Health promotion with teachers

Evaluation of the Norwegian Network of Health Promoting Schools: Quantitative and qualitative analyses of predisposing, reinforcing and enabling conditions related to teacher participation and program sustainability.

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Summary

Background and aims

As concern mounts in many countries for the relationship between poor health and learning, schools are called on to counteract challenging trends and developments in the life of young people (Tang et al., 2008). The WHO describes the school as a priority setting in health promotion because it meets young people during formative years of their development (Mittelmark, Kickbusch, & Rootman, 2007), and policy makers and researchers increasingly embrace health promotion initiatives advocating whole school approaches like the *Health Promoting Schools* (HPS) (West, 2006). Unlike traditional disease prevention in school, the HPS approach addresses determinants of health in the environment (Rowling & Jeffreys, 2006). It aims to empower schools to be active partners in curriculum development and design of health promotion practices instead of being reactive to instructional materials produced by outside bodies.

The European Network of Health Promoting Schools was established in 1992 by the WHO, the European Commission, and the Council of Europe (Burgher, Barnekow Rasmussen, & Rivett, 1999). It encouraged the development of national networks of HPS in accordance to each country and school's problems, priorities and interests (Gray, Young, & Barnekow, 2006). The Norwegian Network of HPS was a joint collaboration between the Ministry of Church, Education and Research, the Ministry of Health and Social Affairs, the National Board of Health, and the Research Centre for Health Promotion at the University of Bergen. Norway became a member of the ENHPS in 1993, and the HPS approach was implemented in 10 elementary and junior high schools

in 1994. Because a lack of buy-in by teachers and principals may challenge the development of HPS, this research aimed to address the teachers' and principals' motivation towards and participation in health promotion practices, critical conditions associated with sustained PA practice, and the extent to which health promotion practices were sustained in the network schools. Attention was also given to how leadership practices contributed to the sustainability of health promotion practices.

Theoretical approach

Given the complexity of the HPS approach, the PRECEDE-PROCEED model (PP-model) proved to be useful as a theoretical framework for the current research (Green & Kreuter, 2005). The PP-model organizes variables into eight phases identifying sequences of causes and effects that influence behavioral change. The third phase particularly informed the current research through an educational and ecological assessment of factors that affect behavioral change. It is assumed that staff's participation in school health promotion is a function of the combined influence of predisposing, enabling and reinforcing factors which refer to a person's motivation to engage in a behavior, how the environment promotes or hinders a behavior and how the consequences of a completed action initiate future behavior (Green & Kreuter, 2005).

Leithwood and Day's four categories of successful leadership practices (2007) provided insight into how principals may motivate teachers so that they have the will and the capacity to translate the HPS principles into practice. The categories are "building visions and setting directions", "understanding and developing people", "designing the organization", and "managing the teaching and learning program" (Leithwood and Day, 2007).

Methodology

The current research consists of three papers based on data from three sub samples from the Norwegian network. Paper 1 is based on a questionnaire study with a sample of educational staff who participated in the HPS survey at baseline and at three-year follow-up. The second paper is a case study over 10 years of one HPS applying mixed methods, while the third paper is based on interviews with seven principals 14 years after the HPS network commenced. The papers draw on survey data, focus group data, school documents, and interview data.

Findings

The majority of the teachers and the principals in the HPS reported that they had taken part in health promotion practices. The highest involvement was reported for work with the students' social environment, while the least involvement was reported for cross-curricular teaching plans in health promotion. Intention to get involved in specific health promotion practices was moderately correlated with actual participation in the corresponding practices at three-year follow-up. The informants in the case school reported that all the teachers were involved in physical activity (PA) promotion, and after 10 years, the upper grades participated in more PA in school each week than the amount allocated for physical education in the national curriculum plan. After 14 years, six principals reported that health promotion practices were integrated into the staff's routines and the schools' operations.

A high proportion of the teachers reported that the HPS had had an effect on the development of a health promoting curriculum and students' social environment, as well as on the relationship between teachers and students. In the case-study school, the

teachers perceived that PA promotion increased students' capacity to learn, and also the principals linked a health-promoting practice with academic performance.

The findings highlight key elements at the individual and school level that seemed to be significant for the teachers' and the principals' translation of the HPS principles into practice. Staff reported high initial motivation towards involvement, and their motivation at baseline significantly predicted their participation in health promotion at three-year follow-up. Moreover, the staff's previous experiences, interests and skills in health promotion seemed to contribute to participation. Yet, motivation and competence alone did not ensure the development of a health-promoting practice. The HPS experience involving collaboration with the university center and the other schools in the network seemed central to the integration of health promotion as a daily fabric in the lives of teachers and principals. The findings further indicate that the exercise of leadership within the schools also contributed to the sustainability of practice.

Conclusions

The findings show that the staff held positive attitudes towards the HPS approach at commencement, and that a high level of participation and perceptions of positive outcomes were reported at follow-up. A motivated teacher group also seemed to remain at the heart of the case study school's sustained PA practice, and according to the principals, health promotion practices were sustained in six schools after 14 years. The teachers' motivation seemed to be linked to the interplay between individual teacher characteristics, school characteristics and leadership practices. The HPS experience also emerged as vital for the sustenance of practice.

Implications

Although there remains much to learn about the wider dissemination of the approach, the current research indicates that the HPS is a promising framework that appeals to teachers. Several implications may be extracted. First, because the principal seemed to be a key force, district offices and national authorities ought to build commitment for health promotion at this level. Second, because staff seemed to be inspired through collaboration, regional networks that stimulate to learning and shared responsibilities across schools are recommended. Third, HPS initiatives probably also benefit from attending to the association between professional development of the individual teacher and the school as an organization. Such an emphasis may contribute to the development of HPS that spread and last.

List of papers

Tjomsland, H. E., Iversen, A. & Wold, B. (2009). The Norwegian Network of Health Promoting Schools: A three-year follow-up study of Teacher Motivation, Participation and Perceived Outcomes. *Scandinavian Journal of Education Research, 53* (1), 89-102.

Tjomsland, H. E., Larsen, T., Samdal, O. and Wold, B. (in press): Sustaining comprehensive Physical Activity Practice in Elementary School: A Case Study applying mixed Methods. *Teachers and Teaching: Theory and Practice*.

Tjomsland, H. E., Viig, N. G., Larsen, T. and Wold, B (accepted pending minor revision): A fourteen year follow-up study of Health Promoting Schools in Norway: School leaders' perceptions of conditions influencing sustainability. *Open Education Journal*

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1. Background

Health promotion addresses the determinants of health and aims to enable change and to empower people so that they have the capacity to improve their own health as well as the health of the community (Kickbusch, 2003). Health promotion inextricably links the individual with the environment and attends to how the environment affects health (Mittelmark, Kickbusch, & Rootman, 2007). Because most health determinants exist outside the health sector, the Ottowa Charter emphasizes the need for healthy public policies in other sectors than health (WHO, 1986).

"A settings based approach" to health promotion attends to populations in a given setting or organization instead of to individuals at risk (Kickbusch, 2003; Poland, Green, & Rootman, 2000; Whitelaw et al., 2001). It reflects an ecological model of health promotion acknowledging that health is influenced by a complex interplay of environmental, organizational and personal factors (Dooris, 2006). Besides the development of personal competencies, settings based initiatives also act on policies, re-shape environments, build partnerships, produce sustainable change through participation and cultivate empowerment and ownership of change in the setting (Whitelaw et al., 2001).

The WHO describes the school as a priority setting in health promotion because it meets young people during formative years of their physical, social, mental and attitudinal development (Mittelmark et al., 2007). The pivotal role of school is teaching and learning. Because some have posited that good health can maximize learning (Rosas, Case, & Tholstrup, 2009), it may be beneficial to the core business of schools to embrace health related initiatives (St Leger, 2004). In the western part of the world, policy makers in education increasingly recognize the link between health and learning and the opportunity of schools to counteract challenging trends and developments in the life of young people (Tang et al., 2008; West, 2006).

Several international initiatives have defined and advanced the role of schools in promoting health and well-being over the past 30 years. The European Network of Health Promoting Schools (ENHPS) was established in 1992 by the WHO, the European Commission, and the Council of Europe (Burgher, Barnekow Rasmussen, & Rivett, 1999). Norway became a member of the European network in 1993, and the Health-Promoting Schools (HPS) approach was developed and implemented in 10 elementary and junior high schools in different parts of the country. This thesis aims to (1) examine teachers' and principals' motivation for and participation in health promotion practice, (2) highlight critical conditions in the school setting associated with sustained PA promotion under the HPS approach, and to (3) explore in what way leadership practices contributed to the sustainability of health promotion practices in the network schools.

2. School Health Promotion

Green and Kreuter (2005, p. 1) define a *health program* as "a set of planned and organized activities carried out over time to accomplish specific health-related goals and objectives". Nevo (2006) describes an *educational program* as planned ongoing activities representing coordinated efforts to achieve major educational goals, and a *policy* as the statement of a problem, a goal to prevent that problem and a set of actions to accomplish that goal. Kolbe (2005) suggests that modern *school health programs* consist of *policies* in one or several of the following areas: school health services, school health education, school health environments, school counseling, school physical education and other physical activities, school food services, school site health promotion programs for employees, and integrated efforts of schools and communities. A coordinated effort between the eight independent components most effectively promotes students' health (Kolbe, 2005).

The European, Australian, Western Pacific, and Latin American equivalent to the American coordinated school health program is known as the Health Promoting Schools approach (Samdal, 2008). In 1995, the WHO facilitated the establishment of the Global School Health Initiative which advocated a comprehensive approach for school health inspired by the Ottawa Charter of Health Promotion (1986) and a settings based approach to health promotion (Tang et al., 2008). The HPS approach builds upon the experiences of the European Network of Health Promoting Schools (ENHPS) (Samdal, 2008; Tang et al., 2008; West, 2006). Unlike traditional disease prevention in school, this approach addresses determinants of health in the school environment and community as well as individual lifestyle factors (Rowling & Jeffreys, 2006). It aims to empower schools and teachers to be active partners in curriculum development and design of health promotion practices instead of introducing standardized instructional materials.

The following five areas are central to a HPS at the school level: (1) *equity* in educational opportunities and a bully free environment, (2) *students' participation* in developing effective health-promoting activities, (3) *empowering* students to make healthy choices, (4) building *healthy environments* including the physical environment, the school curriculum, relationships, catering facilities, extra-curricular activities, and community relations, and (5) *policy development* (Titterton & Rivett, 2008). Taken together, the HPS approach teaches health knowledge and skills in the classroom, aims to develop safe and healthy social and physical environments, and links the school with the outside community (Stewart-Brown, 2006). A HPS applies two major intervention strategies; classroom education and a supportive school environment (Samdal, 2008). It is the latter intervention strategy that differentiates a HPS approach from health education which often involves a set of separate health promotion activities with no health policies or joint effort by the staff in school (Samdal, 2008).

