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ADAPTIVE NATURE OF IMPLEMENTATION PRACTICE

Highlights

!! Implementation practice is strategic in that it aims to engage actors from the 'user' system with the goals of the program.
!! Strategies used during implementation practice aim to build relationships by considering how program goals respond to needs of 'user' system.
!! Implementation practice evolves interactively with the particularities of the 'user' system and thus adapts over time and between settings.
!! Implementation practice identifies the social and technical components to build a ‘new’ network with consolidated goals and operations.
!! Implementation practice is a strategic operation to integrate two potentially complementary systems.
ADAPTIVE NATURE OF IMPLEMENTATION PRACTICE

The adaptive nature of implementation practice:

Case study of a school-based nutrition education intervention

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INTRODUCTION

Health promotion and education programs are not detached from the settings in which they are implemented (Poland, Frohlich, & Cargo, 2008). Instead, there is an “inherent interactivity” between the intervention and the implementation setting (Glasgow, et al., 2006) and interventionists arguably play an indispensable role in the operation this interface. Surprisingly, however, little research has addressed how interventionists manage implementation within settings such as schools where institutional priorities may not coincide with the goals of health promotion interventions (T. Riley & Hawe, 2009). The practice of implementing a program is often portrayed as a standardized instrumental activity, neglecting how interventionists apply their knowledge of the program to the needs of a particular context (Schwandt, 2005). Given that program adaptation is currently identified as a cornerstone of program implementation (Berkel, Mauricio, Schoenfelder, & Sandler, 2010; Ozer, Wanis, & Bazell, 2010), it is surprising to find little knowledge on the strategic role played by the practitioner in this respect. The aim of this study is to advance knowledge on the practice of program implementation. Following the case study research design (Stake, 1994; Yin, 2003), we apply theoretical propositions permitting findings to be generalizable. More specifically, a social theory of innovation (Akrich, Callon, & Latour, 2002a) is proposed to identify how program implementers consider various interests, needs and goals among stakeholders in relation to the implementation of a program’s operations and objectives. This study thus presents a case study of nutritionists’ practices to explain how practitioners plan and operate the interface of a program and its context.

Background

Health promotion and education practice is conceptualized as an extension of scientific knowledge where practice seeks to apply research-based evidence and/or theoretical principles (Dusenbury, 2005; Dusenbury, Brannigan, Falco, & Hansen, 2003). It follows that high-quality implementation reflects fidelity according to a predetermined plan (Contento, Randesll, & Basch, 2002; Thomas, 2006). Missing however is a rationality and recognition for emergent and unplanned practices (Flynn, et al., 2006; Pérez-Rodrigo & Aranceta, 2003; Rowling & Jeffreys, 2006). Results from systematic reviews on obesity prevention suggest appropriate responses to
practice-based realities may indeed contribute favorably to what makes a program effective (Doak, Visscher, Renders, & Seidell, 2006; Summerbell, et al., 2007). This study thus responds directly to the need for knowledge emerging from practice-based realities of program implementation to better inform health promotion and education planning and evaluation frameworks (Green, 2006).

Professional standards for dietetic practice support the application of novel and emergent practices. Dieticians are encouraged to draw from an integrated expert knowledge base to address the requirements of a diverse client base. Canadian standards expect dieticians not only to acquire and apply a unique body of food and nutrition knowledge but to integrate this knowledge with other disciplines including the social sciences, communication and education (CDA, 2000). American standards state that planning and implementation of community-based interventions requires a collaborative approach with other professionals, responsive to community needs and adaptive to changes taking place within the community (The American Dietetic Association, 2008). Nutrition interventions are therefore not invariably prescribed treatments of diagnosed health problems. Rather, they develop from a plurality of knowledge and utilize a collaborative approach (Dab, 2005).

Despite acknowledgement that health promotion and education programs are “locally theorized in situ” (Hawe & Riley, 2005, p. 234), intervention research tends to focus on the quality and quantity of program activities defined a priori. Our study responds to the need for practice-based theory (Green, 2006). In contrast to constructivist approaches where knowledge utilization remains unique to the particular time and place where a study takes place (Greene, 2007; Guba & Lincoln, 1989), our aim was to contribute to generalizable knowledge. We apply social theory for this task, noting that (Author et al., 2005) and others (Frohlich, Mykhalovskiv, Miller, & Daniel, 2004) have promoted the use of social theory for public health program evaluation, to build capacity to theorize ‘program-in-use’ (Patton, 1997).

In continuity with our past research, this current study proposes to explore program implementation through the lens of Actor-Network Theory (ANT) (Author et al., 2008; Author et al., 2009). We build on previous findings demonstrating that program implementers (i.e. nutritionists) were not only aware of the diversity of interests among education actors and contexts, they explained how this diversity influenced their implementation practices (Author et al., 2009). The nutritionists’ discourse confirmed ANT theoretical propositions; the primary
actor group (i.e. nutritionists) strategically situated the program as an indispensible response to the needs and goals found in context (i.e. program participants and education stakeholders). Nutritionists provided rich descriptions of students’ and teachers’ preoccupations and detailed how they were able to respond by translating program operations. Nutritionists illustrated an intuitive awareness that the realization of their goals was intimately connected to their ability to render the intervention responsive to the interests, needs and goals of education stakeholders and participants. This current study will advance and build upon these findings by describing the emergence of program operations (i.e. practices) as they occurred in situ and explain their variation across the specificities of school conditions and the nutritionists’ identity. More precisely, two overarching coupled processes were found to underpin nutritionists’ strategic actions: building alliances with students and building alliances with the school. This study details the specific practices characterizing these two process.

