

Implementing a Physical Education Curriculum: Two Teachers' Experiences

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In this article, we present a case study of two teachers' experiences implementing a junior-high school physical education curriculum. Using interviews, observations, and document analysis, we organized our data around Brunelle et al.'s (1988) conceptual framework. Our results noted several constraining factors to implementation: lack of time to achieve outcomes, inadequate equipment, large classes, heavy teaching loads, lack of professional development, and lack of consultant support. To facilitate implementation, teachers used school "exploratories" and community facilities, worked with parents, and established user fees. Data indicate that, despite teachers' best efforts, students did not meet all curriculum objectives.

Keywords: physical education curriculum, curriculum implementation, Nova Scotia curriculum implementation, case study

Cet article traite d'une étude de cas portant sur l'expérience de deux enseignants dans l'implantation d'un programme d'éducation physique dans une école secondaire de premier cycle. Les données ont été organisées selon Brunelle et al. (1988) en utilisant des entrevues, des observations et en faisant une analyse documentaire. Les résultats démontrent plusieurs facteurs limitatifs à l'implantation : manque de temps pour atteindre les résultats, équipement inadéquat, nombre élevé d'étudiants dans les classes, charges d'enseignement trop lourdes, manque de formation continue et manque de service de soutien. Pour faciliter l'implantation, les enseignants utilisent les « school exploratories » et l'équipement communautaire, travaillent avec les parents et imposent des frais d'utilisation. Les résultats indiquent que, malgré les meilleurs efforts des enseignants, les étudiants n'atteignent pas tous les objectifs du programme.

Mots-clés : programme d'éducation physique, implantation du programme, étude de cas de l'implantation d'un programme en Nouvelle-Écosse

It has become common knowledge that daily physical activity helps children maintain a healthy lifestyle (Nova Scotia Department of Health, 1995). Recent findings indicate that Canadian children are less active and more obese than ever before (Tremblay & Williams, 2000) because

television, computers, and video games have created the “first full Nintendo generation” (Arnold, 2000, p. A1). Because children must attend school until the age of 16, the logical place for physical activity habits to develop is in the schools. Much research, however, indicates that physical education (PE) programs have provided minimal physical activity opportunities (Stork & Sanders, 2000).

Because the Surgeon General’s Report (United States Department of Health and Human Services, 1996) demonstrated a clear link between inactivity levels and health problems in children and youth, government bodies and health promoters have developed many initiatives to improve young people’s health and fitness. Ministries of education, driven by concerns for young peoples’ health and fitness, have developed new PE curricula in most Canadian provinces (Luke, 2000) and in other countries (Penney, 2001).

In the fall 1999, Nova Scotia released a new PE curriculum for grades 7–9, midway through a four-year phase-in period of new PE curricula for all grade levels. The goal of this curriculum (Nova Scotia Department of Education [NSDE], 1999) was to enable students to become physically educated persons “who lead physically active lifestyles” (NSDE, 1999, p. 8). The 179-page NSDE document defined objectives on several levels from general “essential graduated learnings” to specific outcomes for each grade level, in each movement category. The curriculum presents five movement categories: active living, outdoor activities, sport experience, dance, and educational gymnastics. We conducted this study to gain an understanding of two PE teachers’ experiences implementing Nova Scotia’s new grade 7–9 PE curriculum.

MODEL OF INTERVENTION

To begin our research, we reviewed various conceptual models and examined methodological issues relating to teachers’ experiences and curriculum implementation. Snyder, Bolin, and Zumwalt (1992) concluded that teachers were crucial for the success of curriculum implementation. Researchers in physical education have recognized the Brunelle, Drouin, Godbout, and Tousignant (1988) Model of Intervention (Figure 1) as a useful tool to understand and explain the teaching process (Brunelle, 2002). Brunelle and colleagues developed this model, an adaptation of Dunkin and Biddle’s (1974) model, at a time when research trends were focused on identifying the general characteristics of an effective teacher.