2.1 The European Network of Health Promoting Schools (ENHPS)

The ENHPS encouraged the development of national networks with specific criteria for developments of HPS in accordance to the problems, priorities and interests of each country and school (Gray, Young, & Barnekow, 2006). Today, the ENHPS is run as the Schools for Health in Europe (SHE) network coordinated by the Netherlands Institute for Health Promotion and Disease Prevention, a WHO Collaborating Centre for School Health Promotion in the Netherlands. It aims to be the European platform for school health promotion working at the school, national and international level (http://www.schoolsforhealth.eu/). Currently, 43 European countries participate in the network, ranging from Iceland to Kazakhstan (Titterton & Rivett, 2008). Also connected with the SHE network is the HEPS project, a policy development project that aims to support countries in Europe to develop national school policies on healthy eating and PA through the HPS approach (http://www.hepseurope.eu/).

2.2 The Norwegian Network of Health Promoting Schools (ENHPS)

The Norwegian Network of HPS was a joint collaboration between the Ministry of Church, Education and Research, the Ministry of Health and Social Affairs, the National Board of Health, and the Research Centre for Health Promotion at the University of Bergen. The university research center was appointed the national resource center for the network. The Norwegian part of the ENHPS was organized as a school wide approach, supposedly involving all staff members. Each school presented unique opportunities that formed the premise upon which individual HPS were developed. All the schools shared students' school satisfaction and well-being as the overall aim, while physical activity (PA) promotion, healthy eating, the building of supportive environments, and the development of cross-curricular teaching plans in health promotion were other common aims. The schools were also requested to identify a coordinator for the HPS with specific responsibilities in health promotion. In 5

schools, the principal or the school inspector acted as the coordinator. In the remaining 5, the coordinators were appointed from the staff, although, most principals worked together with the coordinator to ensure progress.

Even if there is currently no national network of HPS in Norway, the principles of the HPS approach have been written into the Parliament White Paper No.16 (2002-03) (The Norwegian Ministry, 2003) and are systematically used also by the education sector. The principles promoted through the network have for example been taken forward as a model in the "The Physical Activity and Healthy Meals project", a joint collaboration between the Ministry of Education and Research and the Ministry of Health and Care Services.

2.3 School improvement

"School improvement" refers to sustained change in learning conditions and other internal conditions, with the ultimate aim of achieving educational goals more effectively (Reynolds, Teddlie, Hopkins, & Stringfield, 2001). The HPS approach may be considered to represent a school improvement initiative because it aims to maximize learning and health through an integration of policy and practice from both the education and the health sector (Rowling, 2005). Viig and Wold (2005) propose that the creation of a HPS assumes comprehensive change in the practice of the teachers concerned, and change in school directed towards students' learning or social development may be referred to as change in educational policy (Fullan, 2007).

Educational research refers to teachers as the gate keepers, the key agent when it comes to changing classroom practice (Fullan, 2007). Change in educational policy and practice directed at improved health and well-being are also supposed to be initiated and controlled by the teachers and the principal in each local school. However, educational staff reacts differently to calls for change. Some are more predisposed maybe due to experience or personality to act on change, while some are later adopters who wait for other teachers to take

the lead (Fullan, 2007). As suggested by Rogers' theory of diffusion (1995), those who react early, the innovators, play a gate keeping role in launching new ideas and innovations into school. The next adopter category has usually the greatest degree of opinion leadership in an organization, and therefore, these teachers, the early adopters, serve as valuable role models to potential adopters who look to early adopters for advice and information. As innovators have a tendency to get bored and move on to new ideas and innovations, the early and later adopter categories are crucial to ensure that an innovation is sustained (Rogers, 1995).

However, even if school leaders and teachers welcome a new policy or approach, it is still an open question whether it will contribute to change in teachers' behaviors or not. Teachers' probability to act on change depends not solely on the individual teacher but also on characteristics of the local school for example in terms of collegiality, leadership, and traditions and values in staff to innovate (Coburn, 2001). This reciprocal relationship between individual and organizational conditions and their impact on behavior may be outlined within the PRECEDE – PROCEED model (PP model) (Green & Kreuter, 2005). The PP model also guided the planning and the evaluation of the Norwegian HPS Network (Wold & Samdal, 1999)

3. The PRECEDE – PROCEED model

The complexity and coordinated effort of several components within the HPS approach makes an application of the PP model useful both to educational staff who attempts to transform schools into health promoting settings, and to policy makers and researchers who plan and evaluate school health promotion. The PP model is a framework for planning and evaluation of health programs that combines an educational approach with an ecological approach (Green & Kreuter, 2005). The first acronym PRECEDE refers to *p*redisposing, *r*einforcing and *e*nabling *c*onstructs in *e*ducational *d*iagnosis and *e*valuation, while the second

acronym PROCEED refers to *p*olicy, *r*egulatory, and *o*rganizational constructs for *e*ducational and *e*cological *d*evelopment (Green & Kreuter, 2005). The primary purpose of PRECEDE is information generation, while PROCEED aims at strategic implementations of actions (Green & Kreuter, 2005). The model is informed by several theories such as the Theory of Reasoned Action (TRA), the Theory of Planned Behavior (TPB) and Cognitive Learning Theory. In contrast to the TRA and the TPB, the PP model recognizes that behavioral change is closely linked to resources in the environment.

3.1 Educational and ecological assessment of factors affecting behavior & environment

The PRECEDE and PROCEED components organize variables into eight phases that identify sequences of causes and effects that influence behavioral change. The third phase, the educational and ecological assessment, particularly informed this thesis. Here, the factors that initiate and sustain the process of behavioral and environmental change are identified (Green & Kreuter, 2005). The three categories of factors are predisposing, enabling and reinforcing, and in combination these factors motivate, facilitate and sustain behavioral change. As suggested in Figure 1, the current research assumes that teachers' and principals' participation in health promotion is a function of the collective influence of these factors, and that their participation in health promotion in turn may influence the school environment. Although, certain enabling factors also directly influence the school environment (Green & Kreuter, 2005).

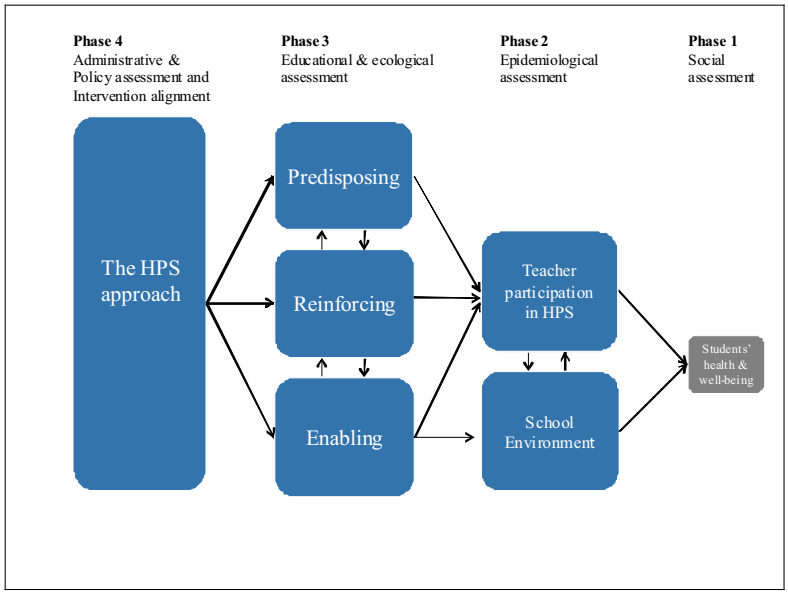

Figure 1. The PP-model: the PRECEDE phase adopted from Green & Kreuter's PRECEDE – PROCEED model (2005). (Green and Kreuter's model from the 2005 edition also includes a box referring to "genetic factors" in phase 2. This box has been omitted because genetics is not addressed in the current research.)

3.1.1 Predisposing factors

"Predisposing factors are antecedents to behavioral change that provide the rationale or *motivation* for the behavior" (Green & Kreuter, 2005). According to the theory of planned behavior (Ajzen, 1991), attitudes are important predictors of intention to engage in a behavior, and intentions are considered the primary determinant of behavior. Attitudes are based on beliefs about outcomes or consequences of a behavior and evaluation of these outcomes.

Teachers may feel challenged by imposed goals and practices (Datnow & Castellano, 2000; Jones & Eick, 2007). For that reason, the way a new practice is introduced to the teachers is of great importance in order to develop positive expectations, attitudes and intentions for example related to a HPS approach (Apostolidou & Fontana, 2003; Dusenbury, Brannigan, Hansen, Walsh, & Falco, 2005). Ballet & Kelchterman (2008) propose that

educational staff do not simply undertake appeals for change but evaluate a call for change by asking if and how the change helps them to better meet the educational needs of their students. If staff perceives change as beneficial to their students' needs, they may be more positive to the innovation because it is difficult to be a "good teacher" and at the same time turn down an innovation that seems to benefit learning (Datnow & Castellano, 2000). Møller *et al.* (2007) suggest that students' learning is the focal point of both the philosophy and practice of Norwegian schools, and the recognition by teachers of improvements in student learning has been identified as the main reason why teachers' change their practice (Guskey, 2002). Thus, it seems likely that teachers will engage in health promotion if they perceive a link between health and learning, and if they for that reason believe that health promotion may improve students' educational achievements. On the other hand, teachers may, despite positive attitudes and high expectations towards the outcomes, choose not to participate because they believe that spending more time on reading and math is a more efficient strategy to enhance learning than time spent on work related to health and well being.

Staff's thinking around the HPS approach may further be influenced by the experiences that created the attitudes, values and perceptions in the first place. The teachers' own experiences in PA during childhood have for example been linked to their attitudes towards PA as professionals (Capel, 2005). Thus, teachers with positive experiences in PA may be more inclined to support a change towards a more physical active practice, than teachers without such values and experiences (Schmidt & Datnow, 2005). Moreover, teachers who already possess the skills necessary to promote PA and who feel competent in instructing PA, may be predisposed to add in more PA to the timetable compared to teachers without skills in for example basketball or aerobic dance.

To predispose teachers to act in accordance with the HPS approach and to allow for change to take place, staff must be granted time to rethink their practice and to embrace the

HPS approach (Inchley, Muldoon, & Currie, 2007). Accordingly, the principal seems to play a pivotal role in facilitating joint reflections and discussions in staff related to health promotion. Leithwood and Day (2007) propose that one category of successful leadership practice in school is *Building shared visions and directions.* While the identification of shared goals for the school is paramount, staff should also be encouraged to include the goals of the organization among their own to ensure that health promotion practices become truly implemented and disseminated.

