Data from the qualitative questions were analyzed by identifying themes for each item and noting the frequency for each theme. A single researcher analyzed both sets of data. Reliability was established as responses from the quantitative data were supported by data produced by the qualitative data. For this study only items which produced data with important differences between associate teachers and student teachers was used.

RESULTS AND DISCUSSION

Benefits for pupils

Almost half of the associate teachers (9 of 21) reported that pupils had the opportunity to experience a variety of teaching styles. One teacher wrote, "provides some variety of approaches and ideas, as well as tech-

niques". Another commented, "a new face; a variety of approaches and strategies". It is possible that the associate teachers viewed variety as a benefit because they may have been concerned about the lack of variety in their own teaching practice. Therefore, it was the student teachers who infused the program with variety by adopting different approaches in their lessons. Interestingly, only three of the student teachers reported variety of teaching styles as a benefit for pupils. The students viewed the variety in terms of relieving the monotony of a single teacher and enrichment through exposure to different perspectives. They wrote, "the kids get a break from the regular teacher; some students respond better to the student teacher; pupils get to have two teachers instead of one" and "they get to work with two teachers and gain two points of view". That eight student teachers did not report variety as a benefit for pupils is interesting because it is possible that they did not believe that having a different style than their associate teacher was positive. Some of them may not have chosen to deviate too sharply from the teachers' style or to adopt approaches that were radically different for fear of a poor report. This notion of passive acceptance of the status quo is also found in the literature on practice teaching within a traditional teacher education program (MacKinnon, 1989). MacDonald et al. (1992) viewed this passive acceptance as an institutional constraint in their study of the elementary school-based program. Other students may not have deviated from the approach used by the associate teachers so as not to disrupt the pupils and cause themselves problems in class discipline. Kagan (1992) writes that student teachers are obsessed with class control and will design lessons and modify their teaching behaviour to maintain control.

Benefits to student teachers

The most important benefit of the on-site program for student teachers as reported by the associate teachers is the realistic experience (17 of 21). Their comments focused on the real-life experience of working in a school for a long period of time: "involvement in the everyday realities of longer-term teaching (e.g., fatigue and burnout, relationships with students, annoying administrative work)" and "seeing the long term planning of a course". It is possible that these associate teachers were comparing the experience received by these student teachers to their own training program. For some of those teachers hired in the 1960s, training consisted of a six-week course in the summer, with no contact with adolescents and little opportunity to develop practical teaching skills prior to the opening day of school.

What they perceived they needed was more field experience, and this may have been projected to their student teachers.

Interestingly, only two student teachers commented on the realistic experience. The benefit they reported most frequently was the time to develop teaching abilities and confidence (8 of 11). One student wrote: "excellent practical experience; [I] honed skills of classroom discipline, organization, test writing and questioning". Another student teacher stated, "time to establish routines and coping techniques". Student teachers may be less concerned with a realistic experience than their associates because field experience is now an important part in every teacher education program. Sufficient time to develop skills was important to these student teachers, which may reflect their need to master the practical elements of teaching and to gain confidence with adolescent pupils. The importance of developing procedures, classroom skills, and knowledge of pupils is also reported in the literature (Deal & Chatman, 1989; Huling & Hall, 1982; Kagan, 1992; Snow, 1988).

Benefits to associate teachers

Over half of the associate teachers (12 of 21) reported that a benefit for them was the opportunity to reflect on their own teaching. Teachers wrote the following: "great reflection on why one does an activity with the students," "helps me reflect on my own teaching," and "provides an opportunity for personal reassessment of teaching strategies". With these secondary teachers it is possible that with their hectic professional life, they have little time to reflect. It is also possible that working with student teachers provides an occasion to reflect. Students in the programs were encouraged to question the associate teachers about their use of approaches and techniques. Moreover, students in the secondary program often employed different styles and approaches than their associate teachers. Therefore, when questioned or presented directly with a new technique, some secondary teachers had the occasion to think critically about their own practice.

Although associate teachers indicated that they had reflected on their own practice as a result of involvement in the program, it does not seem to have been conveyed to the student teachers. Only one of the student teachers commented on the positive effect of reflection on the part of associate teachers. Seven of the student teachers indicated that professional development was a benefit for the associate teachers. One student teacher wrote: "a refresher for them; they learn from us as well". Another student made the following comment: "[We] really showed

the teachers that we had some new and creative approaches to teaching; one teacher who did not use group work at all started to change his way of thinking."

A second benefit for associate teachers as viewed by the student teachers was time to attend to other duties. Students commented that their work in the classroom gave the teachers relief from the "routine", "administrative duties," and "teaching". Interestingly, only two associate teachers commented on having time to accomplish other tasks. It is possible that most of these teachers did not perceive that they had extra time as a result of working with the student teachers.

Benefits for the school

Associate teachers reported that the most important benefit for the school of the on-site program was the enthusiasm of the student teachers (8 of 21). One teacher stated: "the student teachers played a significant role in so far as youthful enthusiasm was most welcome in sports, in curriculum and on special committees". Other associate teachers also wrote the following comments, "the fresh insight and extra enthusiasm", "brought some youth into the school," and "opportunity to gain from energy and enthusiasm of student teacher". From these comments it is clear that the work done in the classrooms and in the school by the student teachers was appreciated by the teachers. As many of them had more than 20 years experience they may have expressed a need for their own re-energizing. These student teachers may have assisted them in satisfying this need.

Only two student teachers commented on the benefit to the school of enthusiasm. For a few of the student teachers (3 of 11) the chief benefit of the program for the school was unpaid help. These students made the following comments: "free help", "extra teachers, workers at no extra cost, more resource people" and " [the school] gained unpaid staff who contributed a great deal to the life of the school". Some students clearly felt exploited. They wrote: "I felt taken advantage of", "being at the mercy of your supervisor," and "you become a slave". Interestingly, some associate teachers did not seem to be aware of the subtleties of the power relation between themselves and their students. One associate teacher referred rather insensitively to student teachers as "gofers".

Negative elements for pupils

Student teachers reported that the most important problem for pupils was the confusion over the classroom authority figures (5 of 10). One

student teacher wrote: "There is some confusion over who is actually in charge – who the students are responsible to: difference in expectations, working styles between student teacher and regulars can cause confusion."

The above comment may explain why student teachers did not view variety of teaching styles as a benefit for pupils. Another student wrote, "[pupils] had to adjust to a number of teachers and teaching styles, this may be considered good or bad". Student teachers may have regarded variety as contributing to difficulties in their class management and discipline. Establishing one's self as an authority figure in the classroom is clearly a need for student teachers. Other student teachers wrote: "there may be some confusion regarding who their teacher is and who has the power" and "confusion as to authority figures in class". Interestingly, no associate teachers commented on this confusion. It is possible that they were not aware of any incidents where the authority of the student teacher may have been weak or undermined. It is also possible that they did not recognize that some student teachers perceived their own sense of classroom control as tenuous.

SUMMARY

The findings of the present study on the secondary school-based program show that there were similarities and differences in the perceptions of associate teachers and student teachers. Both groups reported that student teachers benefited from the length of time spent in the schools. The associate teachers perceived that this school-based program provided student teachers with an experience that closely resembled the workload of a teacher. However, the students perceived that the length of time provided them not so much with a realistic experience but rather the time to develop the classroom skills necessary to survive during their first years of teaching.

Associate teachers and student teachers differed in their perceptions in the area of classroom control. The associate teachers viewed the variety in teaching approaches and styles provided by the student teachers as motivational for the pupils. However, some student teachers did not always perceive that variety produced positive effects on students. In some cases they felt that deviating from the approaches used by the associate teacher produced pupil misbehaviour and challenges to their sense of authority. This finding is different from that reported by student teachers in the elementary on-site program who stated that they imitated the style of the associate teacher in order to receive a

good report (MacDonald et al., 1992). These differences between the perceptions of elementary and secondary student teachers may be related to the context of their classroom experience and the age of the pupils they were teaching.