Brunelle and colleagues’ model consists of five interacting factors considered essential for teacher planning, interacting, and evaluating,

which they refer to as variables of intervention. The *présage* variable, the traits and characteristics of teachers and students as they interact in classes, guides teachers in their lesson preparations. The context variable, the school environment, includes the school's physical structure, equipment, and other resources. The program variable refers to the specific content and subject matter of the curriculum. The day-to-day routines and delivery systems are the process variable (the interacting processes). Finally, the product variable refers to students' learning and appreciation in classes, often considered the evaluation variable. In this article, we discuss the program, context, *présage*, and process variables involved in the implementation of a junior-high school PE curriculum.

Because the Model of Intervention identifies the many variables that observers must consider when studying the teaching process in a PE setting, and also outlines the complex interplay among these variables, the model allowed us to examine in a structured manner the wide array of factors that encroach on implementation. In sum, the model allowed us to identify, understand, and organize our thoughts about the implementation process.

Program Variable

In our review of the literature in the academic, professional, and public domains, spanning the past two decades, we found considerable criticism of school PE (Locke, 1992). Graham (1995) and Stroot (1994) concluded that programs lacked clear sequential objectives, which led to poor assessment and evaluation methods and kept mastery from being a focus in PE classes. Siedentop (1996) noted that the subject matter of most programs included a smorgasbord of traditional competitive sports, and that these programs led to large skill differences within classes. Vertinsky (1992) found that

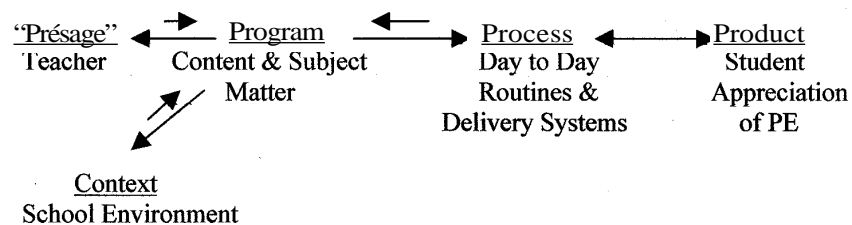


Figure 1. A Model of Intervention. Adapted from Brunelle, Drouin, Godbout, and Tousignant (1988, p. 26), *Modèle d'Intervention*.

programs led boys and girls to interact in stereotypical ways. Furthermore, few lifetime activities such as tennis, running, or hiking occurred (Ross, Dotson, Gilbert & Katz, 1985). Health Canada (2003) currently recommends a minimum of 60 minutes of daily physical activity (comprised of endurance, strength, and flexibility exercises). In contrast, PE programs of the past did not provide students with minimal physical activity requirements (Sallis & McKenzie, 1991).

During the recent wave of reform, ministries of education, recognizing the shortcomings of PE programs, have taken the initiative to address some of the issues outlined above. The Canadian Association of Health, Physical Education, Recreation, and Dance (CAHPERD) started the Quality Daily Physical Education program in 1988. This program has recognized and awarded schools across the country that consistently (year after year) provide students with daily physical activity (CAHPERD, 1998). Despite the initiative's success in raising awareness and support for quality daily PE, the program has encountered numerous obstacles, including limited PE staff and specialists and a lack of funding (Chad, Humbert, & Jackson, 1999). In 1997, only 440 out of more than 15,000 schools in Canada earned the award (Clements, 1997).

Researchers and practitioners have proposed other models such as the fitness and sport education models (Jewett, Bain, & Ennis, 1995) that have served as a foundation for new curricula. These models have placed increased emphasis on fitness and extended opportunities for skill development through a more comprehensive and less traditional approach to sport.

Context Variable

Government cutbacks over the past two decades have provided many challenges for PE programs: larger class sizes, minimal PE class time, and minimal teacher planning time (Locke, 1992; Stroot, 1994). Cutbacks have also affected PE resources: equipment has not been replaced or maintained and in-service opportunities have been reduced (Locke, 1992). Most boards across Canada have eliminated PE consultants (Goodwin, Fitzpatrick, & Craigon, 1996), leaving a leadership void. Consultants played several important roles such as supporting principals in monitoring the quality of PE programs, providing a link between schools and communities, conducting in-services, distributing resources, and serving as a united voice for often isolated PE teachers. This support is now missing (Goodwin et al., 1996).

