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Teaching Children about Health, Part II: The Effect of an Academic-community Partnership on Medical Students' Communication Skills

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ABSTRACT **Context:** *Partners in Health Education (PHE) is a Dartmouth Medical School elective that pairs first- and second-year medical students with local elementary school classroom teachers to provide health messages to students. The primary aim of the programme is to help medical students improve their communication skills through teaching children about health. Secondary aims are to teach children about health and the prevention of injury and disease and to support community teachers in their health promotion efforts. This report contains the results of the assessment of the programme's impact on the medical students.*
Methods: *Sixteen first- and second-year medical students comprised the participants for the study. Students were assessed during their first and fourth teaching experiences using a variety of evaluation measures, including student surveys of expectations and perceptions; ratings of performance in the classroom by students, teachers, and classroom observers; coded videotapes of classroom teaching sessions; and performance on a measure of physician-patient communication skills.*
Findings: *Over the course of the teaching experience, medical students' teaching and communication skills increased on a number of measures.*
Discussion: *Programmes such as PHE can provide true service-learning experiences in which all participants benefit. Medical students can learn how to communicate about health, a set of skills they will need to become effective physicians. School children can learn about health, so they are empowered to take charge of their health and to make healthy choices.*

KEYWORDS *Communication skills, interpersonal skills, service learning.*

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Recently, medical education projects emphasizing the value of community-based partnerships founded upon service-learning initiatives have gained increased recognition as vehicles for the development of community-oriented physicians. Service-learning in medical education has the potential to cultivate mutually beneficial ties between members of medical schools and the greater community. Through collaboration, academic-community partnerships can work effectively towards the development of healthy communities. Additionally, community-based partnerships provide opportunities for medical students to practice communication skills and to develop an appreciation of the important role of non-health professionals, such as teachers, in the promotion of healthy behaviours and illness prevention strategies (Seifer *et al*., 2000).

Effective teaching requires communication skills that enable the clear transmission of information from teacher to student and the breakdown of complex ideas into understandable segments. Teaching children involves the additional challenge of conveying messages in age-appropriate terms. Although there is a wealth of research focusing on interventions to enhance physician communication skills (Anderson & Sharpe, 1991), few of these studies examine the effect of teaching school children on the development of these skills. Carver *et al*. (1991) reported on a programme in which residents taught health education to high school and university students. The residents reported feeling the programme was instrumental in improving their communication skills. Similarly, Cohen *et al*. (1986) described a programme in which medical students taught in secondary public schools. Programme evaluation revealed that 70% of physicians surveyed for the project felt that teaching in schools would benefit the medical students. In one of the few studies of the impact of medical trainee teaching on communication skills, Cohen (1989), in a follow-up report, found that medical students who participated in the programme used less medical jargon when interviewing patients than did students in a control group. Additional interpersonal communication behaviours were not examined.

Our goal in this report was to look broadly at the impact of teaching children as a way of enhancing medical student communication skills.

Context

The Partners in Health Education (PHE) elective is a community-based partnership that pairs medical students with classroom teachers to promote health messages to public elementary students in kindergarten through grade eight. As a service-learning project, it is designed to meet the specific learning needs of both medical students and elementary school children and is jointly sponsored by the C. Everett Koop Institute at Dartmouth, Dartmouth Medical School, and several public school districts in the Upper Connecticut

Valley region of the states of New Hampshire and Vermont in the USA. The programme's primary goal is to foster development of communication skills in medical students through teaching experiences. Additionally, by facilitating medical students' collaboration with community teachers, the PHE programme seeks to instill in medical students an appreciation of the mutual benefit of academic-community health partnerships. A major secondary goal of the programme, previously explored by Reed and Jernstedt (2000), is to teach children about health so that they are better equipped to make healthy choices.

Medical students and school children have differing but complementary learning needs. For medical students, learning *how* to communicate about health is key to becoming effective physicians, while for school children, learning information *about* health is crucial for making healthy choices. The PHE program is a unique academic-community partnership designed to meet the needs of both groups.

The Partners in Health Education Programme

First- and second-year Dartmouth medical students participating in the PHE elective were paired with teachers from local elementary school classrooms. The students participated in collaborative training seminars designed to teach the basics of delivering developmentally appropriate health messages.

The medical students spent six sessions in the classroom over the course of the term. The first session was an observation session and was followed by five teaching sessions in which health education topics were tailored to meet the specific curricular needs of the classroom.

Teaching sessions lasted 45–60 minutes and generally occurred weekly. Lessons were constructed to actively engage children, to stimulate their interest in health topics, and to provide them with a solid framework of health information. Because of individual differences in teaching styles among medical students and the age range of the classroom audiences, the lessons varied widely in content, style, and delivery. For example, some medical students adopted an animated lecture style, while others encouraged learning by involving children in hands-on activities. Medical students taught a variety of topics, including the functioning of the nervous system, heart, brain, and bones, nutrition, and the risks associated with smoking and alcohol consumption.