3.1.2 Reinforcing factors

"Reinforcing factors are factors following a behavior that provide the continuing *reward* or incentive for the persistence or repetition of the behavior" (Green & Kreuter, 2005). Positive feedback from students, parents, fellow teachers and leaders may provide educational staff with incentives to hold on to health promotion. Reinforced behaviors produce lifestyles (Green & Kreuter, 2005), and a teacher who for example perceives heightened concentration in the students after a healthy meal or who enjoys participating in PA with the students may be provided with incentives to sustain the new practice.

Sustainability and external influences

Educational change consists of initiation, implementation and institutionalization (Fullan, 2007). In public health, dissemination, adoption, implementation and institutionalization are described as the four stages that an innovation passes through to be effective and to have sustained impact (Osganian, Parcel, & Stone, 2003; Rogers, 1995). Hargreaves and Goodson (2006) propose that, for a reform to be sustained, it must be institutionalized, and, once institutionalized, it may be sustained over time. Also the HPS approach needs to be set up in a way to ensure that positive changes in structures and practices are reinforced and embedded in the school's operation (Gray et al., 2006). The

sustainability of a health-promoting practice is in this thesis understood as the development and formalization of health promotion policies (healthy eating, PA promotion, bully free environments, and school satisfaction), as well as an integration of health promotion practices into the fabric of the staff's daily practice. A HPS is sustained when a commitment to learning and health permeates staff and the organizational structure.

However, studies of innovations in the educational setting suggest that the multitude of ideas targeting schools, the complexity of many programs and turnovers in staff challenge sustainable change processes (Datnow, 2005; Dowda, Sallis, McKenzie, Rosengard, & Kohl, 2005). Inchley *et al.* (2007) suggest that it is vital to integrate the HPS approach into school life as a way of being to prevent that it becomes a discrete activity that may be replaced with new initiatives. Leithwood, Harris, and Hopkins (2008) note that if a direction is widespread, it is less vulnerable to turnovers in staff and thus improvements are more likely sustained. Similarly, political support of a school reform may enhance sustainability (Midthassel, Bru, & Idsoe, 2008; Stewart, Parker, & Gillespie, 2000; Yonezawa & Stringfield, 2000). In Norway, governmental incentives to promote PA and healthy eating in school as well as a general concern related to sedentary lifestyles in children and youth may have encouraged the network schools to hold on to health promotion (The Norwegian Ministries, 2005). Hargreaves and Fink (2008) also suggest that professional learning networks may contribute to sustainable improvements because they generate excitement in teachers through interaction with colleagues across schools. Network based initiatives build on the idea that teachers learn best when they share ideas, collaborate about planning, and provide feedback to other teachers' ideas and experiences (Hargreaves & Fink, 2008).

The leadership practices identified by Leithwood and Day (2007), discussed in Section 3.1.1 and 3.1.3, probably all have a say in reinforcing teachers to act on health promotion. If principals reinforce health promotion visions, continue to involve staff in relevant

professional development, persist in building productive structures for health promotion, keep staffing school with teachers well matched to the HPS approach – then, teachers may be motivated and enabled to sustain health promotion practices.

3.1.3 Enabling factors

"Enabling factors are antecedents to behavioral or environmental change that allow a motivation or environmental policy to be realized" (Green & Kreuter, 2005). The presence of certain conditions in the environment may facilitate the performance of an action, while the absence of adequate enabling factors may inhibit action (Green & Kreuter, 2005). In the school setting, time constraints, organizational policies, budgets, materials and personnel may act as enabling factors that assist or hinder change in teachers' behaviors. It seems reasonable that school leadership is a key force to the presence or absence of enabling factors in school that can influence teacher participation in health promotion.

School leadership

The principal is crucial in "setting the tone" and fostering a climate in staff that responds positively to local and national policy initiatives and to change in the school community (Penlington, Kington, & Day, 2008). Also in health promotion, leadership is essential (Anderson et al., 2008), and in school health promotion, the principal should provide leadership that seeks to develop healthy policies, motivation and capacities in staff, and mobilize resources for health promotion (Deschesnes, Martin, & Hill, 2003; Dusenbury, Brannigan, Falco, & Hansen, 2003; Samdal, 2008). Four major categories of principal leadership practices have been identified by Leithwood and Day (2007). This classification system includes *Building visions and setting directions*, *Understanding and developing people*, *Designing the organization*, and *Managing the teaching and learning program.* These

leadership practices seem to be common across contexts and most effective when widely distributed in the organization (Day, Sammons, Stobart, Kington, & Quing, 2007).

Distributed leadership is most commonly described as the roles undertaken by teachers who have both management and pedagogical responsibilities, for example in terms of developing curricular plans or being a subject coordinator (Harris, 2008; Muijs & Harris, 2007). A key benefit of distributing leadership is that a wider number of people develop an understanding of and responsibility for whole-school issues (Penlington et al., 2008). Hargreaves and Fink (2008) suggest that distributed leadership is about engaging all members of staff in a dialogue about how to best promote students' learning. In health promotion, the involvement of all stakeholders in producing change is paramount in order to create a sense of ownership to the change process (Green & Kreuter, 2005). There is evidence that distributed leadership encourages staff's participation in health promotion and further supports the sustainability of the HPS approach as teachers and principals come and go (Inchley et al., 2007).

Managing the teaching and learning program refers to how the principal or distributed leader translates guiding ideas into practice by establishing plans and schedules to achieve specific results (Leithwood & Day, 2007). A key force and enabling factor for the development of a HPS seems to be the principal or distributed leader's management. If a school for example aims to implement more PA, the principal ought to develop policies to support a change in practice, draw timetables with openings for extra curriculum PA, provide PE equipment for indoors and outdoors use and recruit teachers with competence in PE.

One way to squelch a teacher's enthusiasm for a health-promoting practice is to assign him or her with responsibilities of which the teacher has no competence. Leithwood and Day (2007) suggest that it is important to build staff's knowledge and skills to provide teachers with a sense of mastery related to their work. The leadership practice, *Understanding and*

developing people, therefore seems applicable also to the HPS because teachers who feel that they are effective in applying the new practice may be more likely to maintain it also in challenging circumstances. It is therefore vital that the principal aims to understand staff and to delegate responsibilities according to the individual teacher's qualifications. Given that staff receives training in program planning and evaluation, policy and curriculum development, and in health promotion, they may faster develop a sense of mastery related to health promotion practices. As a result, participation in health promotion becomes more attractive and it seems more likely that the new practice will be repeated and sustained over long periods.

Designing the organization refers to leadership that builds collaborative cultures and creates structures that support collaboration and productive working relations in staff (Leithwood & Day, 2007). The ENHPS points to collaboration within school and between school and the outside community as an essential ingredient in a HPS (Gray, Young, & Barnekow, 2006). When teachers collaborate about planning and teaching, they may perform better both individually and as a team (Clayton & Schoonmaker, 2007). In a HPS, the principal may for example support and create opportunities for staff to collaborate in building caring school environments. Caring school environments may in turn generate positive outcomes among the students, and staff's perceptions of positive outcomes in the student group may on the next occasion strengthen their motivation to maintain collaboration in health promotion.

4. Evaluation

Program evaluation is integrated as a significant dimension of the PP model through PROCEED (Green & Kreuter, 2005). Green and Kreuter (2005) propose three reasons for evaluation. First, evaluation results can be used by elected officials to demonstrate that a

given program served its purposes and citizens. Second, information from evaluations may be used by program managers to guide program decisions, and last, evaluation data can be used by researchers to determine whether improvements in health and well being are linked to a program, intervention or behavioral change (Green & Kreuter, 2005). Common to all three is that evaluation provides information of what works and what works not, and thus guides informed decisions about continued use of a program (Green & Kreuter, 2005).

Varying definitions of evaluation exists (Mark, Greene, & Shaw, 2006). Some definitions focus on the function evaluation serves, while other definitions include a specification of the evaluation purpose (Mark et al., 2006). Scriven (1991) for example describes evaluation as a systematic determination of merit, worth or value of something, while Nevo (1995, p. 11) describes evaluation in education as "an act of collecting systematic information regarding the nature and quality of educational objects". Whereas educational evaluation originally consisted of an assessment of student learning in the classroom (Nevo, 2006), educational evaluation today has expanded into the entire educational system involving several levels from individuals, over classrooms as well as international levels (Hansen, 2009). It includes for example teacher evaluation, school evaluation, program evaluation and the production of evidence-based knowledge on teaching practice (Hansen, 2009).

Patton on the other hand is deeply concerned about being useful. He describes "Utilization focused program evaluation" as "evaluation done for and with specific intended primary users for specific, intended uses (2008, p. 39)." Here, the aim is to identify improvements and provide information about a program within specific contextual boundaries, and therefore the emphasis is on systematic data collection rather than specific social science methods. According to Green *et al.* (2009) the instrumental view of the process of utilization is that new knowledge should be put to immediate use once it has been turned over from the researcher to the practitioner. Knowledge utilization also seems to characterize

Rootman's reasoning (2001, p.26) of settings based health promotion evaluations which she describes as "a systematic examination and assessment of features of a program or other intervention in order to produce knowledge that different stakeholders can use for a variety of purposes."

Action research, also, involves the dimension of being useful in relation to practice improvement and is increasingly becoming adopted and adapted into evaluation practice (Roger & Williams, 2006). Rogers and Williams (2006, p. 83) note that action research is "about action that is intentionally researched, and research that is designed to inform subsequent actions." Scholars in the Finnish Network of HPS indicate that participatory action research may be appropriate for exploring the transformation of schools into health-promoting settings because it encourages staff to question what happened in school health promotion and to reflect on the meaning of the experience (Turunen, Tossavainen, & Vertio, 2004).

Health promotion is informed by social science disciplines. However, it has often been located within health services, public health and within the culture of evidence-based medicine. For that reason, it has been compelled to demonstrate its effectiveness using the randomized control trial (Moore, Graham, & Diamond, 2003). However, the settings approach to health promotion moves health out of the professional action frame into organizations and communities. Here, health is framed in relevance to the people living and working in the setting, and it is this move that challenges evidence-based practice (Kickbusch, 2003). The HPS approach involves the entire school community in a mutual aim to improve school and the health and wellbeing of students and staff (Rowling, 2005). Active participation by its participants leads to unique HPS aiming at various outcomes even at the national level (St Leger, 2004). Because of the complexity of the HPS approach for example in terms of aims and outcomes that are not clearly defined before implementation, there is still

considerable confusion of what should be evaluated and what constitutes success in the HPS (Campbell et al., 2000; Rowling & Jeffreys, 2006; St Leger, 2004; St Leger, Kolbe, Lee, McCall, & Young, 2007).