Another difference in perceptions between the associate teachers and the student teachers was in the area of benefits to associate teachers. The associate teachers reported that as a result of involvement in the on-site program they had the opportunity to reflect on their own practice. Whereas the student teachers viewed the benefits for associate teachers as having release time and the opportunity to learn new techniques. The final difference in perceptions was related to the enthusiasm of the student teachers. In this respect the associate teachers commented on the energy and enthusiasm the student teachers exuded in the classroom and the time they gave to extracurricular activities. In reality the student teachers may have felt that they could not deny the requests of the associate teachers to do extra teaching, marking, or supervision. The energy and enthusiasm may have been a facade hiding their feelings of resentment for being treated as unpaid help. Unfortunately, the student teachers did not voice their concerns to their associate teachers for fear of receiving an unfavourable report. In previous studies on the elementary on-site program, student teachers expressed concerns about their relationship with their associate teachers relative to teaching styles but not pertaining to workload (Duquette, 1993; MacDonald et al., 1992).

The results of this study demonstrate that student teachers view opportunities for extended periods of classroom experience as important components of a preservice program. It is in the classroom that student teachers learn the practical skills and understand how theory and practice are linked. Essentially, student teachers report that it is during practice teaching that they learn to teach (Henry, 1989; Richardson-Koehler, 1988). Unfortunately, most programs do not include extended periods of classroom experience, and many first-year teachers begin without a clear understanding of the complexity of their work and the amount of time required to do it (Childers & Podemski, 1982-1983; Deal & Chatman, 1989; Huling & Hall, 1982; Kagan, 1992; Olson, 1991; Weinstein, 1988).

The results also show that associate teachers involved in extended practice teaching situations should be aware of the power relationship that develops between themselves and their student teachers. Student

teachers perceive that the associate teachers have the power to deny them entry into their chosen profession. Therefore, associate teachers should recognize that student teachers may overextend themselves in an attempt to appear enthusiastic and capable. One of the roles of associate teachers in a school-based program is clearly to monitor the stress felt by the student teachers due to the demands of classroom duties and extracurricular duties.

Another finding of this study is that associate teachers feel that they benefit from their involvement in the school-based teacher education program. It provides the opportunity for individual classroom teachers to examine critically their own teaching and to learn new techniques from their student teachers. It may also re-energize experienced teachers and renew their enthusiasm for working with pupils. Therefore, working with student teachers for an extended period of time is a relevant and important professional development activity for classroom teachers. It may have more direct impact on pupils than many other professional development activities.

School reform at the grassroots level must begin with individual teachers reflecting on their teaching and acting to improve it. Restructured preservice programs in the form of school-based programs provide the occasion for this process to occur. In this regard school-based teacher education programs may be the vehicle for changing how teachers attain their preservice education and their on-going professional development.

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GRADE 9 MATHEMATICS IN THE COMPUTER LAB: AN INTRODUCTORY STUDY*

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ABSTRACT. A pilot project was conducted at a secondary school in which computers were used extensively in the teaching of mathematics at the grade 9 level. In this paper, the progress in mathematics of the students involved is compared to that of matched students in another school who did not use computers. All student tests and exams were collected during the school year from both groups, and analyzed. Gender appears to be a factor in the differences noted in results, but other factors, including attitude and type of software used, may also play a role.

RÉSUMÉ. Un projet-pilote a été mené dans une école secondaire où les ordinateurs ont été utilisés pour la didactique des mathématiques en neuvième année. Dans cet article, je compare le progrès en mathématiques des étudiants qui utilisent régulièrement un ordinateur et de ceux dans une autre école qui n'en utilisent pas. Tous les tests et les examens des étudiants des deux groupes ont été conservés et analysés pendant l'année. L'un des résultats importants indique que le sexe peut être la différence principale, quoique d'autres facteurs, comme l'attitude et la sorte de logiciel utilisé, peuvent aussi jouer un rôle important.

The use of computers across the curriculum is becoming commonplace in many areas in the elementary schools, particularly in language arts. The secondary schools, however, and, more specifically, the mathematics classrooms of secondary schools, remain for the most part free of modern technology. This is a result of many factors, including the lack of software tied to the mathematics curriculum, the lack of sufficient computer equipment, and the difficulty that untrained, or inadequately trained, teachers have in using the existing systems effectively. The underlying reason appears to be that the teachers of mathematics are

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not convinced that the use of computers will benefit mathematics learning and teaching, and hence consider the purchase of hardware and software not to be a worthwhile endeavour (Capper, 1988).

There is some research evidence supporting the use of computers in specific areas of the mathematics curriculum. James Kaput (1992) provides a broad overview of current studies of such usage, and concludes that computers should have a place in the teaching of mathematics. Some authors (Fey, 1986; Thomas, 1991) have suggested that the use of computers in the mathematics classroom can improve the teaching and learning that takes place. The accounts are persuasive, but anecdotal, and do not mention supporting research. There have been a few studies (Heid, Sheets, & Matras, 1990; Smart, 1987) which deal with one particular topic in mathematics such as algebra or geometry, and suggest that the computer might be helpful in teaching that one topic. Other authors (Dinkheller, Gaffney, & Vockell, 1989; Farrell & Farmer, 1988) simply assume that the use of computers in mathematics instruction is good, without providing evidence to support their statements. The arguments appear convincing that computers may make a difference in the learning of topics in geometry in particular, and perhaps in other areas of mathematics as well (McLeod, 1992). This does not answer the broader question, however, of cost effectiveness: is it worthwhile for a school or a school board to buy computers on a large scale, and have them used extensively in the teaching and learning of mathematics?

The present study addresses the issue of using computers in the mathematics class on a day-to-day basis. There are several possibilities inherent in the use of computers in the mathematics classroom. First, the computer may or may not be of benefit to the learning of mathematics in general by students. Second, the attitude of students towards mathematics may be affected, positively or negatively, by the use of computers. Third, there may be a cognitive element in the use by individual students' use of computers, in that the ability to use different mental representations may be different among those who use computers regularly in learning mathematics. Last, and perhaps of greatest importance to the school board, is the underlying idea that the computer may be of assistance in meeting the needs of groups of students with widely differing levels of ability, particularly those in grade 9 destreamed classes.

THE NATURE OF THE STUDY

In the school year of 1993-4, a joint project was set up by the author and one school board in Ontario to examine the possibility of using computers in teaching mathematics. In one new school, a Macintosh labora-

tory was set up for use by the grade 9 destreamed mathematics classes, to permit two non-immersion grade 9 math classes to be taught, wherever possible, in the computer lab. The computer was to be used as a tool for review, for enrichment, and to assist in teaching topics. In other words, the computer was to be integrated into the course wherever its use was warranted in the mathematics curriculum. The expectation was that if the use of computer software could possibly help in the teaching of mathematics, any benefits would be more apparent and measurable in classes which contain the wide range of abilities found in destreamed grade 9.

Of primary interest to both the teachers in that school and the school board, then, was the question of whether the students would benefit from this type of teaching. This benefit might take the form of academic advantage; it could involve greater liking for the subject; it might develop a greater ability in using different forms of mental representation. It was decided, moreover, that anecdotal evidence would not be sufficient to justify continuing with such a program: sufficient data would have to be collected to ensure that there was a measurable and meaningful relationship between good mathematics learning and computer use.

It was proposed, therefore, that the academic, attitudinal, and developmental levels of students at this one secondary school be measured, and compared to the like levels of similar students at a school where no computers are available for mathematics classes. By this means, not only would the staff of the pilot school know whether or not to continue such a program in future years, but the school board would find out whether this program could be of assistance in other schools.

Following discussion with board personnel, a control school was selected, in which the students of grade 9 mathematics would have no access to computers. This school was selected on the basis of similarity to the pilot school on the following factors: a) Both schools operate on a full-year system, in which mathematics is taught from September to June; b) In both schools, the French immersion students (often the most gifted) do not study mathematics with the non-immersion students, hence the non-immersion classes involved in this study contain a fairly high proportion of low achievers; and c) The socio-economic backgrounds of the students are similar.

