

# **Health Education Classroom Practices in Primary Schools: An Observational Study From Pakistan**

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## **Abstract**

In this study, we examined health education practice in Child-to-Child (CtC) classrooms in urban and rural primary school settings in Pakistan to describe and compare practice critically. Structured observations of health lessons were carried out in 67 randomly chosen primary classrooms from Health Action Schools in urban ( $n = 32$ ) and rural ( $n = 35$ ) contexts. Health education practices were found to be more “participatory” in rural classrooms than in urban ones. Using a multivariate analysis, we identified three factors that contributed independently to the use of participatory approaches in classroom practices: the HEALTH aggregate (i.e., intensity of health education training, use of a health manual, and regularity of health teaching), teachers’ attendance at staff development workshops, and children’s gender. This study provides insight into a largely unexamined area of health education CtC classroom practice. This research in primary classrooms of Pakistan furthers the understanding of health education classroom practices in the context of professional development of teachers for health promotion.

## **Keywords**

*health education; Child-to-Child; classroom practice; schools; observation*

This study is a part of the doctoral thesis of the first author for which she was enrolled in the Department of Education at the University of Oxford. The field-work for the study was carried out in rural and urban schools of the province of Sindh in Pakistan.

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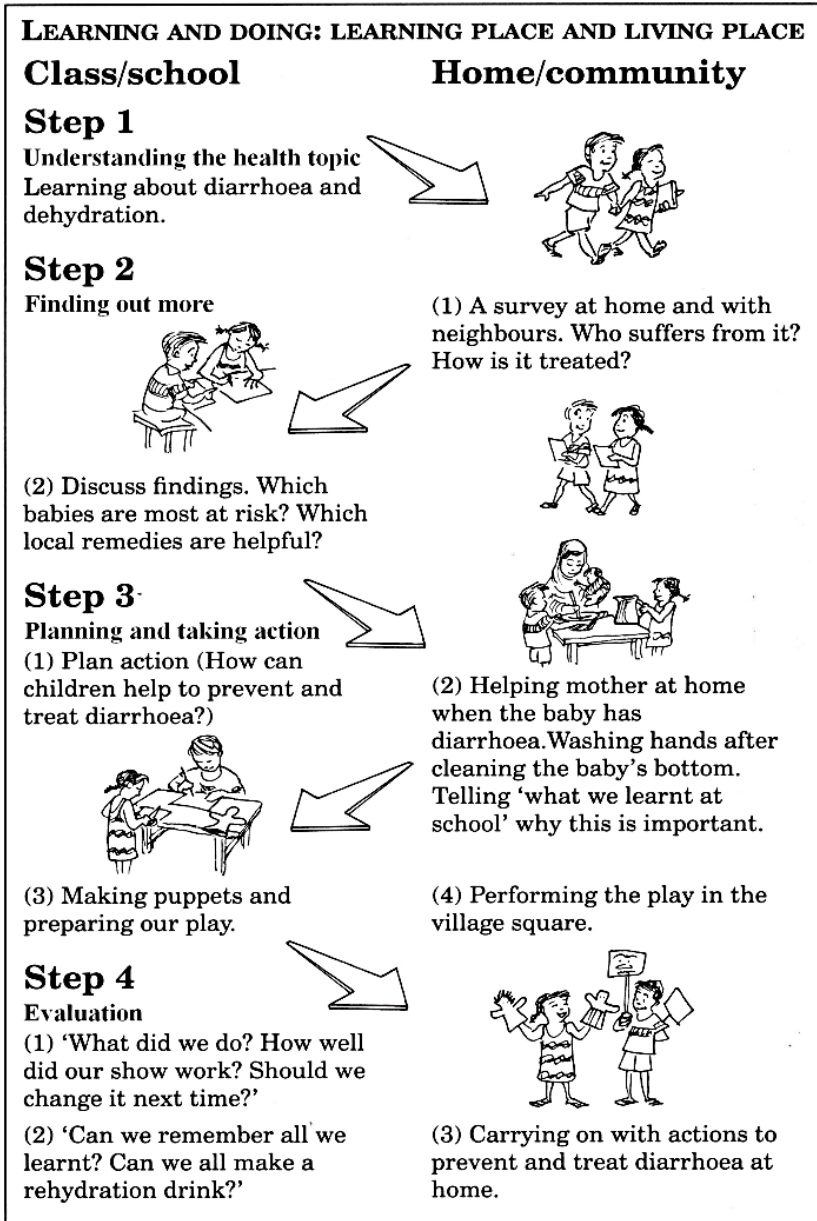
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## Introduction

Many factors—family, peers, school, and community—shape the health of young people (Denman, Moon, Parsons, & Stears, 2002; National Academy of Sciences [NAS], 1997; St Leger, 2004). Among others, the school is the only organized public institution amenable to being restructured and mobilized to promote societal goals (NAS, 1997). Most important, schools have links to several influences on children's health, including family, peers, and the local community. This access puts schools in an ideal position from which to initiate interaction between key influences on children's health behavior, to create supportive environments, and to reinforce messages from outside the school setting (Green & Kreuter, 1991; Nutbeam, Wise, Bauman, Harris, & Leeder, 1993). Capitalizing on this strategic position, for most of the 20th century, school administrators have included school health as a part of schooling. It has taken forms such as provision of vaccinations, delivery of health information, development of skills and attitudes of individuals, and a more comprehensive “eco-holistic” approach to health education known as Health Promoting Schools (HPS). This HPS approach has been strongly promoted by the World Health Organization (WHO) and is being implemented in countries throughout the world to assist schools in improving health knowledge and practices (e.g., Hawes, 2003; Konu & Rimpelä, 2002; Rothwell et al., 2010; WHO, 1996).

The Child-to-Child (CtC) approach to health education, which is the focus of this article, fits well in the broader context of HPS and emphasizes skill-based health education through interactive classroom teaching and building of links between school and community. Since its inception, variants of the CtC approach have been implemented in over 70 developed and developing countries through education, health promotion, and community development programs. A step-by-step educational methodology, which has been developed to put this action-oriented approach into practice, is presented in Figure 1 (Bailey, Hawes, & Botany, 1992).