To track the way schools are transforming through years into health promoting settings, requires more than snapshots of life in school. Evaluations of HPS should attend to change in visions and policies, in the environment, event rates, teachers' practices, as well as to measures of students' and staff's holistic well-being (Inchley et al., 2007). Consequently, it can be argued that experimental designs may be misleading for the evaluation of settings based interventions because such designs seldom pick up the process of active participation by the participants critical to health promotion (Kickbusch, 2003; Nutbeam, 1998; Rootman, 2001; Rowling & Jeffreys, 2006; Stewart-Brown, 2006). While a shift in focus from individual level outcomes to measures of the school level is required (Inchley et al., 2007), also a variety of methodological approaches are advocated to capture the translation of HPS principles into practice (Macfarlane, 2005; Stewart-Brown, 2006).

5. Previous research

5.1 Previous studies of "health promotion in school" and "HPS"

The two concepts of "health promotion in school" and "health promoting schools" as a settings approach are often used interchangeably even if they have different ideological and epistemological bases that affect the way of working with or in schools (Lister-Sharp, Chapman, Stewart-Brown, & Sowden, 1999; Rowling & Jeffreys, 2006; Stewart-Brown, 2006). These differences represent significant consequences for the evaluation of the two concepts. Whereas studies of "health promotion in school" tend to focus on health promoting bodily practice (disease prevention in practice), studies of "the HPS approach" also need to

pay attention to the creation of empowering conditions within the social context and change in organizational structures (Rowling & Jeffreys, 2006).

There is a growing body of evidence of the effectiveness of health promotion in schools (Tang et al., 2008). Some studies have shown that programs targeting specific health issues such as for example hand washing and HIV education have an effect on child and youth health (Kirby, Laris, & Rolleri, 2007; Lee et al., 2008). Other scholars indicate that interventions targeting healthy eating, PA, and mental health may be effective in changing and improving young people's health behaviors (Cale & Harris, 2006; Davidson, 2007; Felton et al., 2005; Tang et al., 2008; Wells, Barlow, & Stewart-Brown, 2003). The least effective interventions in school seem to be those that focus on substance misuse and oral hygiene (Stewart-Brown, 2006).

Few studies assess the impact of whole school approaches like the HPS (Inchley et al., 2007; Rowling & Jeffreys, 2006). Dooris (2006) suggests that the paucity of studies may relate to the complexity of the approach, and Deschesness *et al* (2003) further indicate that this complexity also may explain why all the domains under the HPS approach are only rarely put into practice. Mukoma and Fisher (2004) identified nine evaluation studies of HPS, and their review reported an overall positive development through, for instance, successful integration of health promotion into the school curriculum and positive development of health promotion practices.

Two meta reviews address the effectiveness of the HPS; Lister-Sharps *et al.'*s review (1999) include primary studies of initiatives adopting elements of the HPS approach, while Stewart-Brown *et al.'*s review (2006) build on the former including systematic reviews published since 1997 to the end of 2003. Only experimental studies with quantitative outcomes were included in both reviews and the inclusion criterion involved health promotion activity in each of three areas: the school environment, the curriculum, and the family and / or

community. Lister Sharp *et al.* (1999) note that the HPS may be successful in improving aspects of health related behaviors such as food intake and PA as well as aspects of mental and social well-being in terms of self-esteem and bullying. Both reviews indicate that the HPS approach is a promising framework for health promotion in school. Although, Stewart-Brown *et al.* (2006) underscore that there is currently no evidence demonstrating that the HPS in its entirety is more effective in the promotion of health in school than other approaches.

Inchley *et al.* (2007) examined the implementation of the HPS approach in four Scottish schools involved in the ENHPS. Her study highlights four themes at the organizational level that seem to facilitate a translation of the HPS principles into practice; these relates to ownership and empowerment, leadership and management, collaboration and integration (Inchley et al., 2007). In Australia on the other hand, Laurence, Peterken and Burns (2007) found that schools that embraced the HPS approach positively influenced children's fruit and water intake through the development of policies, integration of health promotion practices into the curriculum and the establishment of partnerships with community nutrition services. Also West *et al.* (2004) examined school effects on health behaviors, and evidence from this study showed that schools vary in their smoking, drinking and drug profiles. Interestingly, the scholars note that schools with an ethos compatible with the HPS' were more effective in promoting students' health than schools without a positive ethos (West et al., 2004)

Based on several studies from the Danish Network of HPS (2004; 2004, 2005), Jensen and Simovska have conceptualized a democratic approach to health education and the HPS. Here, the focus is on educational rather than health outcomes, and the overall aim is to develop students' action competence to enable responsible and critical participation in health matters that concern the students (Simovska, 2007). Evaluation results of a web-based international project involving HPS in Denmark, Sweden, the Czech Republic and Macedonia

indicate for example that the use of ICT for health promotion can foster students' action competence and ability to bring about positive change (Simovska & Jensen, 2008).

A study from Hong Kong suggests that if the HPS approach is embraced comprehensively then students seem to benefit in terms of improved life satisfaction and emotional status, and better health and academic performances (Lee, Cheng, Fung, & St Leger, 2006). Likewise, Patton *et al.* (2006) and Rowe *et al.* (2007) note that schools that embrace the HPS approach may enhance students' belief that staff and friends in school care about them as individuals and their learning. These scholars further suggest that a sense of social inclusion and connection in school may help children and youth avoid behaviors that place them at risk for poor health and educational outcomes (Patton et al., 2006; Rowe et al., 2007). Others again have observed that coordinated school health programs have the potential to address students' health needs and by extension maximize academic achievements (Murray, Low, Hollis, Cross, & Davis, 2007; Rosas et al., 2009).

The above findings are corroborated in a body of literature on the key elements and principles of the HPS approach. This literature suggests that comprehensive programs that have a joint focus on cognitive and social outcomes as well as behavioral outcomes, link the school with sectors dealing with health, exists over several school years and attend to capacity building of teachers and the school are the most inclined to achieve and sustain benefits in health that contribute to the educational experience of young people (Clift & Jensen, 2005; Rasmussen, 2005; Rasmussen & Rivett, 2000; St Leger, 1998, 2000, 2004; St Leger & Nutbeam, 2000)

5.2. Teachers' motivation for and participation in health promotion practice

A study from Greece, revealed that Greek teachers were positive towards health education (Apostolidou & Fontana, 2003). Although, the teachers reported insufficient

training in the field which generated confusion related to the teachers' understandings of key health issues. Studies from the Finnish HPS Network (Turunen, Tossavainen, Jakonen, & Vertio, 2006; Turunen et al., 2004; Turunen, Tossavainen, Jakonen, Salomäki, & Vertio, 1999) also suggest that Finnish teachers were positive towards health promotion and to some extent embraced a holistic whole-school approach to health promotion. During the three-year study period, there was a shift from mostly teacher-centered teaching methods to more collaborative teaching and learning methods, and more collaboration was also seen between staff and outside representatives. The teachers moreover perceived that the atmosphere in the classroom and in the school community developed favorably, however they perceived a negative change in other staff's attitude and support towards the HPS. Tossavainen *et al*' (2004) in addition compared teachers' health counseling in the Finnish ENHPS with that of school nurses. Her study indicates that the teachers were more promotional and community-oriented in their health counseling than the school nurses who were more preventive and individually oriented.

In Leurs, Bessem, Schaalma and de Vries' study (2007), 80 % of the Dutch teachers involved reported having addressed at least three health promotion issues within the past year. These teachers were significantly more optimistic that teaching health education would result in positive outcomes for example related to a 'positive commitment' in school towards pupil health than those who addressed fewer than three health issues. Additionally, the teachers who taught less than three health issues reported significantly more disadvantages related to teaching health than their more positive colleagues for example in terms of "a lack of knowledge" and "a lack of consensus in school regarding health promotion". The teachers who addressed three or more health promotion issues were on the other hand the most confident in teaching health promotion (Leurs et al., 2007).

Also a study from Hong Kong points to the pivotal role of teachers in HPS suggesting that the effectiveness of HPS in this context largely depended on the teachers' understandings of its building blocks (Lee, St Leger, Cheng, & Hong Kong Healthy Sch, 2007).

5.3 Sustainability and school leadership

The sustainability and maintenance of health promotion programs and the HPS approach over time have been studied rarely (Dowda et al., 2005; Dusenbury et al., 2003; Oldenburg, Sallis, French, & Owen, 1999). Evidence from the CATCH ON study in the US, designed to evaluate the institutionalization of the CATCH intervention that promoted healthful behaviors in elementary school children, demonstrated high levels of institutionalization for the CATCH physical education component (Lytle, Ward, Nader, Pedersen, & Williston, 2003; Osganian et al., 2003). Staff training, a program coordinator, and adequate administrative support and resources were factors that facilitated institutionalization of programs in school, while primary barriers that emerged were low priority for health promotion activities and time constraints, lack of teacher training, and lack of equipment (Johnson et al., 2003; Kelder, Mitchell, & McKenzie, 2003; Osganian et al., 2003; Parcel et al., 2003).

The sustainability of SPARK, a health related PE program, was evaluated in 111 elementary schools in the US. 80% of the schools that adopted the program reported sustained use four years later. Here, sustainability was linked to the teachers' PA levels, the school not previously having a PE program, adequate equipment, and support from the principal (Dowda et al., 2005). Also other scholars note that leadership executed by the principal is vital to sustain school improvement initiatives (Datnow & Murphy, 2003; Christopher Day, Leithwood, & Sammons, 2008; Hallinger, 2003; Hargreaves & Fink, 2003, 2004).

It appeared from Inchley *et al.*'s study (2007) that the chance of integrating and sustaining health promotion in school increased when the HPS was linked with existing practice and priorities. Also key individuals in the Education Department contributed to the sustenance of the HPS approach through the provision of strategic directions and active staff support in terms of training, policy and curriculum guidance. Moreover, when school leadership took the lead, the HPS approach was automatically granted status even if the school leaders did not participate at an operational level in health promotion. Laurence *et al.* (2007) point to effective leadership and dedicated resourcing at the school level as key factors of success in Australian HPS schools. Here, leadership was essential in terms of establishing local partnerships with resource people who coordinated and guided the program and increased the capacity of the educational staff to be engaged.