The control group could not be selected from within the pilot school, because all teachers in that school made some use of the computer lab within the mathematics program, and hence the requirement that the control group not use computers would be a perceived hardship to the

teachers and students of this group. Furthermore, since the mathematics software on the machines in the laboratory was freely available to all students at lunch and after school, there seemed to be no way to ensure that students not in any pilot group would not have any access to the software.

SUBJECTS

There are several grade 9 classes at the pilot school. Two were selected to take part in the study, so that those students who, with their parents, decided that they did not wish to take part, could easily be moved to other classes at the start of the school year. As it turned out, this did not occur, since the students involved in the group, and their parents, were anxious to keep any possible advantage, and would have objected strenuously to any attempt to remove a child from the study.

The complete set of subjects is described in Table 1. The 38 students in the pilot group were, in general, very weak in mathematics. In the mathematics exam given by the school board at the end of grade 8, for example, only three students had a grade higher than 73%, and 26 of them had a mark less than 50%.

TABLE 1. Subject description

Group	Males	Females	Total
Pilot	22	16	38
Control	26	31	57

The control school had three classes of non-immersion grade 9 students, all taught by the same teacher; from these three classes, 57 students (including 26 boys and 31 girls), with permission from their parents, volunteered to be part of this study. Since these students were not singled out in any way, but were taught in the traditional way within the standard classes, as part of the classes, the membership or non-membership of any student or students in the study did not present a problem to the teacher. The greater number of subjects in the control group, as compared to the experimental group, moreover, permitted more one-to-one matches of ability to be made between the two groups. There were both weak students and strong students in this control group: on the grade 8 mathematics test written by all grade 8 students in the board, 15 students received a mark greater than 73%, while 21 had a grade lower than 50%.

Since the complete set of subjects was not evenly matched in various factors, subsamples were formed from the pilot and control groups, all matched as to gender and on the results that they had achieved on eleven different topics tested in the common grade 8 mathematics examination of the previous year. There were 26 matches, consisting of eleven boys and 15 girls from each school. The other students either did not have matches, or had received extra help in mathematics from resource teachers during the school year, and hence could not be considered to have the same education as the average student in the class.

PROCEDURE

The students in the control group were taught throughout the year in a standard, strongly disciplined way. The classes were highly structured, and earlier topics were constantly reviewed, in an effort to encourage mastery of the mathematics as a whole; in addition, tests were cumulative, again to encourage learning. No access to computers within the mathematics courses was, or could be, provided for these students.

During the first half of the year, the pilot group spent much of their mathematics class time in the computer lab: the mathematics lessons were delivered right in the lab, and software was used both in the lessons themselves and in reinforcement of lessons. The software used came primarily from the *Wings* series of math teaching software, but also included graphing software and review tutorials. The students were encouraged to explore the tutorials after their lessons had been completed, so as to review elementary mathematics concepts on their own, in whichever order they wished. The lab was also available outside of class to any student in the school.

As the first half of the school year progressed, the two teachers in the pilot school continued to work ahead in integrating computer software into the mathematics curriculum. They were making an effort to teach all possible units using the computer, giving classroom instruction in units for which suitable software did not exist. At the completion of approximately sixty percent of the material in the course, the remaining topics in mathematics could not be effectively taught using the computer, so the classes were moved into regular classrooms, and taught using more traditional methods. The computers were still available to the students at lunch and after school, but were no longer employed as a part of, and during, the math class itself. Hence the results described below are in two parts: first, the results from the first part of the year,

when the experimental group was using computers, and then for the latter part of the school year, when the experimental approach had ceased.

MEASUREMENT TOOLS

Regular testing and examinations

All students in both the pilot and the control group experienced the normal end-of-topic tests which measure achievement, done in every class at the end of a topic of study. This was carried out at regular intervals throughout the school year, and copies were made of all tests, for later inspection. When both sets of students had studied a specific topic, then the results of similar questions on the topic were compared and recorded. It would have been disruptive to the two sets of teachers to have expected them to have identical tests, but the questions asked were very similar, and hence direct comparisons were possible for the core topics and most of the optional ones in grade 9. The students also wrote mid-term and final exams, and a posttest based on the same kind of test items which had appeared on the original grade 9 entrance exam which they had written at the end of grade 8. All of these were photocopied for school-to-school comparison.

Attitudinal questionnaire

One aspect of mathematics which is currently of interest is the student attitude towards it. There are many students who dislike mathematics, and drop out of mathematics study as soon as it is permissible to do so (Lafortune & Kayler, 1992; Steen, 1990). Since all students in grade 9 must study mathematics, however, it is inevitable that the classes contain some students who dislike the subject. It is also possible that the use of computers in teaching mathematics will change the attitudes of some children. For these reasons, permission was asked from both the students and their parents in both groups, to have the students fill in an attitudinal questionnaire. The students filled in this questionnaire twice – once at the beginning of the course and once at the end. The attitude scale selected was that of Fennema and Sherman (1976), which was developed in a study of 1233 secondary school students, and has since become a standard instrument. The Fennema and Sherman scale is a Likert scale, with values ranging from “strongly agree” to “strongly disagree”. Items included “Generally I have felt secure about attempting math” and “Most subjects I can handle, but I have a knack for flubbing up math”. The scale was used, for example, in the evalua-

tion of a new college course (Hollowell & Duch, 1991), where the experimental group consisted of 108 students, and the control group held 875. Hence it was decided to use this attitude scale in the current study.

Task interviews to examine mental representation

Are the students able to use visual, verbal, and enactive mental representations? It is thought by some (Aylwin, 1985) that the use of different forms of mental representation is developmental in nature, and that the amount of use of each of the forms of mental representation varies amongst individuals. It is known that there is a relationship between experience in mathematics and the ability to utilize different modes of mental representation in adults (Gurney, 1992); but little is known about the ability of children to use different modes of mental representation. There are really two questions at play here. First, do the students use all three modes of mental representation? Second, do the students use the most appropriate modes of mental representation when solving different problems in mathematics? Since a particular mathematical idea can often be represented in more than one way, the related ability to change representations, when necessary, is also important (Hiebert & Carpenter, 1992).

It was felt that the question of which mode of mental representation is used by an individual student in the solution of a problem, could best be answered by individual sessions with student and researcher, in which the student was observed while attempting to solve problems. Six boys and six girls of different levels of demonstrated mathematical ability from each of the two groups (pilot and control), selected by their teachers, were therefore asked to solve problems. The problem-solving was done on a one-to-one basis, with each student explaining to an observer the methods of solution being used, and the reasons for following these methods; materials were provided so that each problem could be attempted using various forms of mental representation. The problem-solving was carried out near the end of the school year, and required one session per student of up to 30 minutes. The student was audio-recorded as he or she described each thought process during the problem solution. The observer also made notes during the process, describing the actions taken by the student. The solution itself, any rough notes made by the student, the observer's comments, and the audio tape were analyzed afterwards to see how the student conceptualized the problem, the mental representation used in the solution, and the techniques used in the solution.

RESULTS

Attitude

The attitude of the students on entering the program was similar in both groups of students, in that those who were successful in the grade 9 entrance exam were more positive towards mathematics than were those students who were not successful. In both groups, however, the attitudinal scale gave mixed messages: students with consistently low grades (lower than 30% in a few cases) in mathematics stated that they could learn mathematics with no difficulty; yet some of the students with very high grades stated that they did not like mathematics, and were not ready for advanced work in mathematics; and some stated that they particularly enjoyed problem-solving, while at the same time they insisted that they disliked word problems. As expected, many of the students with poor grades did not see that mathematics could possibly have any relevance in life and work after secondary school. These attitudes did not change during the school year for more than one or two students in either group, indicating that it is probable that attitudes are formed much earlier in a school career. In general, however, the attitude of higher-achieving students in both groups was more positive than that of weaker students.

Mid-term exam

One comparison examined in this study is that of the January mid-term examination results. It should be noted, however, that some of the early topics studied in mathematics by the two groups were different, so there may be little relevance for these interim results. In both the pilot group and the control group, however, the marks received on the mid-term examination were considerably higher than those on the grade 8 final mathematics exam. Table 2 illustrates the change for the 26 matched pairs.