Présage Variable

Although an exact English translation for the French term *présage* does not exist, for the purpose of this study we have used *présage* to refer to the traits and characteristics of the principal and the PE teachers. Although principals' leadership is essential in the implementation of a new curriculum, principals have often under-emphasized their role with respect to PE programs (Siedentop, Doutis, Tsangaridou, Ward, & Rauschenbach, 1994). Because teachers implement curriculum on a day-to-day basis, they play an enormous role in the effective implementation of curricula. Faucette (1987) categorized teachers as having one of three approaches to new curricula: acceptors, conceptualizers, or resisters. Faucette found that only acceptors (teachers who agreed with the innovation and worked consciously to implement the program) fully implemented new curricula.

Process Variable

As education ministries have released new curricula, researchers have conducted studies on the day-to-day occurrences in PE classes to determine the effects of curriculum implementation. Melnychuck's (2000) Canadian study of a teacher's implementation experience identified themes of weariness, lack of time, isolation, and lack of support. In England, Penny (2001) found that PE teachers experienced challenges with the subject matter: they found too much content to cover, they did not always feel adequately trained, and they often did not have the required resources and facilities. In addition, they expressed uncertainty about new evaluation procedures. Gibbons' (1995) study of a more successful implementation process through a collaborative, university-public school project emphasized that teachers found in-service (peer-teaching and observation sessions) extremely beneficial preparing them to teach new content.

Of particular interest (given curricular and contextual similarities to the present study) is a report that the British Columbia Ministry of Education (2001) released recently. This report determined that students failed to meet BC's 1995 PE curriculum goal: to enhance quality of life through active living. Reasons suggested for this failure included implementation challenges such as a lack of facilities and equipment and insufficient time allotted to achieve PE outcomes. Teachers often did not implement the gymnastics and dance movement categories because they

lacked expertise, worried about safety, and found difficulties dealing with the social awkwardness of students. Teachers rarely implemented the alternative movement category (similar to Nova Scotia's outdoor activities) because of insufficient funds. The report also suggested that without a provincial measurement tool to assess achievement, little encouragement for implementation occurred.

PURPOSE

The purpose of our study was to understand two PE teachers' experiences implementing the new grade 7–9 PE curriculum in a Nova Scotia junior-high school. By identifying interactive factors related to the presage, context, program, and process variables of Brunelle et al.'s (1988) Model of Intervention, we ensured understanding of a broad spectrum of the teachers' implementation experiences with the PE curriculum. By understanding the experiences of these two teachers, we are contributing to the field of knowledge about the implementation of PE curricula.

METHOD

The Researchers

Given the study's qualitative research design, we as researchers played an important role. As a former junior high PE teacher in Nova Scotia, the primary researcher (Fraser-Thomas) has a firm awareness from a practical standpoint of PE and school curricula. The secondary researcher (Beaudoin), who has worked extensively in PE teacher-education programs, has a strong theoretical knowledge of the field.

Case Study Design

We chose a case study strategy for this study because it allowed us to "investigate a contemporary phenomenon" (two teachers' implementation experiences) "within its real life context" (one junior-high school) (Yin, 2003, p. 13). Because we wanted to better understand two teachers' implementation experiences, and because their experiences were embedded in their school context, we considered case study the most appropriate research strategy. Specifically, we used an embedded, single-case design that allowed us to investigate subunits within the school context (teachers' experiences, principal's insight, observation of classes), facilitating our

understanding of important interacting factors that influenced the teachers' experiences (Yin, 2003).

Research Site: Seaview Junior High School

Despite legislation, not all schools in Nova Scotia were implementing the new curriculum. Through informal communications with the primary researcher's former colleagues, we developed a list of schools actively implementing the new curriculum. The criterion for selection was that the PE teachers and the principal claimed independently that they were actively implementing the new curriculum. Using purposeful sampling, we selected Seaview Junior High School (pseudonyms are used throughout) as an appropriate school.