What follows is a theoretical background of the CtC approach firmly rooted in Bruner's “act of learning.” As presented in Table 1, the CtC approach provides a framework for children to acquire knowledge on health issues and transform and evaluate it along with their teachers (Bruner, 1977). Active learning appears to be a major theme in the theoretical framework of Bruner, which seems to have a major influence on the CtC approach, according to which learning is an active process in which learners construct new ideas or concepts based upon their current knowledge. Furthermore, Bruner's model of learning highlights the role of effective interactions between children and their teachers, peers, and environment in providing opportunities for the process of active learning.



*Figure 1.* The Child-to-Child four-step approach. Adapted from *Health Promotion in Our Schools*, by H. Hawes, 1997, London, England: Child-to-Child, p. 41.

**Table 1***Act of Learning*

**Acquisition of new information:** The information that runs counter to or is a replacement for what the person has previously known implicitly or explicitly. At the very least, it is a reinforcement of previous knowledge.

**Transformation:** The process of manipulating knowledge to make it fit new tasks. People learn to unmask or analyze information, to order it in a way that permits extrapolation or interpolation or conversion into another form.

**Evaluation:** Checking if the way information has been manipulated is adequate to the task. Is the generalization fitting, have we extrapolated appropriately, are we operating properly?

*Note.* Adapted from *The Process of Education* (2nd ed.), by J. Bruner, 1977, Cambridge, MA: Harvard University Press, pp. 48–49.

As advocated in the model, the CtC approach provides a framework for children to extend their knowledge and skills through inquiry (Hawes, 1988; Hubley, 1998; Kassam-Khamis, 2005; Kassam-Khamis & Bhutta, 2006). However, it does not imply that children should always be in the leading role (e.g., taking the initiative, making decisions). In other words, the CtC approach does not condemn the need for active teaching. Through the model, teachers are encouraged to bring accurate, challenging, and demanding content to a classroom and present it in a clear, structured, and sequential manner. Children might need to remember some of the facts (e.g., WHO's immunization schedule) and rules (e.g., for making oral rehydration solution) and require practice to reinforce their skills (e.g., making oral rehydration solution). For teachers to be effective, interaction and eliciting active participation from students instead of relying merely on the chalk-and-talk method are stressed in active teaching. The process gives stable hooks to which the learning may be attached (Muijs & Reynolds, 2005)

When active learning and active teaching are used together, it can be argued that instead of a loose interpretation of participatory learning during which children always have the lead role and take responsibility for everything, there is a balanced practice during which children are provided with opportunities to benefit from teacher-initiated teaching as well as explore for themselves, as advocated in other disciplines (e.g., Gupta, 2009; Siraj-Blatchford & Sylva, 2004). With a balanced approach, the CtC framework has an emphasis on involving children in acquiring health knowledge and developing life skills by promoting understanding rather than by using persuasion. As presented earlier (Figure 1), the teacher facilitates the learning of children over four steps through a variety of activities and ways of classroom organization. Throughout the four steps, the children also learn and practice skills that are precursors

to healthy behavior. Some of the examples of those skills are problem solving (e.g., how to create awareness among the community about the importance of washing hands), communication and creative thinking (e.g., conducting a survey, reporting findings, taking action), and critical thinking (e.g., reflecting on their activities “what went well and why,” “what did not go well and why”). Through the four steps in Bruner’s (1977) act of learning (Table 1), it is evident that, strictly speaking, children acquire new knowledge during the first two steps, through classroom teaching, discussion with peers, and studying their environment. During the third step of the CtC approach, they transform their acquired knowledge into action and then evaluate their action. It can be argued that effective CtC classrooms, in which children make progress on cognitive and social outcomes, strike a balance between an instructional approach and children’s initiatives, in which classroom management is strong and the teaching is extremely motivating. Furthermore, a balanced practice in CtC classrooms places emphasis on improving children’s skills in metacognition so they can become self-regulated learners.

Since the launch of CtC, numerous studies, mostly qualitative case studies or surveys, have been carried out to explore the development of the CtC approach and to assess its role in improving children’s health knowledge and skills (e.g., Evans, 1993; Kirby, Mann, Pettitt, & Woodhead, 2002; Komba, Ayoub, & Issa, 1996; Pridmore & Stephens, 2000; Somerset, 1987). A common theme running through the literature points to the contribution of CtC in enhancing children’s health knowledge and practices. The role of the approach in improving classroom practice in primary schools has been addressed in most of these studies and reported to have “worked” for some contexts; however, evidence supporting this argument came mostly from self-reported data (e.g., interviews/surveys) from active participants. Classroom observations were made for some of the studies; however, qualitative descriptions were found to be the only method of presenting classroom practice.

Informed by the CtC methodology, the Health Action Schools (HAS) project, which is the focus of this study, aims to develop prototypes of HPS in different social and educational contexts of Pakistan (Hawes & Khamis, 1997). The HAS project began as a 3-year (1998–2001) action research project in partnership with Save the Children, UK at the Aga Khan University Institute for Educational Development (AKU-IED). It started with five pioneer schools and expanded across the country. Teachers in HAS taught health content either as a separate subject or across curricula using carrier subjects such as science, language, and social studies. On average, they taught 30 lessons per year or one lesson per week as health education topics cannot be taught in one lesson, but over a series of CtC steps that link lessons at school with action at home or in

the community (Figure 1). The HAS teachers have been teaching health topics through the CtC approach, which can be grouped under three main themes (though the first theme was focused on more):

- hygiene and disease prevention (e.g., malaria prevention),
- environmental and community health (e.g., preventing accidents), and
- family and social health (e.g., caring for children who are sick) (Kassam-Khamis, Shivji, & Bhutta, 2007).

Findings of the project studies point to the use of participatory approaches in teaching health lessons (Carnegie & Kassam-Khamis, 2002; Kassam-Khamis & Bhutta, 2006). As in other studies discussed earlier, qualitative observations were used to assess classroom practices of HAS teachers.

Qualitative observations may be useful in many ways in understanding classroom practices. Nevertheless, quantitative studies about classroom processes are required, as with any other discipline (e.g., Apter, Arnold, & Swinson, 2010; Galton, Hargreaves, Comber, Wall, & Pell, 1999; Sylva, Hurry, Mirelman, Burrell, & Riley, 1999), in the field of school health to generate more generalizable data to inform policy and practice. Furthermore, this study is a modest yet important step in addressing this gap.

