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Teachers' use of dietary recalls for exploratory dialogue in the classroom

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Abstract

Objective: This study examines teachers' adoption and adaptation of 24-hour dietary recall technique for exploratory dialogue in the classroom with students aged 8–12 years. The focus is on the teachers' use of the information collected through the recall tool to pose open questions, recap, reformulate and elaborate collectively with the students regarding food and nutrition practices.

Setting: Three small rural schools in disadvantaged communities of Ecuador.

Method: Qualitative participant observations of 24-hour dietary recall sessions, with 49 students aged 8–12, and interviews with seven teachers.

Results: Teachers using the recalls as shared objects of learning guided the class through a collaborative process of sensemaking and understanding of their food practices. Based on children's everyday knowledge and experiences, the teachers helped to search for explanations and solutions by contextualising the discussion while also linking it with specialised nutritional advice.

Conclusion: The 24-hour dietary recall aids in organising, connecting and introducing additional information; localising and grounding knowledge; and holding a shared conversation about food and nutrition in the classroom. The tool has potential for teachers to develop instructional skills regarding the discussion of nutrition and health practices within pre-service or in-service training.

Keywords

Classroom discussion, dietary recall, exploratory dialogue, food pedagogy, teaching methods

Introduction

The 24-hour dietary recall is a relatively simple, inexpensive and reliable tool that is commonly applied in schools to assess children's food and beverage intake within a public health perspective on nutrition (Baxter et al., 2016; Diep et al., 2015; Livingstone and Robson, 2000; McPherson et al., 2000). It consists of an open-ended form on which participants report their consumption of food and beverages during the previous 24 hours (Baxter, 2009). According to Baxter (2009), 'recalls can be conducted without advance notice' (p. 20) and do not require particular skills, including literacy. Children as young as 7 years old have participated in studies using this method (Carvalho et al., 2015; Hunsberger et al., 2013).

In socioecological approaches to health such as the health-promoting school, health promotion researchers consider the association between health policy and practice and health education to be central to success (Green and Tones, 2010; St Leger, 2001). Linking an assessment of children's diets to curriculum or classroom learning can contribute to this by connecting school-based health education and public health initiatives. A literature review conducted for this study shows that neither the 24-hour dietary recall tool nor the data collected through its application have been analysed with respect to their educational potential or pedagogical value. Studies of the tool to date have been limited to measurement of nutritional intake. Nonetheless, a number of external public health studies have used class time in order to utilise hour dietary recalls or a similar approach with school students (Baxter et al., 2002, 2003, 2016; Diep et al., 2015; Finch et al., 2006; Guinn et al., 2010; Lytle et al., 1993; Moore et al., 2007).

Exploration and questioning through dialogue are considered essential to participatory processes of learning and the development of an in-depth understanding as part of school-based health promotion; however, teachers may not encourage and support this kind of interactions in class (Nilsson, 2005). Based on descriptions of the methods employed in nutrition studies, it seems that researchers rarely partner with teachers in ways that would add an educational perspective to the class time they take up. If teachers become involved in the application of the 24-hour dietary recall method, they may gain a deeper understanding of nutrition-related research. More importantly, teachers could use the tool to facilitate students' learning about nutrition and the nutritional assessments used by the public health sector as well as to critically reflect on dietary choices. This would help connect public health, health promotion and health education perspectives in schools.

The literature review also confirmed that there is a research gap in the use of 24-hour recall with children in developing countries. Accordingly, this study applied this tool with the interest of seeing how be used with children and how they would react to it within the particular context of disadvantaged communities

in a developing country such as Ecuador. The study was conducted as part of a wider doctoral study that explored connections between the education and the public nutrition and health sectors in Ecuador.

Theoretical basis

In a socioecological approach to school-based health education, the objective is not solely that students learn about health from the perspective of prevention or risk but also that they develop the will and capacity to act upon the wider determinants of health (Fitzpatrick, 2014; Tones, 2005). From this perspective, the aims and means of health education are student participation in plural and democratic processes through open discussion of health issues, including its social and political dimensions (Simovska, 2008, 2013; Simovska and McNamara, 2015; Tones, 2005). Such an approach to health education is collaborative and empowering and promotes critical thinking and acting (Simovska and Carlsson, 2012; Weare, 2007). According to Moynihan et al. (2015), effective health educators collaborate with students and conduct dialogue in an empowering way, which develops the students' ability to think and reflect critically.