Seaview is situated in a small rural community (population 11,000) 30 kilometres from Halifax. Once a fishing community, more recently dependent on tourism, and currently a growing suburb of Halifax, the community has mixed demographics. At the time of data collection, the school had approximately 460 students, fed by two nearby elementary schools. Seaview in turn fed into a high school closer to Halifax. Seaview had six classes of students in each of grades 7, 8, and 9, with class sizes ranging from 23 to 36 students. Marie, the principal, began her second year as Seaview's principal during the study. Before her appointment as principal, she had taught PE at another school. Of the 26 staff at Seaview, about half had recently graduated in education; the other half had several years' teaching experience. The two PE teachers at the school represented this mix: Dan had 20 years of teaching experience, 15 at Seaview; Stacey was beginning her fourth year of teaching, but her first year at the junior-high level and her first year at Seaview. For the purposes of our case study, Seaview represented a "bounded system" (Yin, 2003).

Data Collection

I (the principal researcher) collected data through interviews, direct observation, and document analysis. Interviews, however, served as the main data source. I conducted one interview with the school principal, and three interviews with each of the two PE teachers. All interviews occurred after school or during teachers' preparation periods, lasting about 45 minutes each. I used a semi-structured interview protocol, with open-ended questions. The principal's interview and the teachers' first interviews were very similar, with a focus on how they felt about the new curriculum

and the school context. Teachers' second interviews focused on the curriculum: objectives, course content, and instructional strategies. In their third interviews, the teachers summarized their implementation process, giving specific attention to occurrences and experiences. In this third interview, I used data from previous interviews, field notes, and other documents as sources to trigger teachers' reflections. I audiotaped and transcribed all interviews, and asked participants to review their transcripts for verification. The participants signed release forms, allowing us to use their interview data.

Direct observation served as a second data source. I randomly selected one class at each grade level to observe for one unit (four lessons over three weeks). I observed the grade-7 class during a fitness unit, the grade-8 class during a football unit, and the grade-9 class during a volleyball unit. The teachers had chosen these units for early fall. I also wrote field notes about teachers' plans and class occurrences. I found one unit to be sufficient time to stay on site because by the end of the three weeks I was collecting little new data.

I also analyzed relevant documents including the Nova Scotia Physical Education Curriculum: Grades 7–9 (NSDE, 1999), the school's standard report card, lesson plans, letters to parents, homework assignments, and class tests. I collected data during the summer and fall of 2001. I held the principal's interview and the teachers' first interviews in June and early August, and teachers' second interviews in late August when they were preparing their fall programs. I observed classes in September and October, and conducted teachers' third interviews after I completed class observations.

Data Analysis

Both researchers contributed to the analysis through a collaborative approach. We considered data according to the theoretical proposition that had led to our study (Yin, 2003): the Model of Intervention (Brunelle et al., 1988). First, we organized the principal and teachers' interviews into meaningful units of information. We then classified these meaning units into common categories (Côté & Salmela, 1994). In turn, we grouped categories into themes, using Brunelle et al.'s (1988) variables of intervention. We used Nvivo software to manage data. Observations and documentation complemented our interview data by providing practical evidence to reinforce and validate the principal's and teachers' interviews. In using multiple sources of evidence, we developed converging lines of inquiry to achieve validity and data triangulation (Patton, 1987).

RESULTS

Présage Variable

All our data provided evidence that the PE teachers and the principal at Seaview Junior High were working diligently to implement the new curriculum. Dan's and Stacey's positive attitudes clearly facilitated the implementation process. Although they often seemed tired and frustrated during interviews, they did not make their feelings apparent in their teaching. Both teachers taught enthusiastically, tried new things, and always put the interests of the students first. Principal Marie ensured that implementation occurred. She pointed out her role as a support person who facilitated timetabling and financing; she also served as an informal supervisor. Dan and Stacey maintained open communication with Marie, and felt fortunate to have her support.

When asked their opinion of the new curriculum, Dan, Stacey, and Marie focused on different components. Dan gave a realistic opinion: "There's an awful lot of expectations for two classes in a six-day cycle. It looks good in writing, but I think the building blocks haven't been put in place to assist us." Marie and Stacey both had positive opinions of the lifelong fitness focus in the curriculum.