There is no way to tell, from these data, whether the marks were higher on the midterm exams because of mark inflation (since many of the highest achieving grade 8 students were in immersion classes and hence were not part of this group), or because the students knew they were in a research project, or for any other reason. There is, furthermore, no way to tell whether the midterm exams in the two schools were of comparable difficulty, since the topics taught in the two schools in the first term were not identical. It is interesting, however, to note which students were successful, and which were not. It is considered normal that marks in grade 9 improve somewhat over those of the grade 8

TABLE 2. Comparison of scores of pilot and control groups on exams

Group	N	Grade 8 exam	SD	Grade 9 mid-term	S D
Pilot	26	52.65%	12.4	67.3%	16.3
Control	26	53.4	15.0	63.7	17.1

mathematics exit exam, but the expectation is for an increase of perhaps five percentage points. The main, and important, difference found on the January mid-term exam involved gender. The girls, in general, improved considerably in both schools. As can be seen in Table 3, this difference is statistically significant.

TABLE 3. The relation between January exam scores and gender – Analysis of variance

Source	DF	SS	MS	F	P
Male between	1	2442	2442	9.62*	10.003
Female within	50	12691	254		
TOTAL	51	15132			

A closer analysis of this difference in scores shows that there is a greater difference in scores at the pilot school than at the control school, in that this difference is statistically significant at the 99% level, whereas it is not so in the control group. This is illustrated in Table 4.

TABLE 4. Scores of pilot and control groups on exams by gender

Pilot	Number	Grade 8	Grade 9 mid-term
Girls	15	53.1%	73.87%
Boys	11	53.4	58.36%
Control	Number	Grade 8	Grade 9 mid-term
Girls	15	55.1%	68.09%
Boys	11	51.4	55.9%

In the pilot group, every girl in the class improved. Two-thirds of the girls had a mid-year grade which was more than 20 percentage points higher than the grade 8 score; the others all had grades which were from 10 to 19 percentage points higher. The seven girls who had an A (80% or more) at mid-year had received scores ranging from 38% to 68% on the grade 8 exit exam. A description of these scores is set out in Table 4 above. The boys showed some improvement also, but not to as marked a degree. In particular, one-quarter of the boys had a mid-year grade

which was more than 20% higher than that of the grade 8 exam, and 19% had grades which were from 10 to 19% higher. The four boys who had an A at mid-year included the only three in the class who had an A on the grade 8 exit exam, plus one who had received only 47% on the grade 8 exam.

In the control group there was also some improvement, and again the improvement was more striking for the girls than for the boys. Approximately 12% of the boys and 44% of the girls had a score at mid-year which exceeded their grade 8 exam score by 20 percentage points or more, while an additional one-fourth of both boys and girls surpassed their grade 8 scores by 10 to 19 percentage points. The number of A grades at mid-year was a little higher, with the four boys and six girls increasing to six boys and ten girls. Two boys and one girl went down from an A to a lower grade, while three boys and five girls went from Bs and Cs to the A grade.

In neither the pilot group nor the control group was anything known about their instruction in grade 8 mathematics before they entered secondary school. The only thing known was that all grade 8 teachers of mathematics follow the same curriculum, and that all students write the same mathematics exam at the end of the school year. The order of instruction was therefore an unknown variable in the experiment. A second unknown effect was that of destreaming. This was the first year in which students in grade 9 had not been placed in different classes according to demonstrated ability in subject areas such as mathematics. As a result, some students followed a more difficult curriculum than they would have followed in previous years, while others had followed a less challenging program. At the midway point, this did not appear to have harmed the students.

In examining the individual topics taught during the year, topic by topic, some interesting trends appeared. In the control group, there were several streams of students. There were, first of all, those who did consistently well on each selected problem, and those who did consistently poorly. These students neither improved nor changed for the worse during the course. Next, there were students who started off well, and became consistently worse during the year. There were also those who improved steadily during the year. Finally, there were those who alternated between good and poor work.

This did not occur in the pilot group. In this group, there appeared to be only two streams. The first consisted of those who did consistently

well, while the second alternated between good and poor work. Hence, it appeared that the students in the pilot group had taken control of their own progress, and worked to improve it. The streams which were evident in the control group data did not appear in the data from the pilot group.

END-OF-YEAR RESULTS

The end-of-year results for the pilot group did not closely resemble those of the mid-year. They were not as encouraging, for either the group as a whole or for the girls. Two different measures were examined at the end of the school year. The first of these was simply the final exams in the two schools, as compared to the grade 9 entrance exam and the January exam. This appears in Table 5 below.

TABLE 5. Exam scores for two samples by gender

Pilot	Number	Grade 8	Grade 9 mid-term	Grade 9 final
Girls	15	53.1%	73.6%	66.2%
Boys	11	52.0%	58.36%	57.7%
Control	Number	Grade 8	Grade 9 mid-term	Grade 9 final
Girls	15	55.1%	68.09%	58.9%
Boys	11	51.4%	55.9%	52.36%

As can be noted in Table 5, the improvements found on the grade 9 mid-term did not persist for the female students to the end of the year, although the girls in the pilot sample apparently did retain more of their gains than did either the boys or the control sample.

The posttest scores could not be used in analyzing results, since one of the classes in the pilot school did not write the test under test conditions, but rather used it as an optional review in preparation for the grade 9 examination. Copies of these final examinations had been made, however, and the examinations for grade 9 mathematics in both schools contained questions similar to those of the grade 8 exit exam for more than 90% of the topics. This fact is due to the nature of the destreamed grade 9 curriculum, in which an attempt is made to bring all students to a common level. Hence these questions were used in the comparison of the grade 8 and grade 9 achievement levels in mathematics topics. The results appear in Table 6.

TABLE 6. Scores on common elements: Beginning and end of grade nine

Pilot	Number	# pass	pretest	# pass	posttest
Girls	15	10	52.1%	14	62.73%
Boys	11	7	53.6%	7	62.91%
Control	Number	# pass	pretest	# pass	posttest
Girls	15	10	56.2%	11	62.67%
Boys	11	7	52.4%	7	51.18%

From this table, it can be seen that one group of students, namely, the boys in the control group, did not improve their scores on basic mathematical questions during the grade 9 year. The general difference in scores was not statistically significant, due probably to the small sample size; yet the nature of the individual scores of these boys is interesting. Of the six boys who had failed the grade 8 entrance exam, five failed the equivalent questions at the end of grade 9, and four of these had scores as much as 30% lower than in grade 8. This occurred despite the considerable amount of extra help provided for these students during the course of the year. These grades kept the average at the grade 8 level despite the improvement of some boys during the year. Overall, in the control group, eight students failed the grade 8 material on the grade 9 exam, while two of the pilot group did. Hence overall, the girls from both groups improved their scores on the fundamental grade 8 topics repeated in grade 9, as did the boys in the pilot group.

Individual interviews

One-on-one interviews with students in the control group and the experimental group were conducted near the end of the term. The teachers were directed to select four students who were good in math, four who were poor in math, and four students who were average in mathematics; they were further asked to ensure that half of each set were boys, and half girls. Hence the selection was not entirely randomized, in order to ensure that each sample held both girls and boys of various demonstrated levels of ability. During each interview, the student had four problems to solve, while providing a running commentary on his or her thoughts during each attempt to solve a problem. The problems were of different kinds: each student had one problem which could be solved only by drawing a diagram; one which could be solved by step-by-step logical argument; and two which could be solved in different ways. Many of these were chosen from the *Ontario Assessment Instrument Pool* for grades 7 to 9. During each interview, the

student sat at a table with paper of various sizes, graph paper, protractors, rulers, compasses, and all kinds of manipulative material within easy reach.