Theoretical Framework: The Actor-Network Theory

The Actor-Network Theory (ANT) is a framework to study innovation (Akrich, et al., 2002a). As ‘state-of-the-art’ responses to current public health problems, nutrition education interventions, similar to other public health interventions can be looked upon as forms of innovations (Lehoux, 2006). The ANT framework is emerging as a useful conceptual tool to explain the formation of public health interventions; that is, how and why these actions take one form and not another (Dems, Hebert, Langley, Lozeau, & Trottier, 2002; Young, Berland, & Coghill, 2010). Successful innovations are often seen as building on existing structures to meet their objectives (De Civita & Dasgupta, 2007) and as transforming collective practices (Lehoux, 2006) through an interactive, co-formation process between the ‘user’ and the ‘programmer’ systems (Cook, 2009; Latour, 1987).

According to ANT, innovations include both social (e.g. interventionists, participants, stakeholders) and technical (e.g. best practices, materials, curriculum) actors (or entities). ANT describes a process in which entities form a network, whereby each actor aims to benefit from being part of the network; the network helps to advance their goals. Theoretically, the ability of an innovation to recruit actors into the network and to sufficiently interest them so that they start to act on behalf of the interests of the network, explains its success or durability (Akrich, et al.,
According to ANT, one type of actor, known as the ‘translator’ plays a particularly important strategic role of ‘enrolling’ (i.e. recruiting) social and technical entities. Through careful negotiations, the translator frames and/or interprets program ‘system’ (e.g. operations and goals) with the aim of capturing and holding the interest of the entities from the ‘user’ system.

The ANT theoretical framework informs the research question and the analytic framework of our study. This study aimed to respond to the following, theoretically grounded, research question: How do nutritionists, acting as intervention translators, create connections aiming to interest school actors to see the nutrition program as responding to their own personal and/or educational goals?

Program Overview

The school-based nutrition intervention Petits cuistots - parents en réseaux (translated as Little Cooks – Parental Networks) (hereafter PC-PR) provides the case for this study. First implemented in 1998, the PC-PR program promotes healthy eating behaviors by fostering food preparation capacity, nutrition knowledge, parental participation and citizenship among young school children and their families. During the year of this study (2005), PC-PR was implemented in eight public schools serving the highest 20% of children living in Montreal’s most economically disadvantaged neighborhoods (i.e. living below poverty line) (Anonymous, 2007). Two schools are characterized by a high proportion (about two thirds) of students whose mother tongue is not French. On average, schools have approximately 350 students per school and upper grades have 30 students per classroom. An impact assessment demonstrated program effects on student knowledge, attitude, experience and perceived capacities related to food and cooking (Author, 2008).

The Little Cooks component includes teacher and parent-assisted monthly nutrition workshops, created and facilitated by six nutritionists. Students are required to attend workshops as part of their regular curricular activities. Eight, ninety-minute workshops are planned for each academic year. Workshops feature rotating themes, exposing students to new or alternative foods, ecological issues, international cuisine, food types and health issues. Each workshop includes: 1)
didactic knowledge transmission on topics such as food transformation, food types, nutrition and health (also referred to as the Lesson), 2) hands-on recipe completion using a cooperative learning approach (also referred to as the Practice) preceded by instructions, and 3) recipe tasting with samples of finished recipe to take home. Teachers are invited to complete a preparatory exercise with students prior to the nutrition workshop. This exercise aims at increasing students’ motivation and implication during the workshop. Some teachers have identified the workshop as an opportunity to evaluate students on cross curricular competencies (e.g. work methods, cooperation), however this is not an essential component of the intervention. The second component (Parental Networks) is organized by community development workers and aims to build mutually supporting parental networking through parents’ active involvement in the school. (See www.cinqepices.org for program details, and www.XXXXX.pdf for activity reports.) This case study focuses upon the Little Cooks classroom-based nutrition workshops.

METHODS

Sample

A total of eight primary schools participated in the PC-PR program during 2004/05. This included 114 classrooms and 2156 students from kindergarten through grade five. The study included grades four and five classrooms only as nutritionists were experimenting with collaborative learning approaches among older grade levels; thus a wider variation in practices was expected in these classrooms. One school did not have grades four or five and was thus excluded from the study. From among the seven schools included, there were a total of 19 grades four and five classes. Out of the eight annual nutrition workshops, the four occurring at the end of the school year were targeted for this study’s observation. Although workshops were observed throughout the entire year, ethical approval for audio-recordings was restricted to the final four workshops. Due to unexpected budget constraints, independent of program performance or interest from schools, the eighth workshop was not given during the year of the study.