I think it's great. It's more of a recreational type of program, getting away from the more competitive side, and giving kids a lot more that they will find they're able to use throughout life. (principal, Marie)

Both teachers commented on their lack of preparation to teach the curriculum. Although the school board promised professional development on new subject matter, most in-servicing fell through because of a lack of funding. Teachers like Dan and Stacey, who were often unfamiliar with the new material themselves, taught the few in-service sessions that occurred. As Dan pointed out, "Right now some of the stuff that's been added [such as orienteering and dance], I am not capable of teaching. I can do the bare minimum, but the tougher stuff, I've never been trained in, and never done."

The theme of PE teachers' isolation from each other and from other PE teachers also surfaced. To accommodate timetabling and gym space, the principal did not schedule Dan and Stacey with simultaneous preparation periods. Before school, after school, and during lunch breaks, Dan had gym duties; Stacey had classroom duties. Consequently, they had little opportunity to plan and collaborate. They also had limited opportunity

to interact with PE teachers from other schools. As Stacey pointed out, "I might see another PE teacher for a minute or two before a volleyball game. That's about it."

Context Variable

Dan and Stacey spoke throughout their interviews of the challenges implementing the new curriculum, given several contextual and environmental factors. They found that the additional outcomes in the curriculum required additional class time. Students at Seaview had two 45-minute periods in a six-day cycle, or about 70 minutes of PE each week. Throughout his interviews, Dan pointed out that this scheduling was "simply not enough time to achieve all the outcomes." Both teachers strongly advocated daily PE. Although Marie agreed with them, she asserted that it was not possible: "I'd love to have every student in the gym once a day but it's just not feasible. We don't have the staff or the space."

Dan and Stacey expressed concern about the lack of facilities. The school's facilities included a gymnasium, a large field behind the school, and a paved schoolyard with four basketball nets. In addition, an arena and a section of the Trans-Canada Trail were located nearby. The PE teachers and principal felt fortunate to have these facilities, but added that they had to travel elsewhere to achieve many of the active living and outdoor activities outcomes. To achieve the aquatics outcomes, for example, teachers bussed students to the nearest indoor pool, 30 minutes away.

The teachers also mentioned problems with the school equipment. The school budgeted \$1500 per year for PE equipment. Dan noted that this budget was "pretty good compared to a lot of schools, but it only maintains what we break and wear and tear." Dan gave the example of the broken climbing ropes: "We had an inspector come in. To repair them so that they are useable is \$4300." At the same time, four of the five movement categories (all but sport experience) required new equipment, often specialized and expensive.

Through class observations, we found that large classes presented yet another challenge for teachers. Most of Seaview's classes had more than 30 students, with many students with special needs. When we asked Dan about one particularly large class, he commented,

Often times in one of those grade 9 classes with IPP [Individual Program Plan] kids, you just have time to say hello. You have to always have your eyes rotating. Even then you

can't catch everything. It's more so making sure that they're having a good time. If they're having a good time and behaving, then you can try to get around helping individuals. (PE teacher, Dan)

Dan and Stacey both had fairly heavy workloads, and Marie recognized that she asked a lot of them, "[The new curriculum's] harder on the teachers. We are lucky to have two fantastic PE teachers who are willing and able to take risks and try new things." Dan taught PE to 14 of the 18 classes at the school, and Stacey taught the remaining four classes. Stacey also had a grade-9 homeroom class, and several English and social studies classes. Both had additional responsibilities, including intramurals, lunch duties, coaching, and administration, leaving limited time for planning. Stacey spoke of the challenge of flip-flopping back and forth between the gym and the classroom, while maintaining both teaching duties.

My biggest problem with the schedule is that I don't have any time between the classroom and the gym to set-up and get my bearings. I feel like I'm in the classroom and then I need to rush to the gym and then I need to rush back to the classroom. (PE teacher, Stacey)

Dan mentioned on several occasions the lack of a district PE consultant, a position that had once existed in boards across Nova Scotia. Dan felt that without a consultant, PE programs lacked support.