The Upper Valley Teacher Institute (UVTI) provided professional educators to serve as classroom observers. These observers videotaped the medical students during their first and fourth teaching sessions. After these sessions, students received feedback on their performance from their classroom teacher-partner and UVTI classroom observer.

Methods

The participants in this study were 16 first- and second-year medical students taking part in the PHE elective and 14 teachers from local elementary school classrooms.[1] Students were informed of the confidential and voluntary nature of their participation and were assigned confidential ID numbers so that results could be joined from all data collection points.[2]

The impact of the PHE experience on medical students' teaching and communication skills was assessed during students' first and fourth teaching experiences in a variety of ways.

Course Evaluation Surveys

Pre- and post-course evaluation surveys provided students with an opportunity to anticipate and reflect upon the elective and were used to identify medical students' self-reported learning. All 16 students completed the surveys at the beginning and end of the PHE elective. The surveys consisted of five-point Likert-type scale items and open-ended questions regarding expected and perceived outcomes of the elective. Questions regarding personal goals, aspects of the course that were perceived as most salient, and development of communication skills were included.

Evaluation Cards

Evaluation cards were used to rate the teaching performances of each medical student and were completed by the students themselves, their teacher-partner, and the UVTI observer. Items on the cards evaluated the medical students on six measures: organization, clarity and communication, effectiveness of the student-class interactions, rapport with classroom students, quality of the classroom students' learning, and developmental appropriateness of the lesson. Cards were completed for all 16 medical students during the first teaching session and for 15 students during the fourth session.

Coded Videotaped Teaching Performances of Medical Students

The videotapes of the medical students' teaching performances were analysed to identify verbal and nonverbal communication skills in the classroom. Two highly-trained research assistants (interrater agreement $\kappa = 0.95$) coded the videotapes, classifying teaching behaviours into categories of interpersonal communication, such as using eye contact, using complex versus simple language, checking for class understanding, providing constructive feedback to children, and exhibiting a student-centred vs. teacher-centred approach to class learning.

Patient Video Interview

To supplement the measures of medical student communication skills in the classroom setting, the Patient Video Interview (PVI) was administered to the

medical students before and after their participation in the programme. The PVI is a video presentation of the cases of two patients, a young woman and an elderly man, and is designed to assess the communication skills of medical students in the clinician role (Reed, 1998). After viewing each case, the medical students were instructed to provide a written response of what they would actually say to the patient at various points in the interview. Their responses were coded on items related to interpersonal communication, such as displays of warmth and friendliness, the degree to which medical terminology was employed when conversing with patients, and their focus on the patient as the agent of action. Fifteen of the 16 PHE medical student participants completed both PVIs.

The PHE programme evaluation described here focuses on the impact of the classroom teaching elective on medical students' communication skills and learning. Questions examined include how medical students reacted to the programme experience, how their teaching and interpersonal classroom skills evolved over the course of the elective, and whether their participation in the elective coincided with changes in their communication with patients.

Results

Student Perceptions of the PHE Elective

Responses to the course evaluation indicated that students regarded the PHE programme favourably and found it effective in the development of communication and learning skills, as shown in Table 1.

In response to open-ended questions, approximately two-thirds of the PHE participants indicated that they considered improving teaching and communication skills a primary goal for the elective, and a majority of students reported that most of the learning throughout the elective involved the development of these skills. Many students commented that the elective honed their ability to enhance classroom student understanding through presenting complex information from multiple perspectives and in simplified terms. Several medical students noted that the elective helped them to become more effective communicators of health information, enabling them to identify the level at which children can understand and process unfamiliar and complex concepts. Students reported that the elective taught them to recognize the importance of making eye contact, repeating key points, and asking vs. telling information when teaching. One student remarked that he felt better equipped to discuss difficult issues such as death and serious illness. Another reported that her experience in the classroom helped her realize the impact and effect of her teaching on others' thoughts and actions.

Additionally, students expressed satisfaction in their roles as community health partners and educators. Many described the collaboration with their teacher-partner as mutually enjoyable and helpful. They also reported that

Table 1. Mean scores and standard deviations of medical students' course evaluations[a]

Item	Mean	SD
Acquisition of factual knowledge	2.44	0.81
Usefulness of material in other medical school courses	3.06	1.24
Acquisition of problem solving, decision-making, and analytical skills	3.50	1.10
Development of independent learning skills	3.56	1.03
Overall amount learned	3.69	0.95
Overall effectiveness of student-teacher interaction	4.06	0.68
Value and relevance of elective to personal life	4.13	1.02
Overall quality of learning	4.25	0.68
Development of self-awareness	4.25	0.68
Ability to use or apply elective content to life situations	4.38	0.62
Development and awareness of sensitivity to others	4.44	0.63
Development of written or oral communication and expression skills	4.50	0.82
Development of creative abilities	4.56	0.51

[a]Five-point Likert-type scale items where scores represent the degree to which students rated dimensions of the elective compared to other medical school electives, ranging from 1 (much less than other medical school electives) to 3 (the same as other medical school electives) to 5 (much more than other medical school electives).

some of the most memorable aspects of the programme involved the transition from ''stranger'' in the classroom to ''teacher''. In general, students were impressed by the children's enthusiasm to learn about health, and many commented that they felt they had positively impacted the children's lives.