6. Research questions

- To what extent did the teachers participate in health promotion practices in the Norwegian HPS and perceive positive outcomes of such practices? (Paper 1)
- To what extent were the teachers motivated *(in terms of expectations, attitude and intentions)* to participate in health promotion practices in the Norwegian HPS, and to what extent did their motivation *(in terms of attitude)* change during the implementation period? (Paper 1)
- To what extent did teachers' expectations, attitudes and intentions regarding the Norwegian HPS approach at baseline relate to their participation in and perceived outcomes of health promotion practices at follow-up? (Paper 1)
- To what extent did one of the elementary schools in the network sustain PA as a prioritized area? (Paper 2)
- What critical conditions in the school setting were associated with sustained PA practice? (Paper 2)

- To what extent were health promotion practices sustained in the network schools 14 years after the HPS approach was implemented? (Paper 3)
- In what way did leadership practices contribute to the sustainability of health promotion practices in the network schools? (Paper 3)

7. Methodology

7.1 Mixed methods design

Nutbeam and Bauman (2006, p. 53) define evaluation design as "the set of procedures and tasks that need to be carried out in order to systematically examine the effects of a health promotion intervention." Nevo (2006) suggests that educational evaluations should pursue the method or methods that best answer the research questions in a study instead of assuming that one method applies to all objectives. The current research combines available data from a quantitative study with the collection of new qualitative data at two separate time points. The decision to add qualitative data and thus apply multiple data sources was driven by the objective to more fully explore the research questions related to individual and organizational conditions affecting the delivery and the sustainability of health promotion practices in the Norwegian network of HPS. Mixed methods studies are employed when there is a concern both for what is happening as well as for how and why it is happening the way it is (Sosulski & Lawrence, 2008). This research began by examining if teachers were positive towards and participated in health promotion practices. The quantitative results in paper 1 raised the interest to explore the development of PA promotion through the HPS approach, and to examine if, why and how health-promoting practices were sustained in school over time.

7.2. Samples

Forty Norwegian schools applied for membership of the ENHPS after a letter of invitation from the Ministry of Education and Research was sent to all (approximately 3000) elementary and junior high schools in the country. The 40 schools that applied submitted a presentation of their school and a short proposal stating their commitment for a three-year implementation process, and a description of how they perceived that the HPS approach could be embedded in the school's operation. Strategic sampling was performed within the sample

of the 40 schools (by the university center). First, schools with too ambitious aspirations and unrealistic aims were eliminated. Secondly, schools were selected based on inclusion criteria that ensured equal representation of schools representing different geographical regions, urban and rural district conditions and various school sizes. Three elementary schools, two combined elementary / junior high schools and 5 junior high schools were selected for participation. All 10 schools were members of the network until the final meeting in 2003. The papers in the current research are situated within the sample of the Norwegian HPS, although, each paper reports on different subsamples. Paper 1 draws on a sample of the educational staff in nine HPS. Paper 2 consists of teacher and student level data from one network school, while paper 3 includes a sample of seven principals from the network.

7.2.1 Sample 1 Educational staff in the HPS

One of the schools was eliminated from the survey data due to a change in school zone and a large turnover of teachers at the school. Therefore, when the study commenced in 1994, a total of 200 teachers and principals worked in the nine schools included in sample 1 and reported in the first paper. A response rate of 96% was achieved with 191 teachers and principals responding to the questionnaire. As paper 1 aimed to examine how baseline indicators were related to participation and perceived outcomes at a three-year follow-up, the inclusion criterion were that teachers and principals had to be available for data collection at baseline and at the three-year follow-up. According to school employment records, about 30 of the 200 staff members were employed on a part-time basis on short-term contracts, and were therefore not eligible for analysis of longitudinal data. Another 30 members of staff were not eligible because of sick leave, maternity leave, educational leave or new employment or retirement during the study period. Consequently, it was estimated that a maximum of 140 teachers and principals could participate in the longitudinal study from baseline to three-year follow-up. As it eventuated, 104 staff members responded at both

points in time, and data from this group of respondents were included in the analyses in paper 1 (response rate 75%). Fifty-two members of staff were females and 51 were males (one staff member had a missing value on the sex variable). The teachers and principals were from 23 to 68 years old, with the average age being 45 years. Twenty-four staff members were employed in elementary schools (1st to 6th grade), 56 staff members worked in junior high schools (7th to 9th grade) and 24 were employed in combined elementary and junior high schools (1st to 9th grade).

7.2.2 Sample 2 The case study

The case was selected through a purposive sampling strategy within the ten HPS ensuring that the case to be studied provided maximum learning for the topic of interest in paper 2. A review of school documents from the HPS network showed that the school selected for this study was one out of two schools that chose enhanced PA as a main strategy to improve school satisfaction and health among the students from 1993 - 2003. The case school was in addition successful in its application to become one of the experimental schools in The Physical Activity and Healthy Meals project in 2004. This project was a joint collaboration between the Ministry of Education and Research and the Ministry of Health and Care Services. It aimed to identify ways of organizing the school environment to enable 60 minutes of daily PA for students and to ensure that the guidelines for a healthy school meal are met (Samdal, Leversen, Haug, & Hansen, 2005).

The case school had by the university center in charge of evaluating both the HPS network and the Physical Activity and Healthy Meals project been informally listed as the most outstanding elementary school in the HPS network. In line with Teddlie & Yu's reasoning (2007), it was therefore anticipated that an in depth study of the particularities of this school would yield valuable information of critical conditions related to how schools can work to sustain PA promotion to enhance students' school satisfaction.

The case is an average Norwegian elementary school in terms of size and surroundings. It is situated in the outskirts of a town area with about 20 000 inhabitants. Mountains and forest recreational areas surround the school. The total student population ranged from app 130 to 160 and staff from 11 to 13 during the decade of study.

Because PA promotion was particularly emphasized in grades 5 – 7, and because survey data at the student level were only available among 5th to 7th graders, the study aimed to include the five teachers in grades 5-7 for a focus group interview. Two could not participate because of teaching obligations. However, the three teachers who participated were information-rich cases because of their particular responsibilities in health promotion. One had been the school coordinator for the HPS network. She worked half-time as an inspector and half-time as a teacher. The other two were PE teachers in charge of planning PA / PE for the upper grades. All three worked in the school during the entire 10-year study period, and they were thus capable of reflecting upon how the HPS approach and PA promotion had emerged as priority areas in school.

The survey data that was used in paper 2 consisted of 13 staff members in 1994 and eight in 1997. In addition, the school leader's response to The Physical Activity and Healthy Meals survey in 2004 was included. The responses of case study teachers were compared with educational staff in the other HPS. Survey data at the student level consisted of 56 students in 1994, 72 students in 1997, and 75 students in 2004. The responses of case study students were compared with those from a national representative sample of 11 year-olds (Wold, Hetland, Aarø, Samdal, & Torsheim, 2000).

7.2.3. Sample 3 Principals in seven HPS

To address issues of how the HPS approach had been sustained in the network schools, it was assumed that a person in the leader group had the best general view of the school's vision and practice. Seven principals were positive about participating, whereas three

principals did not respond to the request for an interview. In one school, the principal asked her male inspector to take her place as the informant because of time constraints. In the other schools, the principals themselves participated. Four informants were females and three were males. One principal had been in the leader position also when the network commenced in 1994. Only two of the six new principals were recruited from outside the school.

7.3 Data collection

Campell *et al.* (2000) advocate a phased approach in evaluations of complex interventions because it provides an opportunity for the researchers to define the intervention and to reflect on where they are in the research process. A phased approach to the collection of data included in this thesis made it possible to adjust the research agenda in accordance to the process of developments within the network schools. Figure 2 below outlines the collection of data at various time points.

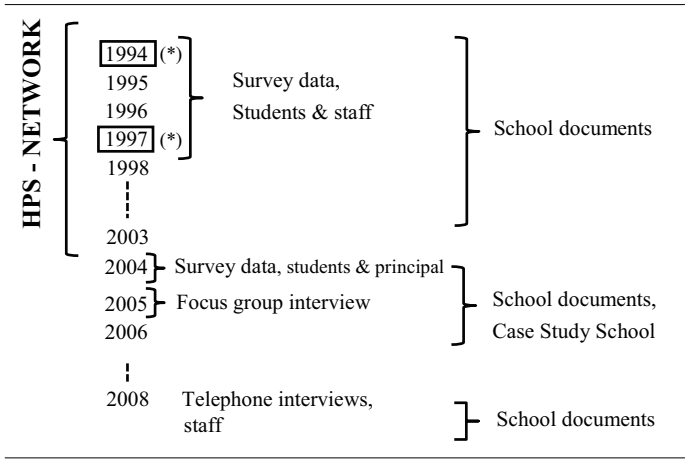

Figure 2. Timeline data collection

7.3.1 The surveys

The university center in charge of evaluating the Norwegian HPS collected survey data biannually for students and annually for teachers and principals from 1994 to 1998. Survey data were also collected once in November 2004 for the students and the principal in the case-study school because of the school's enrolment in the Physical Activity and Healthy Meals project. Data from the teacher surveys in 1994 and 1997 were used in paper 1 and 2. In addition, paper 2 reports on survey data from the Physical Activity and Healthy Meals project.

The surveys were carried out as confidential in-school self-report questionnaires.

Variables

The questionnaire was divided into 4 themes: 1) demographic variables, 2) health and lifestyle, 3) school - work environment, and 4) motivation for the HPS. Questions concerning students' health, lifestyle and the work environment at school were adapted from the Norwegian questionnaire used for the 1993/94 data collection in the Health Behaviors in School-aged Children, a WHO Cross-national study (the HBSC study) (Wold, Aasen, Aarø, & Samdal, 1995). These questions had been developed over 10 years in the HBSC study, and have been thoroughly piloted and tested for reliability (Haugland & Wold, 2001; Torsheim, Wold, & Samdal, 2000; Torsheim, Wold, Samdal, & Haugland, 1997). The teacher questionnaire used an adaptation of these questions, with an addition of questions adapted from a study on teaching style and collaboration among educational staff (Kallestad, Olweus, & Alsaker, 1998).

The questions concerning the HPS network were developed by the research center in health promotion at the University of Bergen based on interviews with teachers and principals. In 1997 and 1998, the questionnaires also included questions related to teacher participation, perceptions of outcomes and the sustainability of the HPS approach (Wold & Samdal, 1999). These questions were derived from in-depth analyses of qualitative interviews

with teachers in two network schools (Viig & Wold, 2005). The variables that were included in paper 1 and 2 are described below.