Exploratory dialogue is one way in which students can engage constructively and critically in collaborative reasoning (Barnes and Todd, 1977; Mercer and Littleton, 2007). Through exploratory dialogue, students may engage in a process of reflection on their food-related practices and behaviours – including the procurement, preparation and consumption of food – in association with the wider influences on these. Such discussions could lead to an increased understanding not only of individual behaviours but also of the socioeconomic, political and environmental factors that influence farming practices or access to food, as well as students' knowledge about the origin and characteristics of the food they eat.

In contrast to a public health perspective, a socioecological approach to health education cannot treat schools merely as intervention settings. Rather, all health-related activities at school must be integrated within the curriculum, which in turn should be aligned with the health-promoting goals of the school. Consequently, an initiative involving the application of a 24-hour dietary recall approach in school requires that the implications of this for learning are also addressed. It may also help counter the criticism that food-related pedagogies have become increasingly less open and more focused on imposing norms and behaviours on children based on an instrumentalist, bio-medical approach to food and nutrition (Leahy, 2013; Leahy et al., 2015; Leahy and Wright, 2016; Welch et al., 2012).

Against this backdrop, the aim of this study is to explore how teachers give pedagogical purpose to a tool that is frequently applied by external nutrition researchers in schools, using 24-hour dietary recalls to trigger and support open-ended classroom discussion about food and nutrition. The main research question discussed in this article is as follows: How can teachers use a dietary recall for exploratory dialogue about food and nutrition in the classroom? The

subsidiary question is as follows: Which strategies can teachers use to guide exploratory dialogue about food and nutrition?

Context of the study

Ecuador's public health sector appears to view schools as intervention settings, with related nutrition and education policy following a biomedical rationale that promotes the regulation and control of behaviour (Torres, 2017). However, wider policy documents, such as the National Plan for Good Living 2013–2017 (SENPLADES, 2013), emphasise the importance of better connections between the health and education sectors, including developing the competence to address the wider social determinants of health. Classroom pedagogy continues to be traditional in Ecuador, with school teachers employing unidirectional methods (Whitman, 2008). In addition, a classroom study of children aged 5–8 shows that instructional support is particularly weak and students are not used to working together in small groups (Cruz-Aguayo Schady, 2015: 137–138).

Teachers in this study were already participating in research concerning the School Feeding Programme, which involved school observations and interviews with teachers, as well as interviews with parents. In the course of this work, the researcher (I.T.) observed that teachers did not ordinarily engage in discussions with their students or explore knowledge through open dialogue. Particularly regarding diet or nutrition, the teachers would give suggestions related to everyday experiences but did not make explicit connections with the curriculum or lessons that had been planned.

As the study progressed, the researcher asked the teachers for permission to apply the 24-hour recall technique with students, after explaining how it was commonly used for studying dietary intake. A date for each classroom session was agreed in advance. As with all activities conducted in the participating schools, the teacher was expected to be present and manage the class.

After the researcher explained the use of the 24-hour recall to the students, some of the teachers took an active role on their own initiative, verbally supporting the researcher in the application of the tool by repeating or clarifying in different ways some of the instructions given. Once the technique had been applied, the same teachers, also without prompting, began a discussion with their students. This study describes the researcher's analysis of how these teachers became involved and re-focused the dietary recall session.

Methods

Participants

The study adhered to the minimum age recommendation for dietary recall self-reporting and involved only students aged between 8 and 12 years ($n = 49$) in three small rural primary schools of Ecuador identified as School H, School M and School S, and their respective teachers ($n = 7$). At the time of the study, the researcher had been conducting observations in these schools for more than 3 months and was familiar to the teachers, students and parents. The parents

had signed con-sent forms for their children's participation; the teachers were free to decide whether and how to become involved. The teachers did not have previous training or experience in nutrition or health education, or regarding the use of the 24-hour dietary recall tool.

Data generation

The study used two data generation methods. The main method involved conducting participant observation while using the 24-hour dietary recall method with students in seven different groups (one class per teacher). These in-class observations had a duration of approximately three consecutive class periods, or 120 minutes in total. Data collected included teachers' individual responses to the tool and their use of the tool in discussing food and nutrition matters with students. The observation protocol was expected to provide exploratory data and not grounds for generalisation. The researcher took notes of the participants' statements, sometimes verbatim and other times synthesising descriptions of situations as they unfolded. A second data collection method involved recording remarks or questions from the teachers before applying the 24-hour recall and interviewing them with open-ended questions about the activity after it had taken place.