Additionally, due to workshops occurring at the same time in different schools not all workshops could be observed. As a result, from among the three annual nutrition workshops
occurring between March and June 2005 across 19 classrooms, a total of 31 workshops were observed by the first author (SB). The sample includes the implementation practices observed during the 31 workshops. On average, 4.4 nutrition workshops were observed within each of the seven schools (i.e. 31 / 7). Given that our study focused upon the interventionists’ practices, study participants are the six program interventionists. These practices are analyzed in relation to the contextual conditions of the school. With the one exception where one nutritionist implemented the program within two schools, nutritionists worked in just one school. Nutritionists were all recent graduates and had been working, full time, within the school context implementing the program for less than five years, with one exception (Nutritionist D). Nutritionists were employed by a community organization and when possible, implemented to the same school each academic year.

Study Design

Our study employed an instrumental case study design whereby the research question is rooted within a theoretical framework (Stake, 1994; Yin, 2003). The theoretical framework used in this study was the Actor-Network Theory (ANT)(Callon, 1986a, 1986b; Latour, 1999). Given that this study aimed to describe implementation practice and its interaction with the school context, the unit of analysis was the nutritionist (Patton, 2002). Observations and descriptions focus upon nutritionists’ practices as they interacted with the particularities of school contexts. Since each school had just one nutritionist implementing the program, practices as they occurred within a school are aggregated such that they can be compared between schools.

Data Collection

Data were derived from a standard interview guide with each of the six nutritionists, and from observations and audio-recordings of classroom-based nutrition workshops. Consent was obtained from participants for interviews (nutritionists), and observations and audio-recordings (nutritionist and teachers). Institutional review board approval was provided by the XXXXXXXX Ethical Research Review Committee.
The same interview guide was used to query nutritionists’ interpretations of the underlying premises of the program and the nature of their interactions with school personnel, students, parents and other school interventionists. Nutritionists were asked if and how these interactions influenced their actions and expectations. Interviews took place in the fall of 2004, lasted from sixty to ninety minutes, and were recorded and transcribed verbatim.

Workshop observations and audio-recordings focused on nutritionists’ practices during the delivery of classroom-based nutrition workshops and during workshop set up and clean up (prior to the arrival of the class and after their departure). Observation notes recorded the facilities and general layout of the tools (i.e., placement of food items, utensils, tables and chairs), the intentions of the nutritionist prior to the workshop and her impressions of the workshop upon its conclusion. Observation notes also recorded the behavior of the students, teachers and participating parents.

Measurement of implementation practice

Implementation practices were analyzed from interviews and observations. Procedures and results specific to interviews are found elsewhere (Author et al., 2009). Briefly, nutritionists’ discourse was coded with regard to: 1) descriptions of program-related entities in terms of specific identities and goals; and 2) strategies used to interest these entities in the nutrition intervention. Results from this analysis revealed five specific strategies, with three aimed at building alliances with students (i.e. Reinforcing familiar connections with food, Creating new connections with food, Expanding interpersonal connections) and two aimed at building alliances with the school (i.e. Connecting the nutrition workshop into the teachers timetable and Connecting the educational institution with nutrition education) (Table 1). Importantly, this coding scheme captured nutritionists’ collective representations of strategic practices. The measurement of practices continues with the current study, with the analysis of observation notes and audio-recordings collected during the operation of the nutrition workshops. These emergent program operations (i.e. practices) will be quantified and qualified in order to explain their variation in relation to the specificities of school conditions and the nutritionists’ identity.

Data Analysis
Data analysis began with an iterative process of coding audio-recordings in order to create a coding template. Codes were specific to the actions themselves yet abstract enough such that they could occur across nutritionists. The coding template organized observed practices first, according to each of the five specific strategies and second, to the workshop component (e.g. lesson, food preparation) (Table 2). This template was then used to quantify practices for each nutritionist according to the five strategies and the nutrition workshop component.

Results from the quantification and qualification of this process were organized into an analytic grid shown in Table 3. The purpose of the analytic grid was to: 1) identity if nutritionists’ practices varied among schools and 2) determine if nutritionists selected the operation of certain strategies over others. All but one nutritionist was identified with just one school, for example, nutritionist ‘A’ implemented in school ‘A’, etc. The nutritionist implementing in two schools was identified as ‘F-i’ and ‘F-ii’, where ‘i’ and ‘ii’ refer to two different schools. The analytic grid was completed by entering the number of specific practices for each of the five broad strategies. Analysis included repeated practices as separate counts (i.e. when the same or a similar practice repeated itself, it was counted more than one time). This procedure permitted the identification of nutritionists’ tendencies to prioritize certain strategies over others and to compare and contrast practices according to school conditions and the nutritionists’ identity.

Validation Procedures

The credibility of the study findings is derived from the articulation of the aims of the research, its theoretical underpinnings and the empirical data collected and analyzed (Yin, 2003). The empirical proposition guiding the collection and analysis of this data was specified a priori as derived from the ANT theoretical framework. The trustworthiness of the interpretations gleaned from the data was developed through ongoing informal member checking with program practitioners and also through field logs and peer debriefing with colleagues also involved with integrating social theory into their qualitative research endeavors (Guba & Lincoln, 1989).

Observations were validated against interview data. Where nutritionists were found to practice certain strategies, interviews were cross checked for supportive evidence providing a
rational for this strategy. Towards supporting results from observations, data from interviews have been integrated into the Results section, denoted by italics.