The teachers' expectations for the HPS approach were measured in 1994 and their perceived outcomes of the approach were measured in 1997. The following 10 items were used: "Do you think the HPS will have (in 1997: had) a positive effect on: a) cross curricular teaching plans in health promotion, b) personal teaching methods, c) your relationship with the school leaders, d) your relationship with colleagues, e) your relationship with the students, f) students' social environment, g) teamwork among teachers, h) collaboration with parents, i) collaboration with school health services, j) collaboration with local environment?" The response options were from (1) to a large degree to (4) not at all. These categories were recoded into (1) not at all to (4) to a large degree. Formative indices were constructed as sum scores of the 10 items referring to the staff members' expectations at baseline and their perceived outcomes of the HPS approach at three-year follow-up. The formative indices were used in the regression analyses based on the recommendations of Diamantopoulus & Winklhofer (2001), suggesting that when constructs are conceived as explanatory combinations of indicators that are determined by a combination of variables, their indicators should be formative.

The teachers' attitudes towards the HPS approach were measured with the following question: "What do you think of your school's participation in the HPS network?" The response options were from (1) like it very much to (6) don't know. These categories were recoded: (1) negative=4 and 5, (2) neutral=3 and 6, (3) positive = 2, and (4) very positive =1. The new categories were based on frequency distributions revealing that most teachers were positive or very positive towards the HPS. The same question and response options were used in 1997 in the past tense.

The teachers' intentions to become involved in health promotion practices were measured in 1994 by the question: "To what degree do you plan on getting involved in the following health promoting areas: a) health behaviors (alcohol, drugs and tobacco, nutrition and physical activity promotion), b) physical outdoor and indoor environment c) students' social environment, d) teachers' social environment, e) cross curricular teaching plans in health promotion?" The response options were from (1) to a large degree to (4) not at all. These were recoded: (1) not at all to (4) to a large degree. A formative index of the five items referring to teachers' intentions towards participation in health promoting activity at baseline was computed and used in the regression analyses.

Teachers' participation in health promotion practices was measured in 1997 by asking if teachers had participated in the health promoting areas described above. The response options were the same as those used for the intention variables. A formative index of the items was used in the regression analyses.

To assess how a set of conditions enabled health promotion practices, staff was in 1997 asked: "How important do you think these factors have been to facilitate your participation in the HPS at your school? a) personal engagement, b) principal's support and c) the focus on school satisfaction and learning? The response options ranged from (1) very important to (5) not important at all.

To assess how other members of staff facilitated teachers' involvement in health promotion practices, staff was asked: "To what degree have other members of staff in your school influenced your participation in health promotion practice? a) the principal b) the school coordinator and c) colleagues. The response options were from (1) to a very large degree to (5) not at all.

To assess if a set of conditions reinforced health promotion practices in school, staff was asked: "How important do you think these factors are for the sustainability of the HPS at

your school? a) formalization of health promotion practice, b) the HPS approach as a prioritized area, c) time to collaborate in staff, d) time to lead and manage a health-promoting practice? The response options ranged from (1) very important to (5) not important at all.

Students' and staff's levels of PA out of school were in 1994 and 1997 assessed with the following question: "How many times weekly do you exercise (out of school) in a way that makes you out of breath or makes you sweat?" The response options were from (1) every day to (7) never.

To assess the provision of PA / PE in school each week, the students were in 2004 asked: "How many class periods weekly do you participate in sports / exercise in a way that makes you out of breath or makes you sweat (PE lessons and other class periods)?" Response options ranged from (1) never to (5) 7 hours or more. The school leader was asked: "Please indicate the number of extracurricular PA classes your school offers for these grades" The response options ranged from (1) 4-5 days pr week to (5) seldom or never (see Appendix A).

7.3.2 The focus group and semi structured interviews

Because qualitative methods may help to understand the world from the individual's point of view (Lytle et al., 2003), this was the preferred method to generate knowledge about the teachers and the principals' HPS experience. The two qualitative phases that supplemented the survey data consisted of one focus group interview in the case study school in 2005 and semi structured interviews with key informants in seven schools in 2008.

According to Krueger and Casey (2000, p. 10), a focus group consists of "people who possess certain characteristics and provide qualitative data in a focused discussion to help the understanding of the topic of interests". Because the objective of paper 2 was to explore the school's story related to PA promotion rather than the story of individual teachers, a focus group interview was the selected instrument. Moreover, it was anticipated that the interaction within the group would stimulate the teachers to remember as much as possible of the

school's PA practice the past decade and, accordingly, help construct the school's history of PA promotion (Madriz, 2000). The focus group interview took place at school during the school day and lasted for about one hour. The informants agreed to the recording of the interview.

The second phase of the qualitative data collection aimed to explore the network schools' current health promotion practices, and to highlight conditions in the school environment that seemed to affect the delivery as well as the sustenance of a health-promoting practice. Telephone interviews were carried out with seven key informants who could speak knowledgeably about the schools' visions and practices. Six informants were interviewed in their office during office hours, while one informant was interviewed at home during office hours. The telephone interviews lasted from 30 minutes to one hour. After staff gave consent, the interviews were recorded on a mini disc.

Interview guides

A focus group guide inspired by the three types of factors, that through interaction with the environment affect behavior, in the PP model was used (Green & Kreuter, 2005). After a set of opening questions, key questions concerning the network experience, the HPS approach and PA promotion, teacher motivation, outcomes, resources, support and teacher involvement were discussed (see Appendix B).

For the telephone interviews, an interview guide was developed inspired by Leithwood and Day's four strategies related to successful head leadership (2007). Former studies of the Norwegian network also influenced the development of the interview guide (Tjomsland, Wold, & Iversen, 2009; Viig & Wold, 2005; Wold & Samdal, 1999). The key questions concerned the schools' current health promotion practices, the principals' perceptions of why health promotion practices should or should not be embedded in school life, as well as the

principals' reflections about how leadership strategies facilitated or inhibited the sustainability of such practices. The main questions were sent to the principals in advance on e-mail (see Appendix C).

7.3.3 The school documents

Hatch (2002) note that documents are powerful indicators of official activity within institutions, and that they also provide a sense of history related to the context being studied. For evaluative purposes, various types of school documents were collected in the 10 schools from 1994 - 2003 by the university center. These comprised vision plans, activity plans, developmental plans, curricula outlines, structured seminar notes, and newspaper articles. The school documents also include individual evaluation reports to the schools in 2001 written by the university center (informed by the school documents and the survey data at the student level from 1994 to 1998).

After the HPS network period, documents were collected from the case study school during a visit for the focus group interview and through e-mail correspondence with the principal and school coordinator in 2005 and 2006. Descriptive data of the case study school were collected on the school's website and in governmental databases providing information on all public schools in the country (http://www.skoleporten.no; http://www.ssb.no – retrieved 2006). Further, documents were collected through e-mail correspondence with the principals and from the websites of the seven network schools in 2008 (retrieved January – March 2008).

The documents included in paper 2 are number 1 to 12 as well as number 14 to 22, while the documents included in paper 3 are number 3, 13, and 22 to 28 (see Table 1).

Table 1. *School documents*

#	Type of document	Year	Collected by university - center / author
1	Health Promoting School newspapers	1994 - 1998	UC
2	Health Promoting School magazine	1998	UC
3	Individual evaluation reports to the HPS	2001	UC
4	Newspaper articles	1995, 96, 97, 04	UC
5	School news	1995 - 98	UC
6	Article in pedagogical magazine	1995	UC
7	Report from project group	1995	UC
8	Health Promoting School curriculum outlines	1994, 95, 96, 97, 99, 03, 04	UC and A
9	Unit plans / activity plans	1994, 95, 96, 97	UC
10	Week plans	1995, 96, 05	UC and A
11	External funding, health promotion	1996	UC
12	Annual evaluation outlines, parents	1997, 1998	UC
13	Structured notes from the final HPS meeting	2003	UC
14	Application for enrolment in the PA & Healthy Meals project	2003	A
15	Information to parents related to PA	2003, 2004	A
16	Aims, values and policy	2004, 2006	A
17	Letter to disctrict educational office	2005	A
18	Video made by students of school's PA practice	2004	A
19	E - mail responses from principal & school coordinator	2006	A
20	National school data bases	2006	A
21	List of model schools in the PA&HM project	2006	A
22	Schools' web sites	2006, 2008	A
23	Developmental plan 2007-2008, school I	2008	A
24	Strategic plan 2008-2011, school II	2008	A
25	Vision statement, school II	2008	A
26	Developmental plan, 2006-2008, school III	2008	A
27	Vision statement, school IV	2008	A
28	Curriculum plan, 2007-2008, school V	2008	A

7.4 Data analysis

7.4.1 Survey data

Descriptive analyses were performed on the study variables. The Independent Sample T test was used to detect gender differences in the study variables. The strength of the relationship between baseline measures and follow up measures were calculated by Spearman's Rank Order Correlation. The Chi-square was used to indicate the relationship between teachers' attitude at baseline with attitude at follow up. Stepwise regression analyses were performed to test the association between the independent and dependent variables. All analyses were conducted using SPSS v12.00.

7.4.2 Focus group data and interview data

The analyses of the qualitative data were an iterative process that involved going back and forth between the data, the manuscript writing, and discussions among the coauthors. It was guided by the preliminary conceptual frameworks drawn from a review of the literature and the research questions that informed the studies (Hatch, 2002; Miles & Huberman, 1994). Kvale (1996) suggests that preliminary analyses start during the interview session, and this was followed by the reading of the interview transcripts to get a first impression of the data. Then, information associated with the main topics in the interview guides were highlighted and labeled with codes. "Start lists" of codes (for example "positive attitude", "negative attitude", "positive outcome expectations", "formalization", "support – leader") had been developed prior to coding based on the conceptual frameworks and research questions (Miles & Huberman, 1994). Although, new codes also arouse from the text as the analyses progressed (for example "systematic use of evaluation", "staff selection"). Next, similar codes were grouped into categories (for example "positive attitude" and "positive outcome expectations" were grouped into "motivation", while "formalization" and "staff selection" were grouped into "managing health promotion practice"). At the second stage of the analysis, the categorized text was searched for patterns and relationships, and the identified relationships were drawn in network displays. In both papers, two main themes were extracted from the categorized text that seemed to relate to the sustainability of PA promotion and the HPS approach. The themes were labeled "teacher characteristics", "school characteristics", "the HPS experience" and "the maintenance and development of practice". Data excerpts were selected to illustrate and explain the findings. The final step involved going back to the literature to compare and contrast the findings with previous findings (Creswell, 2003). In paper 3, the qualitative data analysis software package QSR N7 (http://www.qsrinternational.com) was used to analyze the data.

7.4.3 School documents

The analysis of documents does not advocate any particular method. The overall intention was to draw on the large body of existing documentation to add a third dimension to the interview data and the survey data.