The 24-hour recall solicited the intake of food and beverages at both school and home in reverse order, starting with the most recent food or drink ingested. It was conducted in the following way. First, the teachers were informed about the goal and method of the dietary recall tool in public health research and had the opportunity to ask questions to the researcher. Then, the students were informed about what they were expected to do with the recall form, on which they filled out their name, age and date. Finally, prompted by the researcher or the teacher, the students described on the form what they had eaten for breakfast, dinner, lunch and snacks during the last 24 hours. The activity was followed with interviews with the teachers concerning their opinions about the 24-hour recall.

Analytic framework

In Vygotsky's sociocultural approach to learning, social interaction in the classroom is seen as contributing to both to the meaningful construction of knowledge and an understanding of how to engage in social learning (Vygotsky, 1986 [1934]; Vygotsky and Cole, 1978). From this perspective, interactive, dialogical discussion enables students to exchange understandings and build on these understandings jointly. In this sense, classroom dialogue (between student and adult, and between students) is viewed as a means of developing both individual and collective understanding (Mercer and Howe, 2012). The adult has an important role in guiding, or mediating, this interaction as well as in the appropriation of knowledge by students. Additionally, exploratory dialogue requires a shared object of learning (Rogoff et al., 2001; Simovska, 2008), that

is, an artefact or a process that is developed collaboratively and towards which the attention of participants is oriented.

Exploratory dialogue is a way in which teachers can guide classroom discussion to improve student reasoning and learning; the concept was introduced into sociocultural studies by Barnes and Todd (1977) and further developed by Mercer (Mercer and Howe, 2012; Mercer and Littleton, 2007). Exploratory dialogue involves the joint negotiation of meaning using four main strategies commonly used by teachers in different cultures: questioning, recapping, reformulating and elaborating (Mercer, 2008; Mercer and Howe, 2012). Open questioning is understood as a process of inquiry – prompted and guided by the teacher – that enables students to offer possible explanations. Recapping refers to the teachers restating what has been said in the past on a topic; this strategy helps students to connect past with current learning. Reformulating entails using other words or wording to explain; it involves clarifying what students know by establishing links with curricular or domain-specific content. Finally, elaborating entails introducing additional information into the conversation.

Analytic strategy

The analysis of the observational data focused on the reactions of the teachers to the 24-hour recall, including the ways in which the teachers mediated or guided classroom conversation using their students' responses on the 24-hour recall forms. The research approach was interpretive (Flick, 2009), drawing on the descriptions and oral transcriptions contained in the fieldwork notes while employing sociocultural theory to deduce possible explanations. Descriptions and oral interactions were iteratively contrasted with one another and with the theory in order to ensure that particular assumptions were sufficiently supported on or discarded. Peer debriefing with health education and promotion researchers was an important component of this process as it helped to highlight potential errors of judgement or weaknesses in the arguments. The debriefing sessions also improved researcher reflexivity concerning possible influences on the perspectives being adopted.

Although seven teachers were present in their respective classrooms when the recall technique was applied, only five used the tool for exploratory dialogue. Because the research objective was to analyse the use of the recall method for this purpose, the analysis therefore mainly focuses on two schools identified as School H and School M, where the head teachers used the tool to guide the students in further exploration of the information collected using the recall. School H was a single-teacher school with 17 students grouped in one class, from first through seventh grade (corresponding to ages 5–12). In School M, the head teacher was in charge of 13 students, from sixth and seventh grades (corresponding to ages 10–12).

The information collected through the recall was considered the 'shared object of learning' (Rogoff et al., 2001; Simovska, 2008) on which students and the teacher centred their conversation and reflections. The analysis focused on

identifying whether and how the teachers used any of the four strategies of exploratory dialogue. Results were related to the teachers' reactions to and opinions on the 24-hour dietary recall tool.

Findings and discussion

To answer the main and subsidiary research questions concerning the teachers' use of the 24-hour dietary recall and the exploratory dialogue strategies employed by teachers, findings are presented and discussed in the following three sections: teachers' reactions to the 24-hour recall, their use of the tool to initiate and guide classroom discussion and their views on the recall as a pedagogical tool.

Teachers' reactions to the recall

The seven participating teachers were prompted to ask questions following the explanation of how the dietary recall session would be conducted; however, only two of them chose to do so. These were the single teacher from School H and the head teacher from School M. The head teacher and two teachers from School S, and the other two teachers from School M, did not show interest in doing so.

The following excerpts illustrate the kind of queries the single teacher from School H and the head teacher from School M had:

How does it work?

What is the information good for?