RESULTS

A total of 33, 30 and 31 distinct practices were found, corresponding respectively to (i) strategies aimed at building familiar connections with food, (ii) creating new connections with food and (iii) expanding interpersonal connections. A total of 6 practices were found to illustrate that nutritionists were building alliances with the school. **No one nutritionist implemented all of these strategies and some nutritionists implemented more than others; as seen in Table 3, the total number of practices corresponding to our analytical framework ranged from 36 (School C) to 14 (School F-ii).** Variation was found between nutritionists in relation to privileging certain strategies over others. Findings reveal this variation to be accounted for by the conditions in the school, the nutritionists’ identity, or a combination of the two. Importantly these factors influenced the nutritionists’ perceived legitimacy in the school and influenced their use of particular program operations and translation strategies.

Practices in schools A and F-ii emphasized building familiar connections with food; practices in schools C and F-ii emphasized creating new connections with food; and practices in schools B, E and D emphasized building interpersonal connections (Table 3). Practices in schools C, D and E revealed the presence of strategies during the workshop to build alliances with the educational institution (Table 3).

Variation in the Overall Structure of the Nutrition Workshop

The average duration of the workshop was one hour thirteen minutes (1h 13 min). Between school averages ranged from fifty eight minutes (58 min) to one hour twenty-three minutes (1h 23 min). Important differences were found in workshop duration where variation was relatively small in some schools (A,B,C) (no more than ± 5 minutes), but quite large in others (at least 15 minutes) (D,E,F-i,F-ii). Space availability also differed between schools where some provided a classroom for the nutritionists’ exclusive use (A,B,C,D), whereas others
required the nutritionist to share a room with other school programs (F-i,F-ii) or staff (E) (Table 4).

The sequence and duration of the three workshop components (i.e. didactic knowledge transmission, hands-on recipe completion and recipe tasting) differed between schools. While nutritionists in some schools (A,B) consistently began the workshop with the didactic knowledge transmission (i.e. Lesson) and allotted it more time (average 28 and 26 minutes respectively), others (C,D,E,F-i and F-ii) ended the workshop with the Lesson and shortened its duration (respectively 19, 10, 13,10,13 minutes on average). Leaving the Lesson to the end of the workshop increased the likelihood that it would be given during the time students tasted their recipe (C,D,E,F-i) or that it would not be delivered at all (E,F-i) (Table 4).

Nutritionists’ identity

The identity of the nutritionist is captured by past experience and personal preferences. Personal preferences were identified by a desire or interest to embark on new projects or try new things; not all nutritionists had this desire. Past experience working with schools was associated with a circumspection toward stability. For example, Nutritionist D’s experience is contrasted with one less experienced Nutritionist (i.e. Nutritionist C) whereby the former was keenly aware of how change can come about quickly and unpredictably in the school environment and the later was more optimistic regarding stability:

“I think that you should never take it (the school) for granted…Having personally lived this, at one moment, everything changes and you are no longer integrated, even worse, you can be put completely on the side”

- Nutritionist D

“…I feel very much, now, in the school. I don’t feel, you know, my salary isn’t from the CSDM (Montreal school board) but I feel like an employee of the CSDM”

- Nutritionist C
Formation of legitimacy

The nutritionists’ perceived legitimacy was formed through the conditions in the school and identity of the nutritionist. School conditions are described by the social ‘atmosphere’ or the staff’s attitude as well as the material and non-material resources provided to the intervention. Nutritionists were keenly aware of their professional credibility among staff. For example, nutritionists (D,E,F-i,F-ii) described teachers who identified the workshop as time taken away from regular curricular activity or as “just a cooking class”. Similarly, some nutritionists were lacking a comfortable relationship with school administration whereby the school director’s demeanor was perceived as unapproachable, (F-ii); others remarked how the school direction was supporting the program (C). The provision of resources also varied between schools. While most nutritionists were provided a classroom for their exclusive use (A,B,C,D), others were asked to share a room with another program (F-i,F-ii) or with the staff of the school (i.e. the staff lunchroom) (E). Finally, being allotted a predictable and stable time period on the timetable was associated with perceived legitimacy in the school.

Translating program operations; building alliances with educational interests

School conditions and the nutritionists’ identity combined to bring about translations in program operations (or a lack of). Nutritionists whose workshop was allotted less time tended to prioritize the food preparation component of the workshop. Time restrictions resulted in the delivery of “the essential messages”. By combining the delivery of the lesson with the tasting experience students were less likely to ask questions and comment about their tasting. The social atmosphere in the classroom also influenced the nutritionist’s practices. By controlling discipline, posing questions and offering personal anecdotes, the teacher’s engagement could have an important influence upon the classroom behavior. Moreover, some nutritionists (F, E) expressed a preference for sharing the workshop with the teacher and described their animation as more lively when they experienced a ‘co-teaching’ with teachers. Noteworthy is nutritionists (A,B) who were provided opportunities to complete the workshop in its entirety, were less likely to seek out the teacher’s implication. These nutritionists (A,B) were also found to be less likely
to experiment with practices based upon creating new connections with food or expanding interpersonal connections.

School conditions and the nutritionists identity could also combine to bring about a compromise in the nutritionists perceived legitimacy, which in turn, catalyzed the translation of program operations. Compromised legitimacy combined with explicit disinterest on the part of teachers and students created conditions viewed by one nutritionist as an opportunity for change:

“...you must be open and ready to always take advantage of the occasions which present themselves, to really see how you can evolve.”