It can be argued that CtC is not only about classroom teaching, but also about going beyond classroom boundaries. In school-based health education, the classroom plays an important role in offering children a conducive environment to learn content and life skills, providing an opportunity for structured and spontaneous discussions, providing a platform for planning and practicing community activities, and providing a place for reflecting on those activities. Execution of community activities is a crucial part of classroom activities; however, if the latter is not observed, the former might not give the complete picture. For example, observation of an anti-smoking rally in which school children participate by carrying banners with relevant health messages might not tell much about children's contribution in planning for the rally. Possibly, children had been "used" as "loudspeakers" to convey messages that they hardly understood. Classroom observation would help to address these issues. We were, however, cognizant of the importance of school-community links—an important element of a health-promoting school—but it was beyond the scope of this study.

The prime aim of this study was to describe and compare health education classroom practice in urban and rural primary schools in the Sindh province of Pakistan. It was also to explore factors (e.g., school, classroom, and teachers) that could be associated with the observable characteristics of classroom practice.

## Method

A quantitative approach was employed to conduct the observational study. Structured observations were carried out in 67 primary classrooms that were selected randomly from two strata to represent HAS from urban ( $n = 32$ ) and rural ( $n = 35$ ) settings of the Sindh province (Robson, 2002). Population lists of health education teachers were requested from relevant authorities in urban and rural areas, and these were provided. Teachers were randomly selected from these lists. Randomization incorporated at this stage was to minimize sampling bias so the sample would be more likely to be representative (Black, 1999; Punch, 2000; Robson, 2002).

Sample classrooms were recruited from urban ( $n = 12$ ) and rural ( $n = 35$ ) Health Action Schools. A majority of these classrooms represented private schools in urban and rural settings. Urban classrooms represented private schools that were established by individuals, whereas rural classrooms were recruited from a network of private schools that was established by a nongovernmental organization—Sindh Education Foundation (SEF)—in remote areas of Sindh to enhance girls' education. At the time of data collection, this was the only organized rural project in the province in which health education was taught. Except for two rural classrooms, all were multigrade in which more than one grade was taught together, usually by one teacher. Conversely, only two urban classes were multigrade. The criteria set for including teachers in the study were (i) training in the CtC approach and (ii) a minimum of 6 months of experience of teaching health lessons in primary classes. The research participants took part on the basis of their informed, written consent. The study was approved by the Central University Research Ethics Committee of University of Oxford, United Kingdom.

An observational tool, health education CtC classroom profile, was adapted for the study from previous research (Bhutta, 2002). The classroom profile consisted of 32 items organized under six subscales as shown in Table 2.

The scoring scheme used for the profile is the same as defined for the widely used valid and reliable Early Childhood Environment Rating Scale (ECERS) (Harms, Clifford, & Cryer, 1998). Each item in the profile is presented on a 7-point scale, with descriptors for 1 (*inadequate*), 3 (*minimal*), 5 (*good*), and 7 (*excellent*). Inadequate (1) defines classroom practice that does not meet the basic criteria of provision and teaching–learning practices (e.g., unavailability of basic material, no efforts for the active involvement of children, harsh discipline, no planning, inaccurate content) in a primary classroom. The minimal

(3) ratings are usually focused on the provision of some basic material, some use of active methods to involve children, minimal planning, and accurate content. The good (5) rating describes classroom practice in which communication is encouraged among children through active methods, relevant and accurate health content, as well as sufficient physical facilities. The excellent (7) ratings required a supportive environment for children, a range of teaching strategies to maximize children's involvement in active thinking, detailed yet flexible planning, relevant and accurate content reinforced through co-curricular activities, and provision of advanced material (e.g., television, computer). An example item in the profile is presented in Table 3.

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**Table 2**

*Structure of the Health Education CtC Classroom Profile*

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<p><b>I - Physical set-up</b></p> <ol style="list-style-type: none"> <li>1. Classroom furnishing</li> <li>2. Material</li> <li>3. Classroom displays</li> <li>4. Indoor space</li> <li>5. Health and hygiene facilities</li> </ol> <p><b>II - Classroom interactions</b></p> <ol style="list-style-type: none"> <li>6. Teacher-child interaction</li> <li>7. Teacher-child communication</li> <li>8. Peer interaction</li> <li>9. Discipline</li> <li>10. Building interest</li> <li>11. Teacher's expectations</li> </ol> <p><b>III - Teaching methods and approaches</b></p> <ol style="list-style-type: none"> <li>12. Variety of active methods</li> <li>13. Active or passive</li> <li>14. Questioning</li> <li>15. Group work</li> <li>16. Content</li> <li>17. Start and closure of the lesson</li> <li>18. Teacher's instructions</li> </ol>	<p>19. Teacher's assistance</p> <p><b>IV - Children's involvement in decision making</b></p> <ol style="list-style-type: none"> <li>20. Understanding the health topic</li> <li>21. Finding out more</li> <li>22. Planning and taking action</li> <li>23. Evaluation</li> </ol> <p><b>V - Planning and monitoring</b></p> <ol style="list-style-type: none"> <li>24. Planning</li> <li>25. Schedule</li> <li>26. Children's assessment</li> <li>27. Monitoring</li> <li>28. Teacher's self-assessment</li> </ol> <p><b>VI - Structure of health education activities</b></p> <ol style="list-style-type: none"> <li>29. Teaching time</li> <li>30. Community activities</li> <li>31. Co-curricular activities</li> <li>32. Human resources</li> </ol>
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**Table 3**  
*Child-to-Child Health Education Classroom Profile: An Item*

		Questioning <sup>a</sup>														
		Inadequate	Minimal	Good	Excellent											
		1	2	3	4	5	6	7								
1.1	The teacher does not ask questions (e.g., only disciplinary or procedural questions).	3.1 A few children are asked questions (e.g., only the outspoken children are asked questions).	3.2 The teacher sometimes uses appropriate language to ask questions (e.g., when questions need to be rephrased).	3.3 The teacher asked only closed-ended questions (e.g., does not require explanation, only yes or no response questions).	3.4 The teacher sometimes gives limited feedback (e.g., acknowledges right answers from hesitant children, appreciates response from outspoken children).	3.5 Limited response by the teacher to the children's questions, if asked.	5.1 Most of the children are asked questions.	5.2 The teacher usually uses appropriate language to ask questions.	5.3 The teacher asks open-ended questions <sup>b</sup> (e.g., why, how, what if questions).	5.4 The teacher gives appropriate wait time <sup>c</sup> (e.g., gives time to think and then asks for a volunteer or picks a student to respond).	5.5 Most of the time the teacher gives appropriate feedback (e.g., acknowledges right answer; probes further for correct answer).	5.6 Children's questions are encouraged (e.g., invites questions through planned activities).	7.1 Questions are directed to all students (e.g., girls and boys, quiet and outspoken, younger and older children).	7.2 The teacher gives appropriate feedback regularly <sup>d</sup> (e.g., acknowledges right answer, probes/prompts for correct answer).	7.3 Children ask open-ended questions (e.g., to the teacher, other children).	7.4 The teacher redirects students' questions (e.g., invites responses from other students before responding to the questioner).