We need someone who is a champion of physical fitness and health, who's tied in with inter-school sports and intramurals, who will speak up for us at meetings, so that the individual teachers don't need to come in, in September, and fight for intramurals and the length of the class. Without PE consultants everyone is left on their own. (PE teacher, Dan)

Program Variable

Our study also examined the content and subject matter of the new curriculum, which appeared thorough and comprehensive. The document defined objectives both as broad "Essential Graduated Learnings" and in more specific outcomes for each grade level, in each movement category (active living, outdoor activities, sport experience, dance, and educational gymnastics). The document provided sample lesson plans, activity ideas, suggestions for assessment, adaptations for students with special needs, and additional resources.

In our study we noted that the PE teachers did not achieve all the curriculum's outcomes. Despite the principal's and PE teachers' support

for active living and outdoor activities, Marie pointed out, "Outdoor activities are limited because you often need to leave your site." Although the PE teachers achieved many of the sport experience outcomes (leadership and fair play), they did not achieve all outcomes for skill development and game playing, given lack of class time. Dan confirmed this observation: "It's tough to get to do specific individual teaching for the skills that they need to improve on." Furthermore, the teachers were inconsistent in their achievement of gymnastics and dance outcomes because of a lack of safe equipment and teacher expertise. As Dan said, "Although most of the outcomes we can accommodate with what we have here, some of them — maybe not."

Dan believed that the most significant change in the new curriculum was the addition of health-related content (e.g., nutrition, cardiovascular system), a change that required PE teachers to teach classroom material during students' already minimal activity time. The effect of these new health-related outcomes was evident: class discussions, handouts, homework assignments, tests, and projects, requiring a change in students' attitudes and adding to teachers' paperwork.

Right now [students'] mentality is that you don't have homework and assignments in PE. For example, I sent home a goal sheet the first week. I've still only received about three-quarters of them. I find it difficult because when are you going to get these? I can try to track them down at recess or lunch. I can call home. But I have over 200 students. That's a lot of phone calls. (PE teacher, Dan)

Other concerns for teachers included the changes in assessment and evaluation methods brought in with the new curriculum. A switch from number grades to letter grades had created a great deal of confusion. In the new system, teachers awarded grades for the extent to which students achieved outcomes, making the teachers' role very subjective. According to the Halifax Regional School Board's (2001) Mid Year Report, teachers gave an "A" to students who consistently exceeded outcomes, a "B" to students who consistently met outcomes, a "C" to students whose work consistently approached outcomes, a "D" to students who sometimes met outcomes, and an "E" to students who did not meet outcomes. As Dan pointed out, "That's the range. B, C, and D are pretty close to each other."

Process Variable

We attempted to understand the new curriculum processes, the day-to-day, classroom events. The PE teachers at Seaview developed strategies

to facilitate delivery of the new curriculum. To familiarize themselves with the 179-page document, Dan and Stacey read and summarized the objectives in a one-page chart. Marie verified this simple, meaningful, comprehensive checklist. The teachers then posted this chart on the gym wall for students, and gave a copy to parents as a handout on curriculum night in September. In addition, Seaview used “exploratories” to achieve outcomes that Dan and Stacey could not integrate into their daily classes. “Exploratories” occurred on four consecutive afternoons, three times throughout the year, giving students the opportunity to participate in unique and diverse activities including rock climbing and mountain biking.

Dan and Stacey also made maximal use of the facilities available in Seaview’s rural setting. For example, they achieved some of the outdoor activity outcomes, snowshoeing and cross-country skiing, on the Trans-Canada Trail. To deal with the loss of activity time to health-related content, they taught this material during stretching activities and through homework assignments. Finally, the school introduced a student user-fee system to compensate for the additional cost of such activities as swimming. However, neither the principal nor the teachers felt comfortable with user fees. As Dan pointed out, “We are charging kids for programs that are compulsory.”