- Nutritionist D

Here, reform components within the Quebec Education Program’s (QEP) became part of the intervention in order to present the nutrition workshop as an essential educational tool. Although the nutrition workshop still involved food and cooking procedures, emphasis was placed upon the workgroup method as a means to expand interpersonal connections.

As illustrated by nutritionist D’s comment cited above, making change was associated with the nutritionists identity; being “open and ready,” and comfortable to experiment with new practices. When the nutritionist did not have an interest for experimentation, practices associated with change were absent (A). Others however experienced less than ideal conditions. Still others (B,C) experiencing ‘ideal’ school conditions incorporated these new practices based upon their own need or enjoyment for experimentation.

Translating program operations; building alliances with students interests

Program operations were also translated in order to respond to the representation nutritionists formed of students’ needs and how, by responding to these needs, the nutritionists’ own health promotion goals could be realized. Strategies implemented to achieve these goals differed between nutritionists whereby they may or may not have enabled students to contribute to the knowledge developed during the knowledge transmission (i.e. Lesson) and capacities applied during the food preparation activity (i.e. Practice). In this respect some nutritionists deemphasized strategies focused upon the technical meaning of food (i.e. familiar connections
with food) and instead emphasized strategies highlighting the explorative and experiential value of food (i.e. new connections with food).

These two strategies were particularly well distinguished by two nutritionists (A,B). Nutritionists A and B both devoted similar priority to the Lesson however nutritionist B applied a strategy to interest students in food by involving them in the formation of the knowledge during the Lesson:

“During the theory, in place of saying it, I ask many questions, and you know, I go from what they (the students) tell me. It is sure that the theory is passed, but, you know, it isn’t necessary exactly the same, or in the same order. It goes really from what they tell me and what they ask me”

- Nutritionist B

This distinction was also found during the Practice. While some nutritionists facilitated the completion of the recipe for students (A), others introduced challenge by asking students to problem solve amongst themselves. Nutritionists’ identity was found to be distinguished from one another based upon personal preference for building knowledge with students (e.g. Nutritionist B) versus delivering knowledge to students (e.g. Nutritionist A). The expression of this preference however, appears to have interacted with the school conditions. Namely, Nutritionist F who expressed preference for co-teaching, was more likely to implement this constructivist pedagogical approach in school i compared to school ii (Table 3).

Conditions in the school clearly influenced Nutritionist F’s approach to nutrition education. In the following quotation the nutritionist uses “we” to describe the functioning in the school, whereby health outcomes did not center upon health education:

“Health, this is not my goal. I realize that my goal, it is the children. Finally, with this way of functioning, we touch social development, the personal development of the child, a lot, there, (with) the collaboration, it is really the character of each (child), this comes out...some are too leader, some are too shy, it comes out ... we work on this. This is not nutrition, it isn’t.”
By realizing that health was not her goal, this nutritionist adapted her strategy in accordance with a ‘holistic’ educational approach which existed in the school. Once again however, we note the nutritionists identity as being “open and ready,” and comfortable to experiment with new practices, which likely influenced the incorporation of the school’s educational approach into the program operations.

DISCUSSION

This study demonstrates that interventionists aim to engage actors from the implementation setting with the goals of the intervention. Our study highlights two findings; 1) nutritionists’ practices varied according to their past experience, perceptions of schools’ social setting, structural conditions and atmosphere in the classroom and 2) nutritionists’ practices were strategic, in that they aimed to build relationships by considering how intervention goals could respond to the needs of the school actors. Interventionists, such as nutrition practitioners, are therefore not simply intermediates or ‘instrumental objects’ conforming to program models or ‘best-practice’ guidelines, but are agents who actively revise plans according to interpretations of how stakeholders and participants may become (or remain) engaged with the goals of an intervention. These findings challenge the utility of implementation frameworks typically centered on a set of instructions and technical components and that exclude the social actors with their ideas, interests and goals.

The successful incorporation of health promotion practices depends upon shared commitment and interest for health promoting goals (Cho, Zbell, & Nadow, 2004; Payne, Gottfredson, & Gottfredson, 2006; B. L. Riley, Taylor, & Elliott, 2001; Scheirer, 1987). Our study identifies the interventionist as playing a pivotal role to create this interest and foster a shared commitment. According to ANT, practitioners translate interests in order to build stable program-context connections. Indeed, this ‘blurring’ of boundaries is a health promotion aim
Inchley, Muldoon, & Currie, 2007), however it is difficult to reconcile with implementation models based upon insular definitions of ‘effective’ program practices. Nutritionists’ perceived legitimacy corresponded with objective measures of workshop duration and completeness of program delivery. Findings of this nature, revealing dose and fidelity limitations, correspond to a school-based model of implementation and highlight issues of compatibility between the goals of health promotion and education and those of education (Gingiss, Roberts-Gray, & Boerm, 2006). Others looking at compatibility have found that interpersonal relationships which positively communicate the need for adaptability and change predict fidelity to program implementation over time (Gregory, Henry, & Schoeny, 2007; Parcel, et al., 2003). By going beyond a narrow definition of evidence-based practice which assumes interventionists are uniquely concerned with dose and fidelity issues, our work supports the importance of promoting compatibility between the goals of health promotion and those of education. In addition, ANT has guided our inquiry to study nutritionists’ practices from a strategic perspective where nutritionists actively sought ways to make the nutrition intervention relevant to school actors.