Shouldn't we discuss with the children about the activity afterwards? (Conversation with head teacher in School M, 6 March 2012)

How are you going to go about it?

What does one do with the information afterwards?

Can I talk with the children afterwards to discuss the information they filled out? (Conversation with head teacher in School H, 5 March 2012)

In these questions, the head teachers from School M and School H show curiosity about the ensuing dietary recall session, the purpose of the 24-hour recall tool and the use of the information collected by the tool. They enquire about the potential pedagogical use of recall, that is, whether some discussion concerning the recall activity or should take place afterwards. According to these excerpts, it could be argued that, from the onset, these teachers appeared to be interested in determining the extent to the recall could be used pedagogically.

In addition, the teachers were using enquiry as a form of gaining knowledge, delving into the different learning possibilities associated with the 24-hour recall.

Therefore, it could also be said that these teachers demonstrated some proficiency in exploratory dialogue.

The head teachers from School H and School M, who seemed to show interest and appeared to search for explanations, were also the most engaged in the process, as explained in the following sections. The seeming lack of involvement by the other teachers could be related to the vertical authority structure in School M and the lack of a participatory approach in School S, as described in a related study (Torres and Simovska, 2017).

Classroom discussion

In this section, the analysis centres on the four exploratory dialogue strategies identified by Mercer (2008; Mercer and Howe, 2012) – questioning, recapping, reformulating and elaborating – which were used by the teachers who become involved during the 24-hour dietary recall session. Once again, the teacher from School H and the head teacher from School M appeared to promote and exemplify for the students how to engage in exploratory dialogue.

In School H, the teacher asked questions to the students and elaborated on their answers by adding information, as illustrated in the following excerpts:

- Teacher: Let's see, Viviana, what did you have for breakfast?
Viviana: *Tortillas* with coffee.
Teacher: Coffee is not that beneficial, maybe oatmeal with fruit, with milk; with *tortilla*, better. Milk has protein. It is the season of blueberry, blackberry; that is nutritional, that is good for your age.
Karina?
Karina: Milk with corn flakes.
Teacher: And Jacqueline?
Jacqueline: I didn't have breakfast because the bell already rang.
Teacher: One has to wake up a bit earlier; one has to have a good breakfast.
(Fieldwork notes, School M, 6 March 2012)

Here, the teacher opens the dialogue using the recall's breakfast category to ask students about their diet. It is possible to argue that the teacher is being normative because she is making recommendations; however, the teacher's suggestions follow directly from the students' own answers. Using elaboration as a strategy, the teacher brings information into the discussion by connecting it with the students' own reality. This indicates that by conducting the discussion without searching for fixed, predetermined solutions, the teacher utilised an exploratory dialogue approach.

In a similar manner, the teachers adopted a guiding role in the process of enquiry, thus helping students to explore other possibilities. For example, the head teacher in School M was part of the following exchange:

- Teacher: What do you think that we should do if we are not eating breakfast in
Student: the morning?
Teacher: Wake up earlier! [students laugh]
That is one way. What would another be? (Fieldwork notes, School M, 6 March 2012)

In this case, the teacher uses open questioning to prompt students to explore options on their own, without correcting them. In School H, similar exchanges took place, as illustrated in the following excerpt:

Teacher: Do you eat eggs every day?
A number of students say: No.
Teacher: Your mummies have chickens, right?
A number of students say: Those are to sell.
Teacher: But could you still eat some? (Fieldwork notes, School H, 2 March 2012)

Here, the teacher employs open questioning to challenge students to probe deeper into possible options, even when the students think that an option is not necessarily available. By elaborating on, extending or revising the students' answers, the teacher is helping them make further connections to explore other possibilities. The strategies of questioning and elaborating are additionally illustrated in the following excerpt:

Teacher: What did you have for lunch?
Student 1: Rice and lentils.
Student 2: French fries.
Teacher: Fried potatoes and rice is not nutritional, it is more fat than nutritional
Student 3: food.
Teacher: I am used to eating potatoes and rice and cucumber salad.
Vegetables, that's good. Better watercress than fried potatoes.
Student 4: There isn't any watercress.
Teacher: There is turnip. We should eat what is in our environment. No too many potatoes, though. Ocas are very good. (Fieldwork notes, School H, 2 March 2012)

In this excerpt, the teacher guides the students through a collective conversation, in which she connects together different students' information. The teacher provides context to the students' answers by restating knowledge that is common to the students. She also reformulates this knowledge by linking it to more specialised nutritional advice, such as the importance of eating local foods and limiting the consumption of saturated fat.

