

Barriers and Facilitators for Teachers' Implementation of the Curricular Component of the Boost Intervention Targeting Adolescents' Fruit and Vegetable Intake

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ABSTRACT

Objective: To examine barriers and facilitators to teachers' implementation of the curricular component of the school-based, multicomponent Boost intervention to promote fruit and vegetable intake among 13-year-olds guided by concepts of Diffusion of Innovations Theory and findings of previous implementation studies.

Design: Five focus group and 2 individual interviews.

Setting: Denmark.

Participants: Twenty-two seventh-grade teachers from 7 of 20 intervention schools. Four schools (15 teachers) with a high implementation level and 3 (7 teachers) with a low implementation level were selected to obtain maximum variation in teachers' view.

Phenomenon of Interest: Teacher perceptions of implementation of a curricular component.

Analysis: Situational Analysis including an introductory phase of systematic coding.

Results: Teachers' commitment to the Boost curriculum was hindered by intervention duration and extra workload and motivated by a pre-intervention workshop and the thoroughness of the project. Detailed implementation manuals were helpful for some teachers but a barrier to others because they limited opportunities for adaptation.

Conclusions and Implications: Implementation of curricular activities in school-based interventions may be supported by a predefined teaching schedule, detailed teacher manuals, clear learning objectives, and a pre-intervention workshop to enhance motivation. Situational Analysis may contribute to future implementation studies by highlighting the importance of contextual factors.

Key Words: school, curriculum, implementation, adolescents, fruits and vegetables (*J Nutr Educ Behav.* 2014;46:e1-e8.)

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INTRODUCTION

A high intake of fruit and vegetables (FV) may prevent cardiovascular diseases, obesity, and certain cancers.¹⁻³ Like children in most Western countries, Danish schoolchildren do not meet the national recommendations of eating at least 600 g (2.5 cups) FV daily⁴ and their intake decreases as they enter the teen years.⁵ Eating habits in adult life including

intake of FV are established in childhood and early youth.^{6,7} Thus it is important to promote increased FV intake among schoolchildren. Multicomponent school-based interventions combining educational and environmental strategies seem effective for this purpose^{6,8} but are often poorly implemented.^{9,10} Studying barriers and facilitators to implementing intervention components is an important part of process evaluation and may

contribute to the interpretation of outcome findings and guide the development of future interventions.^{11,12} Many studies have focused on barriers and facilitators to implementing health promotion programs in schools and some address healthy eating and FV programs.¹³⁻¹⁶ However, little is known about factors influencing implementation of curricular activities as part of school-based FV interventions targeting adolescents. Most implementation studies have used quantitative methods and assessed implementation level and fidelity.^{9,10,17} Qualitative studies may provide a richer insight into how teachers handle the implementation process, their acceptability of the intervention, and perceived barriers to implementation.¹¹

This study was inspired by Rogers' Diffusion of Innovations Theory.¹⁸ According to Rogers (2003), factors

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essential for implementing an innovation include characteristics of (1) the implementers, including their perceptions of the innovation; and (2) the innovation, including flexibility and contextual appropriateness of the innovation. In accordance with this theory, previous studies of school-based curricular interventions have identified teachers' acceptability of the intervention, commitment to the intervention, and engagement of change agents as facilitating implementation.^{12,19,20} Moreover, teacher training, easily accessible curricular activities, and administrative support facilitate implementation and motivate implementers to use the curriculum.^{12,19,21}

Guided by the concepts of Diffusion of Innovations Theory and the findings of previous implementation studies described above, the aim of this study was to identify barriers and facilitators to teachers' implementation of curricular activities in the Danish multicomponent, school-based Boost intervention targeting adolescents' FV intake.

METHODS

The Boost Study

The Boost intervention combined educational and environmental strategies within the school, home, and local community including curricular activities, free daily delivery of FV at school, parental newsletters, and fact sheets for sports and youth clubs.²² The intervention was implemented for 9 months (September, 2010 to May, 2011) and evaluated in a cluster-randomized controlled trial including 2,289 students in seventh grade (approximately 13-year-olds) from 20 intervention- and 20 control schools. This study focused on implementation of the Boost curriculum described below. The process evaluation of other components is reported elsewhere.^{23,24}

The Boost Curriculum

The Boost curricular component was designed to influence determinants of adolescents' FV intake such as knowledge, awareness, attitudes, taste preferences, and influence from family, peers, and media.^{25,26} Curricular

activities were developed specifically for Boost or based on existing material from other health-promoting projects.^{22,27,28} At a 1-day pre-intervention workshop, local Boost coordinator(s) from intervention schools were taught to implement the Boost intervention and promote increased FV intake among their students. Furthermore, they were offered the opportunity to give feedback on a preliminary version of the Boost curriculum to ensure applicability. Grade-school teachers from the national Boost planning group and college teachers outside the project critically reviewed the curriculum.

The Boost teaching material consisted of 4 main parts: First, a detailed teacher manual included 12 compulsory and 13 optional curricular activities to be implemented in class (the duration of each activity was 1–4 class lessons). A time schedule specified which activities the teachers were to implement each month to ensure regular delivery (1–3 activities per month). Second, a teacher script for a project week included 4 compulsory and 4 optional activities. These project week activities should be conducted over a week. The script included activities at school (for example, cookery) and activities in the school neighborhood, such as field trips to local supermarkets, greengrocers, or fruit orchards. Third, a student workbook for use in class had a description of the activities and room for the students to write answers and comments. Fourth, a computer-tailoring module was included, which the students were supposed to complete 3 times.²² The Boost computer-tailored feedback messages were tailored to the students' FV intake, awareness levels, taste preferences, and leisure-time activities. Students' answers were stored in the system, enabling them to monitor their own intake over time. Personal feedback generated by the computer module suggested recipes to try FV in a new way and contained ideas for eating FV with friends and at leisure-time activities.²²

Boost curricular activities were designed to be integrated into a range of school subjects and replace regular curricular activities by meeting national learning objectives.²⁹ Adaptation of the teaching material to the local context was allowed.

Participants and Recruitment

To identify barriers and facilitators to teachers' implementation, this study focused on teachers' experiences with implementing the Boost curriculum, their views on the curriculum, and their perspectives on organizational factors.

Maximum variation sampling of schools was applied to collect a wide range of experiences and views. Teachers from schools with high (4 schools, 15 teachers) and low (3 schools, 7 teachers) levels of implementation of the Boost curriculum were invited.³⁰ Schools' level of implementation was determined by data on the number of Boost curricular activities implemented and teachers' attitude toward the curriculum, derived from a process evaluation survey and logbooks completed by teachers.²²

Focus Group and Interview Methods

The researchers chose a focus group interview format to identify different teacher positions in relation to the implementation process within the same school.^{30,31} Group interaction during focus group interviews may give deep and rich information.³⁰ After intervention completion, 5 focus group interviews (2–6 teachers) with a total of 20 teachers and 2 individual interviews were conducted at 7 intervention schools over 3 months. At 2 schools, individual interviews replaced focus group interviews because only 1 teacher at each school had time to participate. At 1 school, the focus group consisted of only 2 Boost coordinators because they were the only teachers working with Boost. The 2 teachers were interviewed jointly because they worked closely together on implementation of Boost.

The authors developed a semistructured interview guide for individual and focus group interviews (Table) based on the study aim, concepts of Diffusion of Innovations Theory,¹⁸ previous implementation studies,^{10,12,19,20,21} written comments from teacher surveys, structured observations of Boost curricular activities at selected schools, and input from the Boost project group. The guide was adjusted after each interview, if relevant, and

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