CONCLUSION

Brunelle et al.’s (1988) Model of Intervention guided and assisted our understanding of two PE teachers’ experiences implementing a new curriculum. In examining the presage variable, we found that they had a positive approach to the new curriculum. They found it more recreational and more inclusive than the former curriculum. In examining the context variable, we noted the teachers and principal expressed concerns, particularly about financial feasibility and teachers’ lack of professional development. The school faced numerous challenges including infrequent PE classes, limited facility access, broken equipment, large class sizes, heavy teacher workloads, and the lack of a district PE consultant.

In looking at the program variable, we found that despite efforts to fully implement the new curriculum, teachers recognized that they were barely meeting minimum curriculum standards. Teachers did not achieve all the outcomes in the active living and outdoor activities categories because of additional costs, nor did they achieve all the outcomes in the gymnastics and dance categories because of a lack of in-servicing and equipment. Because of limited time for PE, the teachers did not achieve

the sport experience outcomes that related to skill development. However, in examining the process variable, we found that the PE teachers and principal at Seaview developed strategies to facilitate implementation: using “exploratories,” maximizing the use of available facilities, providing curriculum information for parents and students, and administering user-fees when necessary.

Concerns for Students

The challenges encountered by the PE teachers in this study (lack of time, facilities, equipment, teacher in-servicing, and grading challenges) occur often; they can be expected in the implementation of any new curriculum (Height-Lewis, 2002; Sarason, 1990). Clearly, these challenges present concerns for students, whether the new curriculum is math, science, social studies, language arts, or PE. However, this study highlights the unique health and safety concerns for students as schools implement new PE curricula.

Because of minimal PE time, teachers found it difficult to influence students' lives sufficiently to achieve the curriculum's overall goal: to develop physically educated persons who lead physically active lifestyles (NSDE, 1999). Indeed, these teachers did not provide students with even a fraction of Health Canada's (2003) recommended 60 minutes of physical activity per day. Although many students likely have additional physical activity outside school, current physical activity levels among students in Nova Scotia indicate that many probably do not (Campagna, Ness, Rasmussen, Thompson, Porter, & Rehman, 2002). In addition, overcrowded classrooms, little professional development, and old or broken equipment, coupled with increasing pressure and expectations to meet the new curriculum's outcomes, created an additional challenge for teachers: maintaining a safe environment for students.

Advancing Knowledge: Implementation Strategies

Although dozens of studies over the past decade have examined curriculum implementation in Canada, few have looked specifically at the implementation of a PE curriculum. This qualitative case study allowed us to gain an in-depth understanding of two PE teachers' implementation experiences, and highlighted the many challenges of implementation.

This study is also of interest because it outlines some effective strategies that facilitate implementation while the teachers worked within the

confines of limitations. Although some of Dan's and Stacey's implementation strategies were deliberate, others were almost second nature to them. Their more deliberate strategies included the development and planning of exploratories throughout the school year, maximizing the use of available facilities in the rural area, providing curriculum information for parents and students by creating a chart of objectives, using effective time-management strategies to teach new health-related content, and applying a user-fee system to achieve certain objectives. Teachers' positive attitudes, enthusiasm, willingness to try new things, and open communication with their principal also facilitated implementation.

DISCUSSION

In comparing this study with others conducted since the recent wave of reform (British Columbia Ministry of Education, 2001; Gibbons, 1995; Melnychuck, 2000; Penney, 2001), we found many similarities. Gibbons' (1995) study of a Canadian school-university collaborative implementation project was the only study we encountered that portrayed a positive implementation experience, with much of the credit for success attributed to the collaborative approach between school and university. In contrast, Melnychuck's (2000) study of a single teacher's experience highlighted themes of weariness, lack of time, and isolation. Seaview's challenges were most consistent with the challenges highlighted in BC schools (British Columbia Ministry of Education, 2001) and British schools (Penney, 2001). Like Dan, teachers in both these studies expressed concern with the large number of objectives required in the limited PE schedule. These studies also highlighted schools' limited equipment and facilities. Teachers did not achieve many gymnastics outcomes because equipment did not exist or it was unsafe to use, and they lacked equipment for many outdoor and active living outcomes. Furthermore, schools in these studies had difficulty finding facilities for units such as aquatics. As Penney (2001) summarizes, "Provision of swimming will continue to reflect very different circumstances of schools in relation to location of swimming facilities, travel requirements, availability of qualified staff and the ability to meet costs associated with pool hire, travel, and instruction" (p. 102). Limited staff expertise and lack of teacher education also led to difficulty fulfilling outcomes in areas such as dance. Penney argues for more in-servicing. "Staff acknowledged that they required professional development in order to gain added depth" (p. 102). Finally, teachers in these studies expressed

uncertainty with new assessment and evaluation methods. For example, British Columbia's review report (2001) outlined, "Teachers need greater guidance in assessment strategies and philosophies. There is enormous diversity between teachers and schools in what is assessed" (p. 41).