It was obvious in the interviews that the students were not used to the kinds of problems with which they were presented, in that they really had no idea of what to do with the problems presented. The ways in which the pilot and control students dealt differently with the problems are, however, instructive. First, and perhaps most important, is that very few students drew any diagrams at all, let alone for those questions which could not be solved without one; and those few who did draw diagrams, often did not draw correct diagrams which might help them in the problem solution. There were two individuals, however, one boy in the control group and one girl in the pilot group, who did draw appropriate diagrams where such diagrams would help; there was also one boy who used the manipulative material on the table to build a scale model to solve a problem in which such an approach was very useful. The boy in question, from the pilot group, was not considered by his teachers to be a good student of mathematics, but he was the only student to solve the problem correctly.

There were differences between the two groups in some aspects of problem solving, but these differences did not have anything to do with the use of computers in the classroom. The students in the control group had obviously been taught some basic problem-solving strategies; most of them wrote down the given information on a separate sheet of paper, and then looked for something which could be answered. If the problem mentioned percentages, for example, then percentages were determined in a manner which was mathematically correct, though not all the percentages found were those asked for. The students in the pilot group had no such strategy in mind; these students, for the most part, decided on a plan of action by guesswork, or attempted, unsuccessfully, to obtain hints from the observers. They showed no evidence of knowing how to solve problems, or even of having met any of the common strategies in the grade 7, 8, or 9 *Guidelines For Mathematics* (1985). Furthermore, these students did not understand sufficient mathematics to begin to solve some of the problems; for example, the majority of these students did not know how to calculate a percentage, how to find an area, or how to substitute values for variables in an equation. In fact, six of the 12 students in the pilot sample simply refused to attempt problems which they did not feel confident about solving, compared to none of the control sample. Specifically, a problem which had several

parts, or which required a diagram to be drawn, was more likely to be refused, whereas a short, one-sentence question would most likely be attempted.

The questions dealing with logical thinking were well done by the majority of students in both groups; all students demonstrated an ability to think clearly and reason mentally to come up with a conclusion which made sense. The other problems, however, did not fare as well: the standard problems, and the problems requiring diagrams, were not, in general, well-done. There was little evidence of ability to visualize situations, or to relate the questions to mathematical concepts. A problem which had to be broken into several small problems was, in general, poorly done, since the students who attempted this kind of question often ended up getting lost in the detail. The control sample did, however, succeed in solving approximately two-thirds of each problem of this type, while those in the pilot sample managed at most one-quarter of the problem.

There was a noticeable difference in both samples between the behaviours of boys and of girls, in that the boys attempted to do everything mentally, while the girls would write things down. This was particularly noticeable in the control sample, where all students tried to solve all the questions, but also existed in the pilot sample, for those questions which were attempted. Only after all mental efforts had failed, would the boys write anything down. As a result, the arithmetic computations done by the boys were often incorrect, even when the methods were correct.

When the diagrams which had been drawn were examined, they bore little resemblance to the problems which they purported to represent; the students were not able to visualize the problems. For example, one of the questions dealt with a tree which had a rope attached to the top of the tree and the ground, while another talked of a cliff, and an observer who walked directly away from the cliff. For neither problem was a good diagram drawn: in the tree problem, not one student drew a line representing the rope; while in the cliff problem, the cliff was not drawn as a vertical line (to the ground), but rather was represented by $>$, neither horizontal nor vertical, and with no connections to anything. Measurements which were provided served only to verify one of the common myths of problem-solving, namely, that "if a problem contains two or more numeric values, then the solution can easily be found by combining these values to obtain a numeric result." Four students (three from the pilot sample and one from the control sample) combined angle measure and side measure to obtain either a sum or a

product, which somehow seemed reasonable to them, rather than simply draw a diagram and measure the desired value. Only two students out of the 24, one from each group, tried an approach which had a chance of leading to the correct solution.

At the end of each problem-solving episode by students of the pilot sample, a set of six questions were asked about the use of computers in their mathematics classroom.

These questions asked the student to specify their usage of the computers both inside and outside of the mathematics class, the degree of assistance provided by the computer software in learning mathematics, and whether the students enjoyed the process.

One of the students had replies which were different from the others in the sample; this one student did not use the computers much during the math class, and did not like them, while the other eleven stated that they had used the computer extensively, and did like using this technology. The students stated that the computer was "fun", and that using the computer was easier because "you don't have to write everything out on paper". They felt, furthermore, that the computer is better than ordinary classroom instruction because the computer is an individual assistant, who can provide immediate help and immediate correction. Of the twelve students, however, five felt that they could have learned just as much from a textbook, or from normal class interaction, but four out of the five did enjoy the computers more than regular class. None of the students used the computers outside of class for mathematics, although they did use computers for other things, such as word processing.

In the pilot classroom, the software used was found to be inadequate for direct instruction, and was used more for practice and drill. The teaching method soon settled into a short lesson, followed by a brief worksheet, then finally the computer component. The topics dealt with by the software included calculations, order of operations, integer arithmetic, fractions, exponents, algebraic relations, and word problems, while utility software, such as function graphing, charts, and spreadsheets, were also used.

DISCUSSION

It is clear from the attitudinal questionnaire that many of the students in grade 9 have an unrealistic low opinion of the benefits of mathematics, in that many of them do not believe that mathematics is necessary for the world of work. Furthermore, these students do not know whether

they have any skill in this area, nor what their strengths and weaknesses are. One particular student, for example, who stated that mathematics is easy, did not have a mark on any test greater than 40%, while an excellent student, with excellent marks, thought that she could not do advanced mathematics. It may be optimistic, therefore, to think that one can change the attitudes of such students towards mathematics at this late date in their schooling.

The results from the examinations on content, of both grade 8 and grade 9 material, show that in the pilot group, grade 8 basic material was learned during the grade 9 year, and that the new grade 9 topics were better completed by the girls than the boys. This is illustrated by the fact, as shown in Table 4 and Table 5, that the scores received on the grade 9 final (topics from both grade 8 and grade 9) were higher for the girls, and lower for the boys, than the score on the grade 8 material alone. For the control group, the girls appeared to have learned more of the grade 8 math topics and fewer of the grade 9 topics, while the boys did the opposite.

It is particularly interesting to note that the girls in both the pilot group and the control group showed greater gains in mathematics achievement than did the boys during the first part of the year. In the control group, the higher achievement continued while elementary material was retaught, while in the pilot group, the improvement coincided with the use of computers in the classes. It is possible that the girls in the control group appreciated the mastery learning approach to mathematics, and the second chance to learn elementary topics which had not been mastered earlier. In the pilot group, the achievement levels of the girls improved significantly more than the boys while the computers were being used, but these gains were not all maintained during the non-computer portion of the course. It is possible that the use of computers provided these girls with individual attention which could not exist in a normal classroom; it is also possible that the novelty of the situation provided the girls with greater incentive to work at mathematics, since few girls had used computers previously other than for word processing, while most of the boys were familiar with computer games.

At this time, it cannot be concluded that the use of the computer software provided in the pilot mathematics classroom was of significant benefit to the students studying new material in mathematics. There may well have been an advantage for both boys and girls in the learning of the grade 8 material which they had not learned previously, as shown

in Table 5; but in learning new material, the results are not clear-cut. What is known, however, is that much of the software available during the study did not match precisely the mathematics curriculum being taught, and hence that better, and very much more expensive, software would have to be written or purchased in order to test adequately the usefulness of the new technology. The software available in the market does not, in general, match the curriculum being taught in our schools, and appears suited only for review of previously learned material. This review material does have potential for use by students who need more reinforcement than is feasible in a regular classroom. Of particular importance are those programs which do more than provide "yes or no" feedback, but rather lead the student through a solution, step by step. The teacher still has to provide other methods of solution, but the computer can provide one-to-one attention where needed.

At this point in the research, more questions have been raised than have been answered. The question of effectiveness of computer software has not yet been adequately answered, since this would require more expensive software than is currently reasonable. The currently available software, however, will not replace any instruction by teachers. Furthermore, it is indeed possible that girls who have not mastered the basics in mathematics can benefit from standard software, but this is only suggested from the data, not proven beyond doubt. In addition, the gender differences found in the results in both grade 9 groups suggest that possibly new approaches must be found for adolescents who have not reached expected levels of achievement in mathematics. As shown in Table 5, students in the pilot (computer) group did learn enough of the earlier mathematics topics to warrant a pass on these topics, but the average scores were still only at a C level, which is not very high for such material. The girls in the control group, but not the boys, also improved their scores only to this level, which is disappointing in a mastery approach.