*NA permitted*

<sup>a</sup> **Questioning:** To give credit for this item, several instances of questioning must be observed during one observation. <sup>b</sup> **Open-ended question:** To give credit for this item, several instances must be observed during one observation when the teacher uses open-ended questions that encourage children to give longer and more complex answers; however, the teacher may ask close-ended questions to probe to elicit responses, for example, and that should not lead to score lower. Children's age and developmental level must be considered. The teacher may ask what and where questions to young children and why and how questions to older children. <sup>c</sup> **Wait time** depends on the nature of questions being asked. The teacher needs to give more time (i.e., 15–20 s) for a question that demands a longer answer and more thinking than a question that only requires a yes or no answer or a short answer (i.e., 3–5 s). The purpose of wait time is to differentiate classroom questioning from interrogation during which children are showered with questions one after the other without giving them time to reflect and respond properly. <sup>d</sup> **Regular appropriate feedback:** To give credit for this descriptor several instances need to be observed during one observation.

Demographic information was gathered through a questionnaire developed for the study to obtain data about the characteristics of the participating schools (e.g., system), classrooms (e.g., children's gender), teachers (e.g., qualifications), and history of health education (i.e., health education training, use of the health manual, regularity of health teaching). Most of the factors in the questionnaire are self-explanatory; however, three elements of the history of health education (i.e., health education training, use of health manual, and regularity of health teaching) require further explanation:

- Health education training is the number of days of training in CtC health education pedagogy attended by participating teachers over the 3 academic years preceding the observations made for the current study. These training were facilitated by the HAS directly or by Master Trainers (MTs) trained by HAS. The training aimed to orient teachers with the CtC participatory approaches (e.g., steps in CtC methodology, children's participation, active methods of teaching, school–community links). Practicum was organized to give teachers opportunities to implement their plans in a guided environment. These training varied in duration (i.e., 1 day to 2 weeks) and patterns (i.e., refresher sessions on participatory pedagogical strategies to full-fledged workshop on overall CtC methodology).
- Use of health manual (i.e., teacher guide), which was usually developed during the training held for MTs at AKU-IED. These MTs then oriented teachers with the use of the manual as part of the health training in their respective schools. The manual provided teachers with six planned health education topics on priority health issues based on the CtC step approach. It can be argued that teachers in primary schools in Pakistan usually use textbooks to teach other subjects, but there are no published textbooks to teach about health issues. These guides not only provided accurate and relevant health content for selected topics, but also offered ideas about suitable pedagogical strategies to teach the content.
- Regularity of health teaching means teaching health education content (five to six health topics) in 25–30 lessons per year or one lesson per week. This construct (i.e., regularity of health teaching) would be interpreted and practiced in different ways in different contexts. However, we adopted the definition of regularity of health teaching from the Health Action Schools project. Information was gathered on the status of the regularity of teaching health education over the academic year preceding the observations made for the current study.

The fieldwork for this study was carried out between September 2003 and May 2004. A demographic questionnaire was administered in face-to-face interviews with teachers. To avoid many of the problems associated with comparing information gathered in two settings (i.e., urban and rural) much effort was invested in ensuring that procedure for data collection was consistent. Each participating classroom was visited for 2 days, for orientation and observation, respectively. Sample classrooms were allocated approximately the same amount of time for orientation (e.g., talking to the teacher and children, drawing a classroom map), which ranged between 2 and 2.5 hours. Formal observations of health lessons, on the second day, lasted for one block of different durations (40–60 minutes) depending on the individual schedule of the schools.

During observations, the observer occupied a place at the back of the classroom. However, with the teachers' prior consent, the observer moved around during group work. As far as possible, the observer was not to interact with the teacher or the students during the observations. The completion of the profile involved one observation of a health lesson as well as talking to the teachers about aspects of the routine that could not be noticed during the observation (e.g., children's involvement in decision making in CtC steps that were not observed). To rate some of the items, teachers' records (e.g., planning) were also consulted. Figure 2 shows a filled segment of a score sheet that was used for scoring profile items. It provides space to check all descriptors within items as yes, no, (or not applicable), in addition to giving the item a numeric score. The key words and phrases were written next to each item for any given score to be fully explained. Examples from these notes were used to discuss results.

3. Classroom displays										Notes		
	Y	N		Y	N		Y	N		Y	N	
1.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>most displays from the previous health topics not all can reach two children's stories are displayed</i>
1.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3.2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5.2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
						5.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	7.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
						5.4	<input checked="" type="checkbox"/>	<input type="checkbox"/>				

Figure 2. A segment of a score sheet.

Internal consistency for the profile was assessed using Cronbach's alpha. The values of alpha for subscales ranged from 0.64 (physical set-up and planning and monitoring) to 0.91 (classroom interactions). Alphas for two subscales were somewhat lower (0.64) than those found for the rest of the subscales and total score (0.77), but the magnitude was acceptable (Field, 2005). The results of internal consistency supported the use of the profile's total and subscale scores to describe overall classroom practice and characteristics of

specific aspects, respectively. To establish interrater reliability of the profile, independent observations were carried out by two observers (i.e., the first author and a trained observer) in 10 representative urban and rural classrooms. Weighted kappa for subscales ranged between 0.78 (physical set-up) to 0.81 (structure of health education activities) with a kappa value of 0.81 for the total score. Reliability coefficients demonstrated good interrater reliability of the profile (Fliess, 1981; Landis & Koch, 1977). Satisfactory interrater reliability helped to add methodological rigor; nevertheless, due to financial constraints, observations for the study presented in this article were carried out by the first author.