There seemed to be a balance between open questioning and elaborating in the classroom discussions. The teachers used enquiry to start and sustain exploratory dialogue with the student while elaborating, that is, bringing additional information to the discussion based on the students' answers. In their open questioning, the teachers prompted and guided the students to offer possible explanations.

To a lesser degree, the teachers also recapped or restated what the students already knew in relation to the topic of conversation and reformulated some of the student's answers using specialised knowledge.

A pedagogic tool

The recall form made the information clearly and readily available, which the teachers then employed as the focus of attention and resource for discussion, that is, as the shared object of learning (Rogoff et al., 2001; Simovska, 2008). This way, the teacher did not have to rely on on-the-spot recollections, and the visual division of intake by meal in four rows (today's breakfast, yesterday's dinner, yesterday's lunch and extras) aided in giving order to the discussion. The teachers with their students used the recalls' information to explore, elucidate and explain their food practices as they also searched for explanations and other available options.

In the interview, the head teacher from School H said that she enjoyed using the recall and thought it was a good tool to discuss with the children the food they helped to grow in their parents' plots, which they saw their mothers cook or which they ate both at home and at school. The views of the two head teachers are illustrated in the following excerpts:

This is really good, and interesting. I have not seen this before. I think it is very useful to analyze with the children. (Interview with head teacher, School H, 2 March 2012)

I think it is very important to talk about this with the children, and that we, as teachers, learn about the tool. (Interview with head teacher, School M, 6 March 2012)

In these excerpts, teachers seem to value the information that the recall helps or could help to gather and the way in which the information is used. In contrast to teachers using food pedagogies that focus on regulating and control children's eating behaviours, these teachers also appear to value or view the children's everyday knowledge and experiences as a point of departure and the basis for classroom discussion. Through such interaction, students are able to build on each other's contributions, making sense of and developing a better understanding of their food practices.

Conclusion and implications

The study identifies a form of collaboration between nutritionists and other health experts and schools that links the health agenda with pedagogical practice. In Ecuador, where teachers are not used to promoting dialogue or working in collaboration with the health sector and there are limited in-service training, health curriculum and resources, such an exercise helps to illustrate a way of integrating health promotion ideals with resources that nutrition researchers commonly use at schools.

The results of the study point towards the potential of using this or similar tools for developing instructional skills regarding the discussion of nutrition and health practices within pre-service or in-service teacher training programmes. Findings suggest that 24-hour recalls could be used to link nutritional knowledge with everyday experience, develop dialogic teaching strategies or provide space to innovate pedagogical practice, which may involve taking into account students' everyday life or employing tools that are not customarily viewed as pedagogical.

The study suggests that 24-hour dietary recall and the information collected through such recall may be used as a mediational means to initiate and guide exploratory dialogue based on open questioning, recapping, reformulating and elaborating. The recall form may be used to organise the discussion logically, according to consecutive events –the main meals – within a limited time span. In addition, the open-ended format of the recall form excludes the idea of predetermined right or wrong answers, which could be the case in a test assessing propositional knowledge. Therefore, students have the opportunity to make connections with their everyday experiences regarding food and nutrition issues in a non-judgemental context.

Concerning the strategies that teachers can use to guide exploratory dialogue about food and nutrition, the study shows that using the completed 24-hour recalls as shared objects of learning assists this collaborative process. Through open questioning, the information collected with the recall can be compared and contrasted collectively in order to understand or explain issues related to food and nutrition. By elaborating and guiding students to elaborate, teachers bring additional information into the discussion to explore common or divergent understandings of different issues. Through recap, teachers use the recall information to make connections with the students' own knowledge or their shared realities. Finally, the teachers can reformulate what the students have stated in the recall by linking stated information with domain-specific knowledge such as nutritional and health recommendations.

While this study focused on the teachers' use of the 24-hour dietary recall, three important elements were not explored. First, teachers were not asked to explain why they did or did not become actively engaged, so no conclusions can be drawn regarding their capacity or interest in using dietary recalls or about the importance they ascribe to the pedagogical use of the recall. Second, the study did not examine the effect of the tool on the process of learning or its impact on knowledge, two dimensions that could help to determine with more precision the potential of the 24-hour recall or similar tools. Finally, the study did not analyse how nutrition and health researchers might better partner with teachers to administer dietary recalls to students. Further research on teachers' use of the 24-hour recall or comparable tools is necessary to more fully understand the pedagogical value of such public health research tools, including the challenges of collaboration between the health and education sectors in school.

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