On another general topic, the whole issue of the teaching and learning of problem-solving needs to be addressed. The difficulties in this domain appeared to be at a deep level: even those students who had memorized a list of techniques for problem solution seemed unable to apply them appropriately. Moreover, there was a lack of understanding of the actual questions being asked, and a lack of ability to visualize the situations in which the questions were posed.

It is important to consider this study as a starting place for future study, on questions not only of teaching methods, but also of attitudes towards

mathematics, preconceptions of students towards mathematics, and gender differences in the study of mathematics.

In conclusion, a board of education cannot entrust the mathematics education of students to computer-based materials unless it is prepared to make a very significant expenditure for superior software. Since such superior software does not yet exist for complete courses, or even for complete units, the question is academic at this time. It was originally thought that computer software might replace the need for textbooks, but this has not happened either: textbooks are still a necessary part of the mathematics program. In order that current software be used effectively, the classroom teacher must teach the topic to the student in the same way as the computer software, which runs counter to the current philosophy of multiple approaches leading to understanding. The teacher must also teach the student how to use the software, since there is little standardization in the user interfaces for different pieces of software. Furthermore, much of the inexpensive software addresses only one-line questions, and hence is not suitable for advanced work. The teacher ends up having to do more work in integrating computers into the curriculum than the integration is worth.

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BOOK REVIEWS

JOHN D. DENNISON (EDITOR). *Challenge and Opportunity: Canada's community colleges at the crossroads*. Vancouver: UBC Press (1995). 298 pp. \$24.95. ISBN 0-7748-0516-1.

Canada's community colleges, at least the vast majority of them, were born for the most part in the 1960s and early 1970s. In existence for about 30 years, they number about 150 institutions in total with some 700 satellite campuses. About 500,000 students are enrolled in credit programs, and a further 1.5 million students in non-credit continuing education courses. The community colleges represent therefore an important element of Canada's post-secondary educational scene. Furthermore, because each province and territory has its own college system, there is a remarkable diversity in the colleges' objectives, governance, programs, and priorities.

In spite of this diversity (or perhaps because of it), there has been very little scholarly discourse or objective critical analysis of Canada's community college sector. That is not to imply that nothing has been written about the colleges. Far from it! Each provincial government and territory has a tendency to write voluminous reports on its own college system, but there is little available that examines the college sector as a whole or on a comparative basis. In fact, there have been just two major studies on Canada's community colleges. The first was Gordon Campbell's *Community Colleges in Canada* published in 1971. The second was *Canada's Community Colleges: A critical analysis* jointly authored by John Dennison and Paul Gallagher in 1986. Now, there is a third. *Challenge and Opportunity: Canada's community colleges at the crossroads*, edited by John Dennison, provides both an update on developments in the community college sector in each province and territory

since 1985, and contains chapters on important issues such as college leadership, organization, accountability, instructional methodology, community college values and culture, and aboriginal education. This is all valuable material for anyone who wishes to understand some of the challenges and opportunities that currently concern Canada's community colleges.

The book also contains some sharp critical analysis. Much of this, of course, is provided by the editor in the introduction and conclusion. But there is also an important chapter by Paul Gallagher entitled "Promise Fulfilled, Promise Pending." It is argued that the two distinguishing characteristics of Canada's community colleges are (a) as instruments for the implementation of social and economic policy, and (b) as exemplars of teaching excellence. This book provides an up-to-date report card on the successes and failures of these dual characteristics. Many colleges, however, appear to have an uncertain future, at least for the short term. Given the current fiscal restraints, certain governments increasingly tend to see the colleges simply as instruments to deliver work-related training programs. Will the colleges be able to continue with their other functions, and to what extent? Will they be able to continue to provide increased accessibility for traditionally disadvantaged groups? Can they adapt to technological change? Can they survive economic restructuring? Can they seek out and serve new clienteles? Will they continue to experiment with new teaching methodologies? How much autonomy, if any, will they be allowed? The colleges are, indeed, "at the crossroads."

This is an important book for anyone who wants to keep *au courant* with the community college scene in Canada.

DONALD A. BURGESS *McGill University*

DAVID PIMM. *Symbols and Meanings in School Mathematics.*

London: Routledge (1995).

220 pp. \$17.95. ISBN 0-415-11385-7.

David Pimm has extended the ideas he introduced in 1987(1) to explore the place of symbolism and icons in mathematics. At the same time that he makes a significant contribution to the growing interest(2) in the interaction between language and mathematics, Pimm challenges his readers to question their beliefs about mathematics teaching and learning, and the meaning of mathematics itself.

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A knowledge of symbols (and what they symbolize) is an important component of mathematics learning. For the sake of efficiency, an automatic knowledge and application of the symbols of mathematics is valued. This suggests that the symbols should be easily accessible and subject to manipulation. Pimm used the words "opaque" and "compact". Yet current practice emphasizes learning with understanding, and the need for symbols to be as transparent as possible. This contradiction introduces the whole issue of manipulation, both in the abstract and in the concrete sense. Elementary school mathematics classrooms are full of manipulatives. One of the best uses of computers in the secondary classroom is for symbolic manipulation; secondary school algebra would be a short course if students did not have to learn to manipulate expressions; graphing calculators do much of this manipulation and put much of the algebra curriculum in question. The metaphor is pervasive.

Throughout the text, one of Pimm's themes is that both the metaphoric and metonymic use of symbols pervade mathematics. If we accept Magritte's caption "*Ceci n'est pas une pipe*" for his highly representational drawing of a pipe, we also have to ask: Is a diagram of a triangle really a triangle? If it is not, what is it? and, more important: If it is not, what is a triangle?

In posing questions about the meanings conveyed by mathematical symbols, Pimm explores the meanings of words in a variety of languages. Think of the related words, *computer* (= to count), *conter* (= to tell a tale), and our use of "teller", "all told", a store's counter, and Pimm's delightful quotation: "Them as counts counts moren them as dont count".(3)

Pimm draws his imagery from a range as diverse as the Rhind papyrus, the Vietnam Veterans Memorial Wall, The Book of Common Prayer, David Hockney, and the Goon Show. He also cites the work of a number of British mathematical thinkers such as Dick Tahta, Eric Love, and, the inspiration of much current mathematical thinking in Britain, Caleb Gattegno. These references provide a valuable counterweight to the influence of US mathematical thought which has such influence on Canadian classroom practice.

David Pimm demands our thoughtful attention to the meaning of symbols, images, icons, and words, and how these connect to give meanings to mathematics.

NOTES

1. Pimm, D. (1987). *Speaking mathematically: Communication in mathematics classrooms*. London: Routledge and Keegan Paul.
2. See, for example, Anghileri, J. (1995). Language, arithmetic and the negotiation of meaning. *For the Learning of Mathematics*, 15(3), 10-14.
3. Hoban, R. (1982). *Ridley Walker*. London: Picador, quoted in Pimm, p. 60.

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MARY BEATTIE. *Constructing Professional Knowledge in Teaching: A narrative of change and development*. New York: Teachers College Press (1995). 168 pp. \$16.95 paper. ISBN 0-8077-3395-4. \$34.00 cloth. ISBN 0-8077-3396-2.

Constructing Professional Knowledge in Teaching: A narrative of change and development, as described on the back-cover of the book, "tells the story of a collaboration between an educational consultant and a classroom teacher. The two were participants in a teachers' in-service program for implementation of a school board curriculum that focused on the learner as inquirer. Within this context, consultant and teacher worked together over a two-year period to describe teaching, learning, and collaborating as holistic, integrated, relational, and artistic endeavours embedded within narrative unities of lives". Composed of eight chapters along with a foreword written by Elliot W. Eisner, Beattie describes her work with Anne, who, after twenty-six years as a physical education teacher, embarks upon teaching a core eighth grade classroom in the years just prior to retirement. In its focus on narrative and autobiography this book joins a growing body of literature in teacher education that acknowledges the significance of coming to understand the role of curriculum change in teachers' work by focusing on teachers' stories and teachers' lives.