Data gathered during the study were analyzed using Statistical Package for the Social Sciences (SPSS 11). Bivariate analysis (independent *t* test/Mann-Whitney for skewed distribution) was used to compare the overall profile and subscale scores to gauge differences between urban and rural classroom practice (Field, 2005). Multivariate analysis was then carried out to explore factors contributing independently to the quality of health education classroom practice. A pre-analysis of multicollinearity revealed an extreme overlap among three factors of history of health education in schools (i.e., health education training in days over the 3 academic years preceding observations, use of health manual, and regularity of health education lessons). After an extensive exploration, an index was developed that was an aggregate of standardized scores of these three variables (Allison, 1999). The index was labeled as HEALTH aggregate. A total mean profile score was used as an outcome variable. Separate models were developed for school, classroom, and teacher factors. A parsimonious regression model (presented in this paper) was then built using variables that retained significance in the three models.

## Results

### Demographics Across Regions

General demographics of children and teachers across urban and rural groups are summarized in Table 4.

**Table 4**

*A Summary of Demographics*

General demographics	Urban ( <i>n</i> = 32)	Rural ( <i>n</i> = 35)	Total ( <i>n</i> = 67)	Differences Mann-Whitney <i>U</i> =
Age (years) <i>M</i> ( <i>SD</i> )	10 (1.80)	9.61 (1.27)	9.80 (1.55)	471.000, ns

**Table 4 (cont.)**

General demographics		Urban ( <i>n</i> = 32)	Rural ( <i>n</i> = 35)	Total ( <i>n</i> = 67)	Differences
Age range (years)	<i>M</i> ( <i>SD</i> )	6.20 (2.14)	2.44 (0.95)	4.40 (2.52)	Mann–Whitney <i>U</i> = 67.000, <i>p</i> < 0.001
Class size	<i>M</i> ( <i>SD</i> )	26.50 (7.34)	27.49 (5.39)	27.01 (6.36)	Mann–Whitney <i>U</i> = 541.500; ns
<b>Teachers</b>					
Gender	Male	7 (22%)	8 (25%)	15 (22%)	$\chi^2(1)$ 0.009, ns
	Female	25 (78%)	27 (75%)	52 (78%)	
Age (years)	<i>M</i> ( <i>SD</i> )	30.84 (7.43)	23.37 (3.38)	26.90 (6.8)	Mann–Whitney <i>U</i> = 203.000, <i>p</i> < 0.001
Teaching experience (years)	<i>M</i> ( <i>SD</i> )	7.53 (5.79)	4.57 (0.85)	6.00 (4.28)	Mann–Whitney <i>U</i> = 528.000, ns
Tenure (time spent in current school)	<i>M</i> ( <i>SD</i> )	4.57 (0.85)	4.34 (3.94)	4.46 (2.77)	Mann–Whitney <i>U</i> = 306.000, <i>p</i> < 0.001
Academic Qualification	Secondary school (10 years of school)	1 (3%)	21 (60%)	22 (33%)	$\chi^2(2)$ 28.820, <i>p</i> < 0.001
	Higher secondary school (12 years of school)	11 (34%)	10 (29%)	21 (31%)	
	Bachelor's/ master's degree (14–16 years of school)	20 (63%)	4 (11%)	24 (36%)	

**Table 4 (cont.)**

General demographics	Urban (n = 32)	Rural (n = 35)	Total (n = 67)	Differences	
Professional Qualification	No professional qualification	11 (34%)	34 (97%)	45 (67%)	$\chi^2(2) 29.931$ , $p < 0.001$
	Certificate in teaching	15 (47%)	1 (3%)	16 (24%)	
	Bachelor's/master's degree	6 (19%)	0 (0%)	6 (9%)	

No difference was observed in urban and rural groups in terms of class size, gender ratio of teachers, and children's age. However, there were more female teachers ( $n = 52$ , 78%) recruited for the study. This participation pattern reflected gender ratio of primary school teachers in general, and female staff outnumbered male staff. Furthermore, because of the multigrade set-up, variation in the children's ages in rural classes was higher compared to their urban counterparts. There were other factors when urban and rural samples appeared to be in two distinct groups. The rural teachers were younger, had less teaching experience, had spent more time in the current school, and had less academic qualification than their urban counterparts. A majority of the teachers ( $n = 45$ , 67%) did not have professional qualification in the area of teaching. All but one teacher with professional qualifications came from urban schools.

The three demographic factors that contributed significantly to health education practices deserve to be explained separately to better understand results of the study. An overview of these three factors is presented in Table 5, followed by a detailed description.

**Table 5**

*Demographical Factors Associated With Participatory Practices: An Overview*

Factors	Urban (n = 32)	Rural (n = 35)	Total (n = 67)	Differences
<b>Single-gender/Coeducational classes</b>				
Single-gender classes	7 (22%)	21 (60%)	28 (42%)	$\chi^2(1) = 9.988$ , $p < 0.01$
Coeducational classes	25 (78%)	14 (40%)	39 (58%)	

**Table 5 (cont.)**

Factors		Urban ( <i>n</i> = 32)	Rural ( <i>n</i> = 35)	Total ( <i>n</i> = 67)	Differences
<b>Status of attendance in staff development workshops 3 years preceding observations</b>					
Did not attend staff development workshops (NO)		12 (38%)	0 (0%)	12 (18%)	$\chi^2(1) = 15.989, p < 0.001$
Attended staff development workshops (YES)		20 (62%)	35 (100%)	55 (82%)	
<b>History of health education (HEALTH aggregate)</b>					
Health education training (in days) 3 academic years preceding observations	<i>M</i> ( <i>SD</i> )	4.00 (2.04)	6.5 (11.30)	5.3 (2.10)	Mann-Whitney <i>U</i> = 933.500, $p < 0.001$
Use of health manual (No/Yes)	Did not use health manual	26 (81%)	0	26 (39%)	$\chi^2(1) 46.471, p < 0.001$
	Used health manual	6 (19%)	35(100%)	41 (61%)	
Regularity of health education lessons (No/Yes)	Did not teach health regularly	30 (94%)	0	30 (45%)	$\chi^2(1) 46.471, p < 0.001$
	Taught health regularly	2 (6%)	35 (100%)	37 (55%)	

**Single-gender and coeducational classes.** Overall, there were more coeducational ( $n = 39, 58\%$ ) than single-gender ( $n = 28, 42\%$ ) classes. However, rural classes were predominantly single gender ( $n = 21, 60\%$ ), whereas the urban group had more coeducational classes ( $n = 25, 78\%$ ). All single-gender classes in this sample, except one, had girls. Differences were significant across the two regions ( $p < 0.01$ ).