Nutritionists were found to be keenly aware of the program’s receptivity in the school and to be engaged in a translation process in order to build interest among stakeholders. Others have similarly described health promotion practitioners developing strategic actions to reconcile their mandated, school-based implementation activities with the needs, implicitly or explicitly communicated from the schools (MacDonald & Green, 2001). Empirical results in this respect correspond to educational theories of change with regard to the adoption of innovation. Theories of social influence show how practitioners would intuitively adjust their practices following the rule of reciprocation or ‘give and take’ (Cowell, et al., 2005). Namely, practitioners who sense that educational stakeholders are providing them with time taken from another curricular activity, devise a means to ‘repay’ this time through the in-tandem delivery of program material as a valued educational substance (e.g. by incorporating educational material into the nutritional workshop).

Nutritionists were found to make various translations in the form of the nutrition workshop. Translations ranged from small changes in the roles that students or teachers were expected to take in disseminating knowledge during knowledge transmission, to important changes involving the function and focus of the food preparation activity. Our findings speak to
the interpretive nature of program practice and challenge orthodox expectations that practice will
conform to the evidence derived from context-free, controlled empirical testing (Cowell, et al.,
2005; McDonald & Viehbeck, 2007). Our findings further suggest that practice is not
spontaneous or ‘whimsical’ but is, rather, a strategic process of negotiation where risks and
benefits of making translations are carefully assessed in what has been referred to as a “dilemma
of moderation vs. stringency” to implement program objectives (Cargo, Salsberg, Delormier,

The strength of these findings should consider the quality of the data and the validity of
the analysts’ interpretations. Due to sudden budget cuts, the final nutrition workshop was cut
from the program, impacting the collection of workshop observations. This reduced the number
of within school observations along with a potential to assess variations between schools.
However, interviews obtained from the nutritionists add support to these data, thus strengthening
interpretive quality. These unexpected constraints also prevented returning to the school setting
to verify our analytic interpretations with participants. However, informal observations (i.e.
without audio-recordings) together with field experiences with the community organization,
where nutritionists met to plan workshops and discuss their experiences in the schools, lasted the
entire academic year. This prolonged engagement with the setting contributes to the quality of
data and supports the validity of the analysis. Further, the observations even if completed would
have captured only a partial view of the translation practices which occurred during the entity of
the academic year.

Observer bias is well known to be problematic where behaviors of observed actors
change in evaluative conditions (Miles & Huberman, 1994; Patton, 2002). We cannot disregard
this bias. However, interventionists were aware of the investigator’s academic pursuits. Further,
a certain level of familiarity developed over time between the nutritionists and the researcher
who assisted with set up and clean up duties. On the other hand, the practices of the teachers
may have adjusted due to the presence of the evaluator. In this respect, proactive discipline and
expressed enthusiasm for the program may have been exaggerated (in either direction).

Data analysis focused uniquely upon the operations and strategies used by the
nutritionists to create links with educational actors and students; analysis did not consider links
to parents. While community workers were responsible for the parental axe of this program,
nutritionists may have built connections with parents in order to increase the likelihood of future
participation, repeating recipe at home and talking about the program to other parents. While this aim was part of some nutritionists’ strategies, it was indeed a secondary pre-occupation. Nutritionists’ practices in this respect were related to the presence of parents and community workers during nutrition workshops, which was low in our study sample of grades four and five classrooms.

Finally, our study did not measure program effectiveness. Our objective was not to link process and outcome, but rather, to capture implementation processes using an alternative conceptual framework. We explain how interventionists strategically advance intervention goals and why these strategies vary across contexts. As suggested by the appearance of anomalies in systematic reviews of obesity prevention program effectiveness (Doak, et al., 2006; Summerbell, et al., 2007), current frameworks may inhibit our ability to identify and measure practices which emerge during implementation and render an intervention effective.

CONCLUSIONS AND IMPLICATIONS

Developing an evidence base which legitimates the interpretive and strategic nature of practice has important implications for health promotion practice in general, and school-based health promotion in particular. Health practitioners including nutritionists have typically followed individually-based behavior change theory. The need to extend action beyond the classroom, to “help create conditions that facilitate more healthful individual choice and more supportive social and physical environments” (Lytle, 2005, p. 92) is acknowledged. This requires health professionals to engage in relationship building activities that center less upon passing health promotion messages and building individual skills, and more upon negotiating with a range of stakeholders to learn how intervention goals can be strategically advanced.

The practice of implementing a health promotion program is about translating program objectives to the needs of actors living, learning, or working in that setting. While the results of this study are modest in confirming this interpretive dimension of practitioners’ roles, they are nonetheless important in challenging orthodox implementation frameworks that seek simply to
ensure correspondence to preconceived notions of information delivery and modes and doses of delivery.
Appendix 1; A Brief description of the Quebec Education Program (QEP).