Beattie's book is very much informed by the work of such researchers in teacher education as D.J. Clandinin, M.F. Connelly, and Freema Elbaz whose area of concern is on the significance of teachers' personal practical knowledge. Her book is part of an emerging body of scholarship on classroom-based narrative in teacher education, and sits nicely alongside other recent publications such as D.J. Clandinin's *Learning to Teach, Teaching to Learn: Stories of collaboration in teacher education* or Andy Hargreaves' *Changing Teachers, Changing Times: Teachers' work and culture in the postmodern age*. By drawing from the fields of biography

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Constructing Professional Knowledge in Teaching: A narrative of change and development, as described on the back-cover of the book, "tells the story of a collaboration between an educational consultant and a classroom teacher. The two were participants in a teachers' in-service program for implementation of a school board curriculum that focused on the learner as inquirer. Within this context, consultant and teacher worked together over a two-year period to describe teaching, learning, and collaborating as holistic, integrated, relational, and artistic endeavours embedded within narrative unities of lives". Composed of eight chapters along with a foreword written by Elliot W. Eisner, Beattie describes her work with Anne, who, after twenty-six years as a physical education teacher, embarks upon teaching a core eighth grade classroom in the years just prior to retirement. In its focus on narrative and autobiography this book joins a growing body of literature in teacher education that acknowledges the significance of coming to understand the role of curriculum change in teachers' work by focusing on teachers' stories and teachers' lives.

Beattie's book is very much informed by the work of such researchers in teacher education as D.J. Clandinin, M.F. Connelly, and Freema Elbaz whose area of concern is on the significance of teachers' personal practical knowledge. Her book is part of an emerging body of scholarship on classroom-based narrative in teacher education, and sits nicely alongside other recent publications such as D.J. Clandinin's *Learning to Teach, Teaching to Learn: Stories of collaboration in teacher education* or Andy Hargreaves' *Changing Teachers, Changing Times: Teachers' work and culture in the postmodern age*. By drawing from the fields of biography

and literary study, as well as from the body of literature on personal practical knowledge and narrative in teacher education, Beattie's book evokes a number of questions about collaborative biographical/autobiographical studies in teacher education. For example, where should the researcher – consultant locate her own narrative? When and how should the voice of the teacher-participant be represented? Indeed, perhaps the most important contribution of Beattie's work in this field is in the way it offers the reader insight into representation and the process of telling about such stories, or "how to" story experiences of change and development in someone else's classroom. This is not easy, and many scholars working within a teacher-as-researcher and collaborator framework struggle with how to write about such experiences: in whose voice? whose agenda? whose professional knowledge? What gets represented? How are issues of inequalities in power and experience handled in such co-authored or co-researched projects?

While Beattie only obliquely addresses such questions, and her text raises many more, the self-consciousness of her writing serves as an invitation to the reader to initiate such questions, not just about this particular researcher – consultant and teacher, but about the enterprise of representation in teacher education generally. In this respect her self-conscious text is not unlike Anne-Louise Brooke's book *Feminist Pedagogy: An autobiographical approach*. And where Lynley Hood, author of a biography of Sylvia Ashton-Warner, was obliged to write two texts, the biography and later the behind-the-scenes autobiography in *Who Is Sylvia? The diary of a biography*, Mary Beattie explores narrative as both phenomenon and method. This blending of phenomenon and method is an important one, again because of the way it can serve to inform the work of other researchers who may be attempting to apply narrative approaches or cultural studies approaches to classroom research in classrooms. At the same time, this notion of narrative as both phenomenon and method itself raises more questions about the degree to which any one story can be about the telling of the tale, the tale told, or about the teller of the tale? There can be no one satisfactory answer: a reader whose primary interest is in the methodology would want to see more about the telling of the tale; a reader interested in teachers' lives and classroom practice, particularly those practices associated with a learner-centred pedagogy would want to see much more evidence and testimony of the ways in which the teacher experienced the project as a collaborator, or how she came to develop particular units on mythology; and a reader interested in the significance of autobiography in educational change would want to insist on even more of Beattie-as-

Beattie, acknowledging, then, the ways in which "all biography is a form of autobiography" (Winston Rhodes, cited in Hood, 1990). This last statement might sound as though this book is somehow deficient because it doesn't satisfy any one of these special interests, but that would not be the case. While Beattie does not address in direct ways many of the issues raised above that might be organized along the lines of "the politics of the personal", her text nonetheless can be read as a "meta-story" and in so doing is of particular relevance to scholars who are interested in examining procedural issues in doing collaborative biographical studies that of necessity are about both phenomenon and method.

REFERENCES:

- Brookes, A.L. (1992). *Feminist pedagogy: An autobiographical approach*. Halifax: Fernwood Press.
- Clandinin, D.J. (1993). *Learning to teach, teaching to learn: Stories of collaboration in teacher education*. New York: Teachers College Press.
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CLAUDIA A. MITCHELL *McGill University*

NICHOLAS PALEY. *Finding Art's Place: Experiments in contemporary education and culture*. New York & London: Routledge (1995). 185 pp. \$19.95. ISBN 0-415-90607-5.

This is a book no doubt intended for art education specialists; but it should be of interest to anyone involved in helping children, especially adolescents, who grapple with meaningful learning. Paley's text is a somewhat experimental investigation of three different settings in which "at-risk" children address their learning and social challenges directly, and with positive actions, through artistic means. Although the children have their own singular aims and characteristics, their problems have a familiar ring, applicable to a multitude of settings.

A disquieting feature of Paley's book is the not-too-subtle message that these children achieve their results in spite of traditional schooling, rather than because of it. Thus any reader who is a regular classroom teacher is likely to ask, "Can I adopt some of these ideas?" The question is well worth asking, if one can achieve anything akin to the evolution in learning described by Paley. While prompting the question, Paley also provides a view of art education as an instrument for political

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awareness, critical thinking, and social change. As such this text joins a growing body of literature that attempts to eradicate any vestiges of the long outdated idea that art is an expendable nicety.

Paley's topic is intriguing, and inspirational – but not “nice”, in the sense that one thinks of polite school art. In his first example he focuses on artist – educator Tim Rollins and his Kids of Survival (K.O.S.). The teacher and his kids, working in an after school, non-school setting, “. . . have collaborated to explore, through the study of works of literary distinction and through art making, many of the complex social, political, and ideological factors which shape their daily lives in the South Bronx” (p. 22). He often works with the same teenage children over a period of several years; and some have recently gone on to study to become teachers themselves.

Where K.O.S. is the story of individual awareness that arises out of group work and a sense of community, Paley's description of the work of Sadie Bening provides dramatic contrast. Bening is the quintessential loner, a school drop-out who turns to her rudimentary video camera and the security of her bedroom to explore the evolution of her self-awareness and sexual awakening in autobiographical fashion. The results have been seen in experimental film festivals internationally and are now distributed by the Video Data Bank in Chicago.

Photographic imagery is also the subject of Paley's third example. In this case the works are the result of the efforts of a photojournalist-turned-teacher, Jim Hubbard, who provides cameras and basic photographic skills to the homeless children of Washington's streets. The results of his protégés' initial efforts have gone on a national tour and spawned a “. . . multi-sited enterprise struggling with the actualities of its own industrialization: rapid development, program promotion, continuous reorganization, and ongoing evaluation. . . .” (p. 121).

All the youths mentioned in Paley's book have produced works that have received extensive critical acclaim within the art world. More importantly, the activities have given the participants a heightened sense of identity and self-esteem, an increased understanding of their worlds along with their current and potential roles in them, and an ability to articulate evolving viewpoints. Their accomplishments are an important reminder that it is possible to instill in children a love of learning – learning that teachers and students alike see as meaningful reflections upon their everyday lives. The question remains, “Can schools do it too?”