**Staff development training.** Staff development training workshops are the professional development activities used to provide in-service support to teachers to improve their classroom practice. These professional development events were not focused on health education. The workshop content varied from general issues (e.g., assessment strategies) to specific ones (e.g., displays in science classrooms). These workshops ranged from 1 day to 2 weeks. All rural ( $n = 35$ , 100%) and 20 (62%) urban teachers reported attending staff development workshops during the 3 academic years preceding observations. In academic and professional qualifications, more urban teachers fell into the higher categories, whereas rural teachers superseded their urban counterparts in staff development training. It would be important to recall here that the rural sample was drawn from a network of schools established and run by the SEF. Informal discussion with sample teachers and management revealed that staff development was a regular feature of SEF and participation in these workshops was mandatory for teachers.

**History of health education.** Evidently, rural teachers had an advantage over their urban counterparts in terms of health training and its implementation (Table 5). They had attended more days of health education training during the 3 academic years preceding observations, had been provided with a health manual, and had been teaching regularly over 1 academic year preceding data collection. The difference across groups for all three variables were significant ( $p < 0.001$ ).

A detailed analysis of demographic characteristics revealed that the urban sample was more varied than the rural sample. The difference of variability in the two groups could be explained in the context of school management. Thirty-five rural schools, though scattered geographically in five areas of Sindh, are run by one organization (i.e., SEF) and have similar school policies including the teaching of health education. Conversely, 12 urban schools in this sample were run by different management bodies that may be different in aspects such as recruitment and professional development policy in general and taking health education in particular.

### **Comparison of Classroom Practice by Region**

The total mean profile score of the whole sample was 3.4 ( $SD = 0.64$ ), and rural classes scored higher ( $M = 3.84$ ,  $SD = 0.45$ ) than their urban counterparts ( $M = 3.01$ ,  $SD = 0.52$ ) with a significant difference,  $t(65) = -7.014$ ,  $p < 0.001$ . To examine further the characteristics of health education practices within urban and rural classes, the quality was categorized according to three broader levels: scores below 3 represent inadequate practices, scores of 3 but less than 5 represent mediocre practices, and scores of 5 or higher are good practices (Helburn, 1995; Tietze & Cryer, 2004). The overall profile score was put into this framework, and about 75% of all classes in this sample had profile scores



between 3 (minimal) and less than 5 (good). Altogether, 53% of urban classes scored in the lowest range. On the other hand, none of the rural classes exhibited inadequate practices. No classes in urban or rural schools had scores in the highest range.

Results of further analysis that was conducted at subscale level are presented in Table 6. Of the six subscales, rural classes scored significantly higher on five ( $p < 0.01$ ). A reversed pattern was observed for physical set-up in which urban classes demonstrated a significantly better quality than their rural counterparts ( $p < 0.01$ ).

**Table 6**

*Comparing Mean Scores of Urban and Rural Classes Across Subscales*

Subscales	Urban ( $n = 32$ )		Rural ( $n = 35$ )		Differences
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Physical set-up	3.96	0.73	2.93	0.75	$t(65) = 4.217$ , $p < 0.01$
Classroom interactions	3.74	0.90	4.30	0.78	$t(65) = -2.775$ , $p < 0.01$
Teaching methods and approaches	3.65	0.84	4.22	0.83	$t(65) = -2.790$ , $p < 0.01$
Children's involvement in decision making	3.01	0.58	3.45	0.57	Mann-Whitney $U = 771.500$ , $p < 0.01$
Planning and monitoring	2.40	0.39	3.31	0.22	Mann-Whitney $U = 1096.000$ , $p < 0.01$
Structure of health education	2.23	0.34	3.90	0.34	Mann-Whitney $U = 1119.500$ , $p < 0.01$

For rural classes, with the exception of physical set-up, which fell just below 3, all of the scales are between 3 (minimal) and less than 5 (good). For urban classes, scores on three subscales, namely, physical set-up, classroom interactions, and teaching methods and approaches are between 3 (minimal) and less than 5 (good), whereas the scores on two subscales (i.e., planning and monitoring, structure of health education activities) fell below the minimal requirements, and the mean score on children's involvement in decision making was minimal.

The subscale physical set-up for which urban classes scored higher was focused on physical facilities such as space, furnishings, and teaching material, whereas the five subscales for which the rural group scored higher are much

more focused on classroom processes (i.e., classroom interactions, teaching methods and approaches, children's involvement in decision making) and covered elements that may contribute to quality in classroom processes (i.e., planning and monitoring, structure of health education activities).

### Exploring Associations

A parsimonious model for health education was built by regressing the total mean profile scores upon factors that retained significance in the school, classroom, and teacher factors models. The results of the last step of the parsimonious model are presented in Table 7.

**Table 7**  
*Factors Associated With Participatory Practice*

Factors	B	$\beta$	<i>p</i>
Constant	2.929	-----	0.001
Coeducational (0)/Single-gender (1) classrooms	0.271	0.210	0.022
Staff development workshops (not attended = 0, attended = 1)	0.486	0.294	0.004
HEALTH aggregate	0.106	0.451	0.001

Overall, the model explains 51% of the variance in the total mean profile scores for health education with a significant linear relationship,  $F(3, 64) = 23.696$ ,  $p < 0.01$ . Evidently, children's gender, teachers' attendance in staff development workshops, and the HEALTH aggregate are independently associated with the health education classroom practice. However, the stronger effect size for the HEALTH aggregate ( $\beta = 0.45$ ) illustrates that it contributes to predicting the score on the profile for health education over and beyond other covariates.

## Discussion

### Health Education Classroom Practice: Urban–Rural Differences

Differences between urban and rural groups were pronounced, with rural teachers scoring higher than urban ones on all aspects except physical set-up. The high score on the subscale physical set-up requires adequate indoor space, material for teaching, furnishings, and health and hygiene facilities. Most urban classes, though not well equipped, except a few from a high-income private school, were provided with basic facilities such as a safe electricity supply, bet-

ter furniture, and running water. Conversely, rural classes ranged from open air set-up, a straw hut, or a dilapidated mud building with crumbling walls, to a relatively better concrete building. Most of them did not have electricity or running water. These differences might be explained partly by the economic climate in which the educational systems operate in urban and rural settings. Some of the requirements in physical set-up (e.g., availability of electricity) though necessary and basic were more expensive than other requirements (e.g., blackboard and chalk) of the profile. The rural groups in this study came from poverty-stricken areas and therefore might consider these items difficult or even impossible to provide.