Future Directions

Although this study highlights some effective implementation strategies, challenges clearly continue to outweigh effective strategies. Ideally, more PE time, additional funding, professional development, and collaborative opportunities, accompanied with a decreased workload, would satisfy teachers' needs. However, these curricular suggestions are evidently not realistic when considered within their context, the school curriculum. In Canada, needs are currently high across all subject areas, given the implementation of other new curricula, and budgetary cuts to education.

This predicament highlights the importance of global understanding within the education community through positive and co-operative communication at all levels. At Seaview, PE teachers worked closely with their principal, but this study did not gain an understanding of the implementation process within the entire school context, nor beyond the school walls. For smooth implementation of any new curriculum to occur, teachers need support from within the school, as well as from school boards and provincial governments. In his critical reflection of school change, Fullan (1999) points out that district-level support is very difficult to attain, while state-level support is extremely difficult to attain. Fullan goes on to emphasize that improvement is a bilateral, two-way process, and schools need to engage their outside environments: teachers must constructively communicate their needs, while being understanding and accommodating of limitations.

Although this study focused on the implementation of a new curriculum, the teachers' challenges also highlight the importance of communication at all levels prior to implementation: during curriculum development. In his review of Canadian curricula, Pratt (1989) argues that, although educators are often involved in curriculum development, political agendas, special interest groups, and the media often drive many curriculum decisions. Pratt emphasizes the importance of assessing needs prior to curriculum development, involving the school clients (parents, employers, and taxpayers) in the development process, and conducting province-wide observation studies during curriculum piloting. Although this study did not explore Nova Scotia's curriculum development, it is clear that teacher, school, and community involvement is necessary in

the earliest stages of provincial curriculum development to minimize problems during curriculum implementation.

Suggestions for Future Research

To fully understand the curriculum implementation process, studies need to go beyond teachers' experiences, and extend to integrate school board, regional, and provincial jurisdictions. Although Brunelle and colleagues' (1988) conceptual framework helped us understand teachers' experiences, we delimited our understanding to teachers' immediate environment. Other models could extend understanding beyond the school walls because comprehension of the interrelations among various levels and jurisdictions is key to improving the implementation process of current and future curricula. Models such as Fullan, Bennett, and Rolheiser-Bennett's (1990) Comprehensive Framework for School Improvement can serve to better understand the different interacting components that facilitate positive change in teachers, within classrooms, within schools, and beyond school walls.

Future studies in curriculum implementation could also help teachers work within the confines of current limitations. Because a shortage of government funding for education exists across the country, many teachers attempt to implement new curricula amidst challenges. Intervention and community-based action research designs (Stringer, 1999) would be particularly beneficial, given teachers' limited time to plan, explore, and collaborate with other PE teachers.

Interdisciplinary studies could also be further pursued. Recently, Campagna et al.'s (2002) study of the physical activity levels of 1655 children and youth in Nova Scotia found obesity rates among the highest in the country. Although these well publicized findings are disturbing, they have led to some very progressive initiatives, including the development of a provincial office of health promotion, and changes to PE time allotment in schools. Although implementation of these initiatives is currently in early stages, future studies examining their contribution to the health and fitness of youth would be beneficial.

Finally, given that Nova Scotia's overall PE curriculum goal is to develop "physically educated persons" (NSDE, 1999, p. 8) and a growing national interest for children's health and fitness drives PE curriculum reform, longitudinal studies can determine if a relationship exists between the implementation of new curricula and students' lifelong health, fitness, and physical activity levels.

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