The documents were processed systematically, and indexed according to who used them and how they were used, as recommended by Hatch (2002). All the documents were read through to examine whether health promotion had been written into policies and curricular plans and to search for documents that verified, expanded or contradicted the other qualitative findings. For example in paper 2, the annual HPS curriculum plans were compared to examine possible developments in the case's PA practice. The HPS newspapers (1994–1998) and internal school news provided insights into the activities and events implemented and to what extent these followed the curriculum outlines and activity plans. Internal evaluation check lists added strength to the focus group finding on the use of working strategies, and a school-made video recording of the school's PA practice complemented findings related to PA promotion as institutionalized in school. In paper 3, the documents were used to confirm and extend the perceptions of sustainability expressed by the principals.

7.4.4 Integration of data sources

A study that applies multiple data sources must at some point mix or integrate its findings; this can be done during data collection, data analysis, interpretation, or in a combination of places (Creswell, 2003; Johnson, 2004). Only the second paper integrates numeric and narrative data to answer the research questions at hand. Here, the integration involved to connect findings from one phase to a second phase, and "a sequential exploratory strategy" (Creswell, 2003) seems to best describe the process of integration even if the survey data were collected before the qualitative phase. The first phase started with the preliminary

analysis of the documents and survey data at the student level to examine whether the school continued its involvement in PA promotion 10 years after the HPS commenced. The preliminary findings showed that PA promotion was still visible in the school's vision and plans, and that the students were physically active. It was therefore followed by a second phase of collecting and analyzing the focus group data. The third phase involved connecting the themes and categories that emerged through the focus group session with the existing survey at the teacher level and with further analysis of the documents. The use of survey data did not add new dimensions to the findings but strengthened them. For example, the focus group teachers' reports of their colleagues' motivation for PA promotion were also significant factors in the survey data. Likewise, the focus group teachers described school characteristics as influential of the implementation and sustainability of PA promotion, and these categories were mirrored in the survey data. Taken together, the different data sets provided greater comprehensiveness of the findings through the provision of data reflecting both the process and the outcome of PA promotion.

Compare and contrast

Cross case analysis in qualitative data analysis aims to see processes and outcomes across many cases to develop more sophisticated descriptions and more powerful explanations (Miles & Huberman, 1994). It enhances the researchers understanding of the relevance and applicability of findings beyond a specific case. In paper 2, the case study school was compared with other Norwegian schools in governmental databases to examine if the case was typical or a typical in respect to financial resources (http://www.skoleporten.no;http://www.ssb.no). Moreover, the students were compared with a national representative sample and the staff with sample 1. In paper 3, the interview data were compared and contrasted between the schools and the documents. Hence, the integrative

analysis of comparing and contrasting data from multiple sources and levels helped to improve the confidence of the findings.

7.5 General verification of the study – validity and reliability

While a reliable measure is one where the researcher contains the same result on repeated measures, a valid measure is one which measures what it purports to measure (Kvale, 1996). Huberman and Miles (1994, p. 278) suggest that the issue of reliability and validity relates to if "things have been done with reasonable care?" and if "the findings of the study make sense?" Kvale (1996) suggests that validity refers to the process of checking, questioning, and theorizing, and about choosing between competing explanations.

Greene *et al.* (2007) suggest that a mixing of methods can enhance the credibility of an evaluation study because when multiple data sources are used to measure the same phenomenon, the various threats to validity inherent in each method may be ruled out. In the current research, multiple data sources were used to explore staff's motivation for a health-promoting practice. A congruency of findings across methods and over time seemed to enhance the validity and credibility of inferences (Creswell, 2003; Fischer, 2006). Likewise several findings connect with the research literature on implementation and sustainability of reform and change in school, and this indicates that what Fisher (2006) refers to as "touch point validity" occurred.

An aspect of reliability in the evaluation of the Norwegian HPS relates to the university center's mutual role as both the coordinating center and as responsible for the evaluation. Because the teachers and principals were familiar with the university center they may have been inclined to portray their school's operations in a positive way. Moreover, the knowledge and experience generated at the university center through coordination of the network may have influenced the researcher's preconceptions of the schools. In paper 2 and 3, the analyses of data may have been, as Malterud suggests (2001), contaminated by the

existing knowledge. However, to reduce the risk of contamination, a third co-author with no connection to the network helped with the analyses.

Generalization

Qualitative research is often criticized for not being relevant beyond the case because there is no representativeness in sample. Therefore, qualitative researchers often appeal to the general relevance of the phenomenon or case being studied in order to establish its value (Miles & Huberman, 1994). In paper 2, for example, the aim was not generalization but rather an in depth analysis of one particular school which seemed to represent what Schofield (2004) describes as "what could be" in school health promotion. Donmoyer (2004) proposes that in the field of education, practitioners, who are concerned with individuals and questions about meaning and perspectives, need an alternative way of conceptualizing generalization. Lincon and Guba (2004) advocate the concept of "transferability", and Simons *et al.* (2003) recommend the term "situated generalization". Here, the researcher applies a "thick" description or a base of information to allow the reader to determine whether context-bound evidence may be transformed into evidence that intelligently informs action in other contexts Correspondingly, Rowling and Jeffrey (2006) suggest that the presentation of evidence from HPS ought to be closely connected to the situation in which it arouse to allow the reader to interpret and reinterpret what the evidence means to other school contexts.

Nevo (2006) suggests that "good schools" are usually more involved in innovative projects initiated by the school itself or by various organizations outside the school. It is important to pinpoint that the HPS approach was implemented in schools that applied for membership in the ENHPS either because of a special interest in health promotion or because they were particularly innovative. Moore *et al* (2003) suggest that such characteristics may be potentially important in facilitating the success of an intervention in the educational setting. The teachers and principals studied here may therefore have been more positive to the HPS

approach and more likely to sustain health promotion practices than educational staff in schools that did not apply for membership. As indicated by the response rates in the surveys, it is also likely that staff eligible for a longitudinal study was among the most positive within the schools. Therefore, the findings do not necessarily represent Norwegian teachers' motivation and participation in health promotion practice in general and should be interpreted with caution.

7.6 Ethical considerations

The collection of data for the evaluation of the HPS network was approved by The Norwegian Data Inspectorate. Before the study commenced, written consent was obtained by the students and their parents and informed consent by the educational staff.

When admitted to the network, the schools agreed to function as resource schools in their local area encouraging diffusion of the HPS approach beyond the network. Whereas the schools have been depicted anonymously in this thesis, other publications and web sites provide specific information of each school. Thus, it may be possible for people who are familiar to the network to identify in particular the case-study school. The staff was informed of the possibility of being recognized, but still, they expressed active consent to participate. Nevertheless, the chance of harming the staff involved seemed reduced through an ongoing dialogue between the school leaders and the researcher. The manuscript was for example taken back to the school inspector to determine how she felt about the accuracy of the findings. Moreover, because the picture portrayed of the case-study school probably would be looked upon as positive, the risk of causing harm appeared to be low.

Miles and Huberman (1994) indicate that it is essential to bear in mind what each party to a study will gain from having taken part. The case study aimed to include more than three members of staff in the focus group. Here, however, it was important to respect the principal's decision to not take too many teachers away from their teaching obligations.

Especially because the school's reward from taking part, as suggested by Miles and Huberman (1994), seemed intangible and also delayed in light of educational staff's preoccupation with action and life at present. Further, the question of benefits and costs can also be raised with regard to the HPS surveys, given that the response rate indicates that not all staff members perceived that it was worthwhile to respond to the questionnaire at follow-up. Because of its demand on research subjects, Moore *et al.* (2003) in fact argue that it is moral dubious to conduct a RCT in school until there is reason to believe that the intervention will be effective. In retrospect, it can be argued that the questionnaires should have been shorter and more focused on the essence of the HPS experience to reduce the burden on the staff. Overall though, it seems likely that the teachers and the principals experienced a balance between the costs of evaluation and the benefits of membership in the ENHPS. Because even if the teachers and the principals invested energy on the evaluation, the rewards received through the school-university collaboration probably neutralized the demands put on staff in the course of evaluation.

8. Results

8.1 Paper 1

Educational staff's motivation (in terms of attitudes, intentions and outcome expectations) and participation in health promotion practices were studied using the network sample from 1994 and 1997.

A majority of the teachers reported positive attitudes towards the HPS approach at baseline and at three-year follow-up; only five teachers reported that they were negative at baseline and three at follow-up. The majority of teachers further expected that the HPS approach would positively influence different aspects of school life. At follow-up, a high proportion of the teachers reported that the HPS approach had positive effects on several areas, for example curriculum development, school environment and relationships within school. The correlation between the sum score measuring expectations at baseline and the sum score measuring perceived outcomes at follow-up was moderately high (Spearman's rho=0.47, $p < .001$). The teachers also reported high intentions towards participating in health promotion practices at baseline, with 97% responding that they intended to work with improving students' social environment. At three-year follow-up, the correlation between the sum score measuring intentions at baseline and the sum score measuring involvement in health promotion practices at follow-up was quite high (Spearman's rho=0.49, $p < .001$).

The findings suggest that the teachers' initial motivation towards participation in the HPS in terms of intentions and expected outcomes at baseline were associated with subsequent participation in and perceived outcomes of a health promoting practice at follow up. In stepwise multiple regression analysis, expectations and attitude at baseline significantly predicted 21% of the variance in teachers' participation in various health promotion practices. When intentions at baseline were introduced into the analysis, 31% of the variance was

explained, and intentions comprised the only significant predictor. Teachers' expectations at baseline explained 31% of the variance in perceived outcomes of a health- promoting practice at follow-up. The proportion of explained variance was increased to 52 % when teacher participation at follow-up was introduced into the analysis.

The findings indicate that teachers are inclined to participate in school health promotion if they believe that such practices will result in positive outcomes for example in terms of better relations with others in their work environment or in an improved social environment. The teachers' previous experiences with activities relevant for the HPS also seem to enhance participation.

8.2 Paper 2

Paper 2 is a case study of one elementary school in the network that selected PA promotion as a prioritized area while enrolled in the ENHPS. The primary purpose was to examine if PA had been sustained as a prioritized area during the decade following the commencement of the HPS, and to illuminate what critical conditions in the school setting were associated with sustained PA practice.

More than 10 years after PA was noted as a priority area, survey data, school documents and focus group data showed that PA promotion was formalized in curriculum outlines and sustained as an essential component of the HPS approach. The teachers referred to PA promotion as "a taken for granted" feature in school in need of no further discussion related to appropriateness or teacher loyalty. Survey data revealed that the students' PA level in school both as reported by the school inspector and by students' self-reports was higher than that instructed by national plans.