The rural teachers were found to provide a more supportive classroom environment and showed involvement in their interaction with children (e.g., praised children's efforts). Being a multigrade set-up, one of the striking features of rural classes was "elders taking responsibility for younger ones" in teaching-learning activities (e.g., during group work, fourth graders helped third graders to learn a poem on eye hygiene). On the other hand, in urban classes, there were fewer opportunities for peer interaction. The teachers seemed to display a rather reserved gesture (e.g., less appreciation for children's efforts). Use of harsh discipline (e.g., physical punishment) was neither observed nor reported in urban or rural classes.

In rural classes, emphasis was placed on varying ways of organizing the classroom (e.g., whole class teaching, group work, individual tasks) and the use of active methods (e.g., questioning, picture stories, poems). The teachers used low-cost and discarded material to enrich their teaching (e.g., socks, buttons, and cotton to make puppets for a health-related puppet show). Teachers asked questions during health education lessons to instruct (e.g., What advice would you give to Rashman to get rid of head lice?). On the contrary, in most of the urban classes, group work or individualized work of children was less emphasized. Teachers brought some activities into classrooms such as stories or pictures, but rarely provided opportunities for children to be engaged (e.g., read a balanced diet story in a detached manner). The teachers mostly asked questions at the end of the lessons, usually to check memory (e.g., How many types of intestinal worms did we learn today?).

The dynamics of classroom questioning, regardless of type and time of questioning and quality of feedback the teacher provided, resonate with the Initiation-Response-Follow-Up model (Sinclair & Coulthard, 1975) in both types of classes. According to this model, the teacher poses a question, children give a response, and the teacher gives feedback (e.g., appreciative or corrective). Much is left to be desired in terms of children's questions in urban and rural classes. Arguably, health education classes could provide many opportunities to nurture children's questioning skills as they may see the direct relevance of the content to their daily life. However, it is a skill that needs to

be developed, and perhaps teachers' own mastery in questioning skills, grip on content knowledge, and encouragement for children to forward their queries are prerequisites to make classrooms inquiring communities (Hurry & Parker, 2007; Pardhan & Bhutta, 2004).

As far as the health content, most of the topics discussed in urban and rural classes can be grouped under one major theme: hygiene and disease prevention (e.g., cough and cold, diarrhea). However, some of the urban teachers taught environmental and community health (e.g., safe neighborhood) or family and social health (e.g., helping persons with disabilities). In most cases, the basic health content delivered in the classroom was accurate. Nevertheless, in some cases, usually in urban classes, and some rural ones too, teachers attempted to give too many health messages (e.g., fifth graders were taught about type, causes, symptoms, and prevention of intestinal worms during a 40-minute lesson) or wrong ones (e.g., eat less food during coughs and colds). There could be many reasons that underpin the delivery of wrong health messages including indigenous beliefs and practices and lack of accurate content knowledge to counter those beliefs. For instance, it is possible that teachers did not have access to accurate content or they might not have read the available content thoroughly (e.g., available resource books). Whatever the reasons, wrong health messages taught through participatory strategies could have adverse ramifications. Therefore, a combination of accurate health content and participatory methods is fundamental for any meaningful health education activity.

The evidence suggested that unlike urban participants, the rural ones encouraged children to express their views, in a limited sense, as the discussion of a health topic progressed through the CtC step approach (e.g., teachers shared survey questions and children shared their views of where and when they should administer the survey). However, there were only a few examples where their ideas were reported to be considered. It can be argued that encouraging children to share their views might be considered the first step on the ladder of children's participation. However, the next and most important step is to take these ideas on board (Hart, 1992, 1997; Nilsson, 2005; Shier, 2001), which is a skill teachers need to develop to strike a balance between structured planning and children's initiative.

In rural classes, the progress of health education was tracked through monitoring (e.g., classroom observations followed by discussion). A few rural teachers shared their diaries in which they had highlighted the strengths and weaknesses of their health lessons, and there was no such example in urban schools. There was rarely any example of classroom support for urban teachers. Assessment of children was limited to end-of-lesson questions (or in some rural cases, tests) to check content retention. As far as planning, rural teachers were following ready-made plans (i.e., health manual); however, in many cases, their contribution was obvious in modifying the plan (e.g., writing an alterna-

tive health story) or preparing materials (e.g., drawings, posters) for implementation. Apart from a few urban teachers who had pre-prepared plans (e.g., provided during training at AKU-IED), others did not share written plans.

In general, classroom activities in rural schools were extended into the community through surveys (e.g., children went in groups to find out how many people in the village clean their teeth regularly) and taking action (e.g., parents attended a school event during which children presented a puppet show on eye hygiene). Also, health-related activities were integrated into some of the major co-curricular events (e.g., children presented health-related dramas in educational seminars conducted by SEF for rural communities). The community was reported to be receptive and supportive in most of the rural cases. Conversely, in urban classes, few examples of community activities were reported (e.g., children surveyed the number of people with disabilities and type of disabilities they had). In spite of more than one trained teacher in some urban schools, there was rarely any example of accessing this available human resource (e.g., peer support).

Discussion so far has revealed that even though rural participants outscored their urban counterparts, neither the urban class nor the rural class reached a level that could be described as good in the profile.

## **Factors Associated With Classroom Practice**

### **HEALTH Aggregate**

A strong positive association among the three elements of the HEALTH aggregate illustrated that teachers who had attended relatively more training had also been provided with a manual and were implementing health teaching regularly. It can be argued that focused health education training, underpinned by an understanding of the CtC approach alone, may not lead to improved classroom practices. The training may help teachers to learn about the theoretical assumptions of the CtC approach and ways to implement it. A health manual would help them to apply the training according to the protocol (e.g., the four-step approach) without placing additional burden of planning on the teachers. Also, teachers might be accustomed to following a textbook for other subjects, and the manual could provide them with a textbook-cum-teacher guide for health education. Nevertheless, without regular health education teaching, the training and manual might result in nothing more than an additional training certificate and a pile of training material kept safely in a cupboard.