The Preschool and Elementary Quebec Education Program (QEP) underwent an important reformulation during the last part of the 20th century. Documentation on this subject can be accessed through the Quebec Ministry of Education website at (www.mels.gouv.qc.ca/dfgi/dp/programme_de_formation/primaire/educprg2001h.htm). The new QEP or ‘reform’ is identified as a response to recent socio-cultural trends, including: internationalization, globalization, information explosion, rapid technological development and the growing complexity of social life. In response to these new technical and social demands, the QEP identifies the need to build competencies which go beyond core areas of learning. That is, beyond the subject-specific focus of the educational program, the reform identifies two new areas of concentration, cross-curricular competencies and broad areas of learning. Cross-curricular competencies are generic in nature and refer to intellectual, methodological, personal and social and communication-related competencies which are used in various subject areas. Broad areas of learning aim to bridge the boundaries between the multiple realities of the child, including the school, home and community. Broad areas of learning aim to enable students to look critically at their personal, social and cultural environment.

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Table 1. Definition of implementation strategies (i.e. practices) to build alliances with students and school

<table>
<thead>
<tr>
<th>Building Alliances with students;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reinforcing familiar connections with food;</strong></td>
</tr>
<tr>
<td>- defined by nutritionists actions to build healthy eating knowledge and know-how by referring to the nutritional value of food (i.e. quantity or quality) or the technical meaning of food (i.e. an instructional or manipulation tool).</td>
</tr>
<tr>
<td><strong>Creating new connections with food;</strong></td>
</tr>
<tr>
<td>- defined by nutritionists actions to guide students toward discovery of the diverse meanings of food (social, ecological, industrial, or commercial) and its potential to build their sense of self-identity and achievement.</td>
</tr>
<tr>
<td><strong>Expanding interpersonal connections</strong></td>
</tr>
<tr>
<td>- defined by nutritionists actions to support students role development among classmates and/or family</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Building Alliances with school;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connecting the nutrition workshop into the teachers timetable</strong></td>
</tr>
<tr>
<td>- defined by the actions taken by the nutritionist to engage the teacher with the nutrition education program in general or the nutrition workshop in particular.</td>
</tr>
<tr>
<td><strong>Connecting the educational institution with nutrition education</strong></td>
</tr>
<tr>
<td>- defined by the actions taken by the nutritionist which suggest that the nutrition workshop is used as a unique and essential part of the educational curriculum; In this respect, the workshop responds to the explicit needs of the school to build social competencies among students, partnerships with parents and a health education curriculum.</td>
</tr>
</tbody>
</table>
Table 2. Coding template; Examples of nutritionists’ practices in response to their identified strategies to build alliances with students and school

<table>
<thead>
<tr>
<th>Reinforcing familiar connections with food</th>
<th>Creating new connections with food</th>
<th>Expanding interpersonal connections</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Workshop component : Food Preparation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Directs students through the proper interpretation of recipe; - Responds to question (measurement, procedure, manipulation) providing direct answer. - Redirects students through a procedure by interrupting or by asking a question. Modifies or correct a manipulation procedure; - showing how to do or how to do better. Directs students to complete food preparation; - Tells students to get on to the next step, what to do next, to put things away, to sit down, to clean tables, to wait. Facilitates the completion of the food preparation; - placing food items and tools directly on workgroup table. - pre-preparing food items. - removing a procedure.</td>
<td>Enlarges the space for recipe completion beyond immediate work tables to other places within the classroom. Provides a new food fact Involves students in finding solutions; - Responds to question by referring student back to recipe. - Refers students to a new smell, texture, taste. - Tells students that errors are ok because they are learning.</td>
<td>Involves students in finding solutions; - responds by referring question to students. Talks about working together, sharing, taking turns, cooperation. Reminds about roles &amp; responsibilities; - asks students if they are respecting their role. - corrects student behaviour based upon their role. - asks students to remind one another of their roles. Reminds about autonomy; - refuses to respond to question. Refers positively to workgroup functioning. Providing Usable and applicable information; - identifies possible adaptations and alterations which can be tried at home.</td>
</tr>
<tr>
<td><strong>Workshop component : Lesson</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identifies nutritional composition of food in terms of; sugar, fat, salt, calories, vitamins, minerals, fibre. Identifies nutritional composition of food in terms of; nutrient quantities. Relates nutritional value in food to health effects on body; names diseases. Identifies nutritional composition of food in terms of Canadian Food Guide. Relates the food to common consumption practices. Relates the food to individual students’ consumption practices Situates the food in terms of cookery – recipes.</td>
<td>Relates the food to alternative dietary practices – religion, culture, vegetarianism. Relates the food to its use in language and tradition. Discusses the sensory experience associated with the food – taste, smell. Discusses the food in terms of its plant biology – cultivation, classifications. Discusses food in terms of world geography and climate. Discusses the food as an consumer product – corporation, marketing strategies. Discusses the food in terms of its manufacture – as an industrial product.</td>
<td>Involves students by discussing prepared exercise. Involves students by asking questions and waiting for their response. Uses students responses, commentaries and questions in content of lesson. Involves students personal experiences and cultural traditions.</td>
</tr>
</tbody>
</table>
Table 3. Distribution of practices observed confirming operation of strategies to build alliances with students and schools