BOYD WHITE *McGill University*

CECILIA REYNOLDS & BETH YOUNG (EDITORS).

Women and Leadership in Canadian Education.

Calgary: Detselig Enterprises, 1995.

253 pp. \$26.95. ISBN 1-55050-116-9.

The impetus behind this book, as announced by the editors, was to develop Canadian scholarly resources for students and school practitioners addressing "gender issues in education" (xv). To do this, the editors "issued a call for papers in 1992 and initiated a collaborative review process by which contributors commented on each other's work" (xv). Hence, this is not simply a collection of previously published works but rather a completely new contribution. The results of that effort were then organized and presented under three topic headings: (1) "Why All This Fuss About Gender, Educational Administration and Leadership?" a feminist, theoretical, and social critic of educational administration and the position of women within that field; (2) "Experiences of Women Educational Administrators in Provincial Contexts" a variety of studies about women in various provincial contexts; and (3) "Leadership Issues for Teachers and Others" an eclectic amalgam covering such issues as job and family conflicts (Vivian Hajnal's "Can I Do A Good Job of Both Family and Work? Decisions Regarding Offspring"), perceptions of leadership roles (Tom Gougeon, "Teacher Perceptions of Male and Female Principles"), and the public and private dimensions of administration (Hanne Mawhinney and Linda LaRocque, "Women Educators as School Board Chairpersons: Problematizing the Public/Private Dimensions of Leadership").

At the outset, it should be noted that the title of this work, *Women and Leadership in Canadian Education*, is more accurate than the stated intention of addressing gender issues in education. With the exception of the essay by Tom Gougeon which looks at the differing perceptions of male and female principals and an essay by Elizabeth Tucker on employee assistance programs directed at teachers (a largely though not exclusively female group), the real focus of this work is on women in educational administration. More particularly, it is about women's careers in educational administration. The picture it paints of insidious deterrents (Juanita Ross Epp), systemic discrimination (Ruth Rees), and the continuing existence of the glass ceiling (Barbara Gill) is bleak. At the same time, as Roberta Russell argues, there are "survivors" to learn from, and powerful women's voices to be heard (Harris).

To say that the work is about women is not intended as a criticism but merely a clarification. Certainly, this material is of great value to

Reviews

anyone interested in educational administration. Given this focus on women, it should be of equal interest and value to anyone interested in women's studies, feminist studies, and organizational studies (among others) as a multifaceted consideration of the roles and positions of women within a particular career field and the oppression which they have and continue to experience.

While the essays in this work are all generally short, and therefore cannot be expected to develop a depth of argument or to explore all aspects of an issue that more extended articles might provide, they cover a broad range of topics and issues offering a solid introduction to each one and providing critical sources for further research. The quality of the essays is generally quite good. The developmental and collaborative process used to put this work together appears to have provided the various essays in the work with a unity within their diversity (somewhat unusual in collected works), with only a few seeming somewhat out of place, such as Katie Webb's " 'Our School': Reclaiming Teaching as Leading", a fictional, quasi-philosophic dialogue about what schools would look like without hierarchy -- without administrators. Interestingly, Webb's essay is the only one which extends the feminist critique about educational administration to consider how the critique of administration might relate to or effect education.

In summary, this book provides those individuals interested in the study and practice of educational administration in Canada with a much needed resource and a general overview of the multiple challenges women encounter within that profession.

ADA L. SINACORE-GUINN *McGill University*

BOOKS RECEIVED

The following is a list of books received by the MJE. Not all the books received can be reviewed; however, reviews of some of these books may appear in this issue or in future issues. We wish to thank all of the publishers who have sent us review copies.

Crawley, M. (1995). *Schoolyard bullies: Messing with British Columbia's education system*. Victoria, BC: Orca Book Publishers. 186 pp. \$14.95. ISBN 1-55143-043-6.

Davis, B. (1995). *Whatever happened to high school history? Burying the political memory of youth Ontario: 1945-1995*. Toronto: James Lorimer. 278 pp. \$19.95. ISBN 1-55028-486-X.

Ernst, J. (Storyteller & Editor). (1995). *The golden goose king. A tale told by the Buddha*. Chapel Hill, NC: Parvartigar Press. 34 pp. \$26.95. ISBN 0-9644362-0-5.

Martel, G. (1995). *A new education politics: Bob Rae's legacy and the response of the Ontario Secondary School Teachers' Federation*. Toronto: James Lorimer. 310 pp. \$19.95. ISBN 0-55028-488-6.

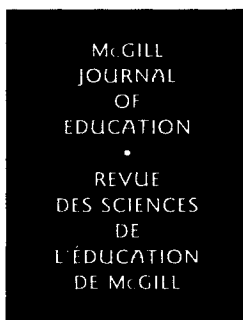
Myers, M. (1995). *Changing our minds: Negotiating English and literacy*. Urbana, IL: National Council of Teachers of English. 375 pp. \$28.95. (NCTE members \$19.95). ISBN 0-8141-3304-5.

Samuels, B.G., & Beers, G.K. (Eds.). (1995). *Your reading: An annotated booklist for middle school and junior high 1995-96 edition*. Urbana, IL: National Council of Teachers of English. 381 pp. \$21.95. (NCTE members \$15.95). ISBN 0-8141-5943-5.

Slevin, J.F., & Young, A. (Eds.). (1995). *Critical theory and the teaching of literature: Politics curriculum pedagogy*. Urbana, IL: National Council of Teachers of English. 369 pp. \$22.95. (NCTE members \$16.95). ISBN 0-8141-0963-2.

Struthers, B., & Klasser, S. (Eds.). (1995). *Poets in the classroom*. Markam, ON: Pembroke Publishers. 128 pp. \$12.95. ISBN 1-55138-055-2.

Zipes, J. (1995). *Creative storytelling: Building community, changing lives*. New York & London: Routledge. 267 pp. \$16.95. ISBN 0-415-91272-5.



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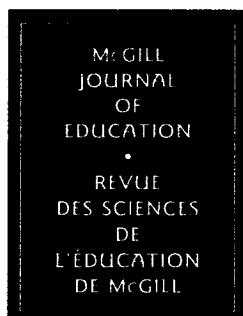
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Le but et le rôle de *Revue des sciences de l'éducation de McGill* sont bien précis en ce qui concerne la recherche, la théorie et la pratique dans le domaine de l'éducation au Canada. Son tout premier objectif est de faire connaître les progrès dans le domaine de l'éducation au Québec, où l'enseignement en anglais est donné dans un milieu francophone et où l'enseignement en français est donné en collaboration avec une importante minorité anglophone. En raison de ce lien, les enseignants anglophones et francophones rédigent des articles qui font état des progrès dans le domaine de l'éducation de ce point de vue particulier. De plus, les théoriciens et les chercheurs provenant de milieux divers et uniques se servent de cette revue comme une tribune, à l'échelle nationale et internationale, pour présenter leurs idées et les découvertes de leurs recherches. Aucun autre journal portant sur l'éducation au Canada n'apporte une contribution aussi unique dans le domaine de l'édition savante. Cette revue tout en mettant en valeur le caractère unique de l'éducation au Québec, laisse une place de choix aux écrits savants d'un public international qu'elle apprécie, ce qui permet aux spécialistes connus à l'échelle internationale d'apprendre l'histoire de même que les progrès récents en ce qui concerne l'éducation au Québec, en particulier, et au Canada, en général, ce qui, en retour, peut faciliter l'avancement dans le même domaine dans leur propre pays.

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While references, notes, tables, graphs, and figures are necessary elements of scholarly research papers, they should be kept within a range which does not detract from or clutter the text of the article.

All submissions should be addressed to the Editor, *McGill Journal of Education*, Faculty of Education, McGill University, 3700 McTavish Street, Montreal, Quebec, Canada H3A 1Y2. (Telephone: 514 398-4246; Fax: 514 398-6968).

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Si les références, les notes, les tableaux, les graphiques et les figures sont des éléments essentiels des articles savants, il ne faut pas en abuser pour ne pas détourner l'attention du lecteur ou créer une impression de fouillis.

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March 1995

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