Why was it that some teachers (all rural and two urban) in this sample taught health education regularly and others (urban) could not manage to do that? Considering regularity of teaching as a proxy for personal commitment and institutional support, a speculated response to this question could be two-fold: first, teachers' commitment and second, support from the school manage-

ment. No one could possibly deny the importance of the teachers' willingness, to accept change and take responsibility to teach health education. However, one needs to be careful in expecting teachers' commitment with minimal or no support from the management to initiate and sustain an innovation such as health education, which lacks standing in the school curriculum in Pakistan. It might be easier for teachers to leave out health education, in the absence of encouragement and support from the school management, in favor of high status subjects (e.g., mathematics, science). The commitment at an organizational level can have a strong influence on the successful implementation of health education as it indicates the school's commitment to health promotion as part of its organizational practice (McBride, Midford, & Cameron, 1999; St Leger, 1998). Researchers studying school effectiveness/improvement have also found the leadership of schools to be important (Fullan, 1986; Mortimore, Sammons, Stoll, Lewis, & Ecob, 1988; Rowland & Higgs, 2008; Sebastian & Allensworth, 2012). Perhaps the management in urban schools assumed that their responsibility ended once they made the decision to send their teachers for health education training. They might not have worked out an implementation plan carefully before sending teachers for health education training, which may have led to a lack of the type of support that teachers require for the regular teaching of health education.

In contrast, rural management seemed to play an important role not only in initiating health education in rural schools, but also in ensuring its regular implementation by identifying health as a core area of the curriculum. Additionally, the management took the close-knit community on board by sharing the health education implementation plan for them to appreciate their role and cooperation to extend classroom activities to the community. It is possible that the teachers' commitment and organizational support worked in harmony in rural areas to implement health education regularly, which led to relatively better health education classroom practice.

### **Staff Development Workshops**

The results of the multivariate analysis highlighted the contribution of professional development workshops to the use of participatory methods. The exact nature of the training could only be ascertained by collecting qualitative data (e.g., in-depth interviews with teachers), which was constrained by time and financial considerations. However, some speculation can be made in the context of differences between urban and rural participants. Rural teachers reported attending a series of workshops during the 3 academic years preceding observations, whereas 12 (38%) urban teachers did not attend any workshop during this period. Informal discussions with teachers and management bodies revealed that these workshops were more likely to be need based and regular for rural teachers. Conversely, urban teachers reported that they were usu-

ally sent randomly by school management to attend staff development training conducted by private and public sectors. In addition, the rural teachers shared that they were followed up in the classroom by school management, whereas there was rarely any example of follow-up of staff development workshops for urban teachers. The argument of teachers' commitment and managerial support to translate learning at these workshops into classroom teaching could be equally applicable here.

### **Single-Gender/Coeducational Classes**

Single-gender classes scored higher on the profile than coeducational ones. The majority of the rural classes were single gender (i.e., all girls). In a coeducational set-up, the lower score might be explained by the differential participation of girls and boys in classroom activities. Researchers studying teacher-student interactions have reported that boys receive more attention than do girls (e.g., Smith, Hardman, & Higgins, 2007; Swinson & Harrop, 2009).

Findings of this study, however, do not resonate consistently with the results of previous research. In the coeducational sample classes, several teachers were observed putting boys and girls together in groups, perhaps with the intention of enhancing participation from both genders. However, this strategy did not seem to work in all situations. In some cases, girls were observed to shy away from sharing their ideas in groups with their male counterparts or boys remained silent. In some instances, the teacher contributed to this differential participation by focusing on either girls or boys. It might also be explained in terms of similarity between teacher's and children's gender. It was found that out of 28 single-gender classes, 26 were taught by female teachers. Thus, teachers may have felt more comfortable teaching a group of children of the same gender.

Arguably, the influence of three factors might also speak of differences between classroom practices of urban and rural participants as the latter were advantaged over the former on all factors. Additionally, in rural classes, somewhat younger and less qualified teachers who started teaching relatively recently might be more receptive to innovations introduced to them through health education training and staff development workshops. On the other hand, their older, experienced, and more qualified counterparts who have already spent more years in the profession might feel content with their teaching practice and perhaps find it difficult to deviate from the norm. Nevertheless, teachers' commitment is part of the equation that should not lead to overlooking the second yet important element, that is, managerial support.

The rural teachers had more structured managerial support and encouragement to initiate and implement health education. However, it could not substitute separate analyses for urban and rural groups, which was necessitated by the small sample size in the two groups.

## Conclusion

Teachers are the primary implementers of innovation such as health education. The teachers' willingness and commitment are imperative in implementing health education and improving classroom practice. However, teachers whose modus operandi is transmitting knowledge to children in a didactic set-up cannot change their practices overnight. Many factors militate against the implementation of health education in general and participatory approaches in particular including lack of professional development, protected time for health education, organizational support, and research evidence to inform policy and practice. However, these issues should not halt health education activities, but provide challenges that can be surmounted.

In line with this argument, it is worth recalling one of the important findings of this research: the strong association between the three elements of the HEALTH aggregate (i.e., health training, provision of health manual, and regular teaching). These factors are not only interdependent but also have close ties with organizational support, which is conducive to the initiation, implementation, and institutionalization of health education activities in and around the school. It might be more relevant for policy makers and practitioners to consider the impact of packages of factors, rather than to try to assess the effects of one particular feature in isolation from the rest.

Although rural participants outscored their urban counterparts, neither the urban nor rural classes reached a level that could be described as good in the profile. The rural teachers have taken health education on board and have been supported in their efforts by their school management, but they have a long way to go to achieve a balance of active teaching and active learning in their classrooms.

To our knowledge, this is the first study that has been carried out to explore CtC classroom practices using structured observations and may provide a modest foundation for other researchers who want to take the same line of inquiry. This study raises many possibilities in terms of future research. First, to illuminate and broaden understanding of classroom practices of those who are trained in the CtC approach, larger and more representative sample studies can be conducted to have sufficient power to produce generalizable data. Second, efficacy of the observational tool—CtC health education profile—can be explored systematically as a self-assessment tool using experimental design. The profile may provide the teachers in intervention groups with a new language, criteria for assessing their own practice, and a framework for improvement. Third, the future research within the CtC approach could benefit from ethnographic investigation of educational and home factors influencing children's participation in health education and promotion activities. Finally, one of the important needs for future research emerging from the current research



is to conduct a child outcome study. Arguably, the ultimate beneficiaries of any educational innovation are children, and it is imperative to investigate this aspect—the child outcome—systematically. This future study would help to investigate child outcomes using a value-added design that could be employed to examine the gains in health knowledge, attitudes, and practices of a selected cohort of children over time.

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