Impact of the PHE Programme on Medical Student Communication Skills

Repeated measures analysis of variance was conducted using time (pre, post) as a within-subjects measure. Measures of performance on the PVI revealed that, after participation in the elective, medical students reduced the use of medical jargon in their communication with patients ($F_{14,\,1} = 4.70$, $p = 0.048$) and exhibited increased focus on patients as agents of action ($F_{14,\,1} = 27.92$, $p = < 0.0005$).

The evaluation card measures revealed that classroom observer ratings of the effectiveness of student-class interaction ($F_{12,\,1} = 9.93$, $p = 0.008$) and quality of learning ($F_{12,\,1} = 5.33$, $p = 0.04$) increased over the course of the programme and that observer ratings of rapport ($F_{12,\,1} = 4.55$, $p = 0.054$) increased marginally. Teacher ratings of medical student rapport increased significantly ($F_{14,\,1} = 6.09$, $p = 0.027$) from the first session to the fourth. Interestingly, medical student ratings of the quality of their lessons decreased significantly from the first to fourth sessions ($F_{14,\,1} = 5.96$, $p = 0.028$).

In contrast to the above findings, analysis of medical students' videotaped teaching performances did not identify any significant changes in medical student communication skills.

Discussion and Conclusions

The current evaluation of the PHE elective suggests that the programme satisfies its primary goal of positively impacting the development of communication skills in medical students as evidenced by (a) medical students' self-reported gains in communication skills, (b) teacher and classroom observer increases in ratings of some aspects of communication skills over time, and (c) medical students' improvement in some aspects of performance on the PVI.

The finding that the frequency of medical students' displays of interpersonal communication behaviours during videotaped teaching performances remained unchanged between the first and fourth teaching sessions is a surprising one. One reason for these seemingly incongruous results may be that the sheer variation in medical students' teaching styles and choices of health topic presentations paired with the small sample size of 16 participants prevented the detection of small but important changes in displays of interpersonal communication behaviours. Future research should be conducted with greater numbers of participants, taking into account the variation in teaching styles and subject material presented.

Despite the fact that classroom observers rated the quality of medical students' fourth lessons significantly higher than their first lesson, the students' ratings were just the opposite. This may suggest that while classroom observers saw gains in skill, the medical students became more critical of themselves over time.

Participating medical students articulated appreciation of collaborating with community teachers to provide health education to children. Additionally, previous evaluation of the PHE elective has demonstrated a major secondary gain of the programme, in that children in participating classrooms reported learning more about health than did children in comparison groups (Reed & Jernstedt, 2000).

The goal of this current evaluation was to investigate the effect of participation in the PHE programme on medical students. Given the comprehensive and participation-dependent nature of the assessment measures, similar measurement of a comparison group was not possible. Results, therefore, must be examined cautiously, especially noting that the number of participating medical students was not large and may represent a group more committed to community-oriented projects and the development of teaching and communication skills than non-participating students.

However, in a survey conducted at the beginning of these students' first year of medical school (Reed & Jernstedt, 1995), there were no differences between students electing the PHE and other students in terms of their responses to a number of questions related to social responsibility, the desire for medical education to prepare them to be good communicators and to emphasize prevention and wellness, and the degree to which their satisfaction as physicians depends on being good communicators and on being of service to their communities. While students participating in the PHE indicated they had participated in significantly more hours of school-sponsored community service over the 12 months prior to matriculation ($t_{27} = -2.71$, $p = 0.011$) than did students not participating in the elective, there were no differences in participation in community-sponsored volunteer service. It is unlikely that maturation alone could explain the changes in performance seen in this evaluation, because the time period in which the study was conducted was very short. In all cases, students' teaching experiences occurred within approximately a 1-month time frame. Future studies should explore whether there are differences in communication skill development trajectories for students who participate in programmes such as PHE compared to students who do not.

One of the hallmarks of service-learning is that the roles of learner and teacher become blurred (Seifer *et al*., 1996). PHE is an academic-community partnership that meets needs of both of its constituencies, enabling medical students to achieve gains in communication skills and exposure to the implementation of community-oriented health programmes that bridge the gap between clinical and educational settings, while providing children with the opportunity to learn about illness prevention and health information from experts within their community.

Notes

1. In two instances, two students planned to team-teach with one teacher.
2. The protocol used was approved by Dartmouth College's Committee for the Protection of Human Subjects.

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