<table>
<thead>
<tr>
<th></th>
<th>School A (total)</th>
<th>School B (total)</th>
<th>School C (total)</th>
<th>School D (total)</th>
<th>School E (total)</th>
<th>School F-i (total)</th>
<th>School F-ii (total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing familiar connections with food</td>
<td>40% (10)</td>
<td>21% (5)</td>
<td>28% (10)</td>
<td>16% (4)</td>
<td>18% (6)</td>
<td>36% (10)</td>
<td>57% (8)</td>
</tr>
<tr>
<td>Creating new connections with food</td>
<td>32% (8)</td>
<td>38% (9)</td>
<td>39% (14)</td>
<td>24% (6)</td>
<td>21% (7)</td>
<td>54% (15)</td>
<td>7% (1)</td>
</tr>
<tr>
<td>Expanding interpersonal connections</td>
<td>24% (6)</td>
<td>42% (10)</td>
<td>22% (8)</td>
<td>52% (13)</td>
<td>48% (16)</td>
<td>11% (3)</td>
<td>29% (4)</td>
</tr>
<tr>
<td>Connecting the nutrition workshop into the teachers timetable</td>
<td>0% (0)</td>
<td>0% (0)</td>
<td>6% (2)</td>
<td>0% (0)</td>
<td>3% (1)</td>
<td>0% (0)</td>
<td>0% (0)</td>
</tr>
<tr>
<td>Connecting the educational institution with nutrition education</td>
<td>4% (1)</td>
<td>0% (0)</td>
<td>6% (2)</td>
<td>8% (2)</td>
<td>9% (3)</td>
<td>0% (0)</td>
<td>7% (1)</td>
</tr>
<tr>
<td>Total practices</td>
<td>100% (25)</td>
<td>100% (24)</td>
<td>100% (36)</td>
<td>100% (25)</td>
<td>100% (33)</td>
<td>100% (28)</td>
<td>100% (14)</td>
</tr>
</tbody>
</table>
Table 4. Between-school variation in structural characteristics of workshops

<table>
<thead>
<tr>
<th>School</th>
<th>School B</th>
<th>School C</th>
<th>School D</th>
<th>School E</th>
<th>School F-i</th>
<th>School F-ii</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average duration (var)</strong></td>
<td>75 min (+/- 3)</td>
<td>70 min (+/- 4)</td>
<td>80 min (+/- 5)</td>
<td>75 min (+/- 20)</td>
<td>70 min (+/- 15)</td>
<td>58 min (+/- 20)</td>
</tr>
<tr>
<td><strong>Space availability</strong></td>
<td>exclusive use of classroom</td>
<td>exclusive use of classroom</td>
<td>exclusive use of classroom</td>
<td>exclusive use of classroom</td>
<td>Shares room with school staff</td>
<td>Shares room with other program</td>
</tr>
<tr>
<td><strong>Ordering of workshop components</strong></td>
<td>Consistently the same order</td>
<td>Consistently the same order</td>
<td>Order may vary between workshops</td>
<td>Order may vary between workshops</td>
<td>Order may vary between workshops</td>
<td>Order may vary between workshops</td>
</tr>
<tr>
<td><strong>Ordering and duration of workshop components (Minutes (inter-workshop range))</strong></td>
<td>Lesson 25 (21-29)</td>
<td>Lesson 26 (17-35)</td>
<td>Instruction 8 (4-12)</td>
<td>Instruction 10 (8-12)</td>
<td>Instruction 8 (4-14)</td>
<td>Instruction 13 (6-19)</td>
</tr>
<tr>
<td></td>
<td>Game 7 (5-14)</td>
<td>Game n/a (0-8)</td>
<td>Practice 40 (35-45)</td>
<td>Practice 41 (41-42)</td>
<td>Practice 39 (22-52)</td>
<td>Practice 32 (20-46)</td>
</tr>
<tr>
<td></td>
<td>Instruction 2.6 (1-4)</td>
<td>Instruction 5 (2-12)</td>
<td>Lesson 19 (13-25)</td>
<td>Game n/a (0-10)</td>
<td>Return 2 (1-3)</td>
<td>Lesson n/a (0-15)</td>
</tr>
<tr>
<td></td>
<td>Practice 29 (22-38)</td>
<td>Practice 26 (25-27)</td>
<td>n/a (0-6) &amp; Lesson 13 (6-16)</td>
<td>Game 10 (6-15)</td>
<td>Tasting 8 (5-10)</td>
<td>Tasting n/a (0-11)</td>
</tr>
<tr>
<td></td>
<td>Tasting 8 (5-12)</td>
<td>Tasting 9 (7-12)</td>
<td>Tasting 8 (5-12)</td>
<td>Tasting 12 (10-14)</td>
<td>Tasting 9 (5-15)</td>
<td>Tasting 9 (5-15)</td>
</tr>
</tbody>
</table>
Dr Sherri Bisset completed a Bachelors in Nutrition Science, a master’s in community health and a PhD in public health. She pursued post doctorate training as a CIHR fellow in the school of psycho-education at the Université de Montréal. Sherri is presently a young investigator with the Canadian Cancer Society. Her research has highlighted how and why health promotion interventions inevitably interact with contexts by unravelling the components of context using a social theory of innovation. Currently, Sherri is pursing health promotion research that adopts a ‘critical health education’ perspective to interventions targeting healthy lifestyle behaviours among youth.

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