The findings revealed that a motivated teacher group comprised the core of a sustained PA practice, and several factors were identified that seemed to predispose, enable, and reinforce teacher motivation. These factors were grouped into two themes: teacher

characteristics and school characteristics. The first theme comprised individual predisposing and reinforcing factors such as positive attitudes and beliefs, innovativeness, PA skills, and internalization of a health-promoting practice. The focus group participants described the entire staff as positive to PA promotion both during enrolment in the HPS network and 10 years later. They also described positive effects of their PA practice for example in terms of heightened concentration and improved learning among the students. The focus group teachers talked with enthusiasm about discovering new things and constantly improving PA promotion. In addition, they were knowledgeable of developments in PE, and they were creative and willing to apply new methods.

The second main theme comprised enabling and reinforcing factors such as leadership, teacher climate, and working strategies. The teachers perceived that the administration supported the implementation and sustainability of PA promotion. Documents revealed that the school inspector maintained interest in the HPS and worked actively with health promotion during the entire decade. She expressed an awareness about how she managed the HPS, and she noted the importance of including all teachers in PA promotion and in external seminars in health promotion. The school inspector further pointed to both the former and the current principal's commitment to health promotion practices. Moreover, the teacher climate seemed to be characterized by respect, openness in communication, and collaboration. Staff commented that teacher collaboration was paramount because they shared ideas and methods, responsibilities and challenges, and as such motivated and enabled each other to move forward. Equally, the formalization of PA in policies and curriculum seemed to be an essential strategy for sustaining PA as a prioritized area. By writing PA into the plans and curriculum, the case school seemed less dependent on teachers with certain qualifications and interests. Likewise, systematic use of self-evaluation seemed to be a key strategy.

Data from the baseline and follow-up surveys complemented the qualitative findings related to the conditions that predisposed, enabled and reinforced teacher involvement in PA promotion. The survey data revealed that staff was motivated for health promotion in terms of their attitudes, personal commitment, intentions, expectations, and perceived outcomes. All but one teacher intended to participate much in PA promotion at baseline, and at follow-up, all reported having participated in either "very much" or "much" of the activities. Especially the school inspector was important in terms of motivating the teachers to participate in a health-promoting practice. Likewise, the link between health, well-being and learning as described by the HPS approach encouraged involvement. Factors associated with sustainability involved formalizing a health-promoting practice in the plans and curriculum and health promotion as a prioritized area in school. But also teacher collaboration and time for planning and management were reported as factors that sustained the sustainability of a health-promoting practice.

The interplay between teacher characteristics and school characteristics seem to have created the premises for a motivated teacher group that approached external programs and reforms with enthusiasm and creativity. Taken together, these factors seem to have contributed to a sustained PA promotion practice at the case school.

8.3 Paper 3

This study examined the sustainability of a health-promoting practice in seven network schools. Seven principals were interviewed in 2008, and documents in terms of vision statements and developmental plans were collected. After 14 years, six of the seven principals responded that health promotion practices were sustained and further developed. Some aspects of the HPS approach seemed to be formalized in plans and noted as priority areas, while other aspects were neither priority areas nor formalized in curriculum plans because they seemed to have been built into ongoing use and organizational structures. Two themes

emerged as vital to the sustainability of health promotion: the HPS experience and the maintenance and development of practice.

All principals, except one, referred to the HPS experience as central to their current health promotion practices. The HPS experience seemed to consist of the health promotion practices internalized by the staff and the transfer of experience to new teachers. The HPS experience had according to the principals contributed to making the staff more aware of the link between health promotion practices, students' school satisfaction, and learning. Further, the HPS experience seemed to have increased their awareness of how physical activity promotion, healthy foods, restriction of bullying, and cultural activities were part of an overall focus on school satisfaction. And students' school satisfaction was perceived as a basis for academic achievement.

The transfer of experience seems to have been vital in sustaining the experience in health promotion because there had been repeated turnovers of staff. The experience in health promotion was, according to the principals, transferred informally among the staff from teachers with experience in health promotion to newcomers or through more formal strategies insofar as new teachers were introduced to the school's pedagogical platform and health promotion practices on student-free days at the beginning of each new semester.

There had been a change of principal in all but one school since the establishment of the network. Yet, both the internally and externally recruited new principals seemed to value their schools' experience in health promotion. In only one school, the analysis indicates that there had been no transfer of experience in health promotion from the former principal to the current principal.

The maintenance of vision and practice was the second theme that emerged as vital to the sustenance of health promotion. Here, the principals demonstrated commitment to the

HPS approach, applied leadership strategies that encouraged health promotion practices, and designed collaborative practices for health promotion. All principals signaled commitment to health promotion practices, and they expressed that they maintained such practices because they recognized the positive outcomes of health promotion. Moreover, their leadership seemed to be vital in the sustenance of health promotion. All schools, except one, had for example regular pedagogical discussions among the staff and evaluations of the health promotion practices that encouraged constant development of practice. Likewise, the formalization of the experience in the curriculum and plans facilitated future health promotion practices and stimulated the transfer of experiences by making them less vulnerable to turnovers in staff. The principals further commented that teacher competence and motivation was a criterion for the success of sustained practices. Therefore, it was important that they understood and developed teacher initiatives in health promotion, and they also provided training for teachers to empower them to take on responsibilities in health promotion. The strategies that they used to build collaborative teachers groups for health promotion included using the principal's right to make the final decision, highlight good practices by setting an example and "co-worker conversations".

Networking and collaboration also seemed to contribute to the maintenance and further development of health promotion practices. Some schools participated in regional networks to promote PA and healthy meals. Others collaborated with external partners in the community including for example community sport teams or health promotion coordinators in the county. Likewise, international collaboration with other European HPS seemed to encourage sustained health promotion practices.

9. Discussion

The current research reflects staff's motivation for, participation in and perceived outcomes of health promotion practices at several time points. First, in 1994, the majority of the teachers reported positive attitudes towards the HPS as well as high expectations for the approach. Secondly, in 1997, the majority of teachers and principals reported that they (although to varying degrees) had taken part in health promotion practices involving for example the promotion of health behaviors, development of teaching plans in health promotion, and work to improve the physical indoor and outdoor environment and the social environment. They also perceived that the HPS approach had a positive effect on several areas, for example the students' social environment and the school's cross-curricular teaching plans in health promotion. Third, in 2005, the focus group informants reported that all the teachers were involved in PA promotion, and the analysis also showed that the upper grade students participated in more PA in school each week than the amount allocated for PE in the national curriculum plan. Staff moreover expressed that they believed that PA promotion increased students' capacity to learn. Finally, in 2008, six principals reported that health promotion practices had been integrated into the fabric of the schools. The principals' perceptions were supported by school documents suggesting that the schools had visions, policies, or priority areas in place in line with the health promotion aims that had been formulated in 1994.

The findings highlight key elements at the individual and school level that seemed to influence the development of HPS. The teachers reported high initial motivation towards involvement in health promotion. At three-year follow-up, their initial motivation at baseline significantly predicted participation in and perceived outcomes of health promotion practices. The findings further indicate that the teachers' previous experiences, interests and skills in health promotion contributed to involvement in health promotion practices.

Yet, teacher motivation and competence alone did not ensure the development of a health-promoting practice. The HPS experience involving collaboration with the university center and the other schools in the network seemed central to the integration of health promotion into the teachers' practices. The findings further indicate that a set of conditions related to the school organization and to leadership practices also mattered to the sustenance of health promotion practices in the network schools.

In the introductory chapter, Figure 1 illustrates how PRECEDE in the PP-model informed the theoretical framework upon which this research was built. Here, the PP-model has been redrawn to indicate how the second part of the model, PROCEED, applies to the evaluation of the network. While PRECEDE assures that a given program will be *appropriate* to the recipients' needs and circumstances, PROCEED assures that a program is *available, accessible, acceptable* and *accountable*; and moreover, whereas the systematic search for determinants and causes work from right to left in PRECEDE following the causal chain implied by the model, the move is from left to right in PROCEED applying the same logic and causal chain (Green & Kreuter, 2005).

The application of the PROCEED to evaluations of HPS draws attention to the following issues: a) how was the HPS approach received by the stakeholders? b) where resources, in terms of factors predisposing, enabling and reinforcing teachers to participate, available? c) did the HPS approach change teachers' behaviors, d) did the HPS approach change aspects of the school environment? and finally e) did the HPS approach change health, well-being and learning at the student level? The following discussion pays attention to the aforesaid questions and the components in Figure 3.

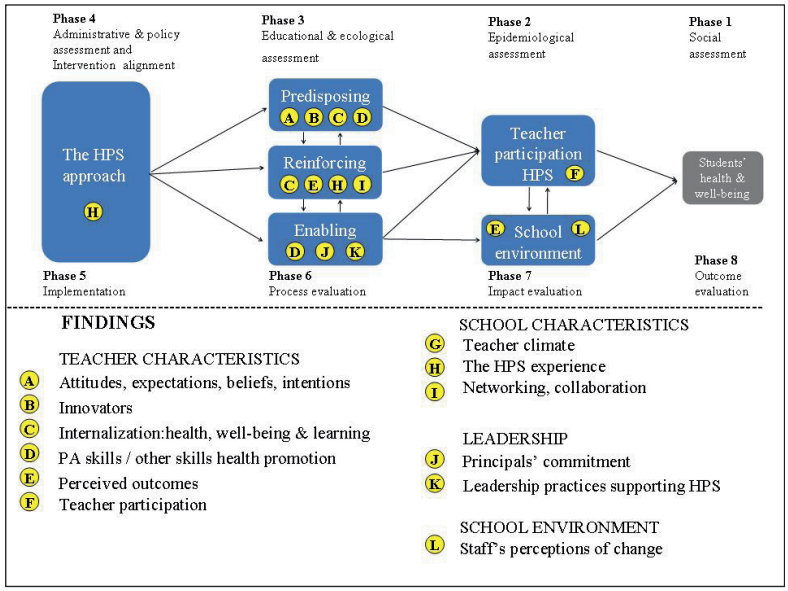

Figure 3. The PP-model: the PROCEED framework. The yellow letters relate to the findings in the three papers.

9.1 The health promoting school experience

The first step in PROCEED aims to provide a descriptive picture of the quality of the program elements and of the stakeholders' reactions to the program; it observes what is taking place as the program proceeds (Green & Kreuter, 2005). The reported outcome expectations at baseline and the description of the HPS experience at 14-year follow-up shed light on how the approach was received by staff.

The HPS experience emerged within a network of 10 schools. Two representatives from each school met annually for seminars from 1994 to 1998 and in 2003. Here, opportunities were provided for principals and teachers to learn from one another and coach colleagues across schools. To learn from developments abroad and to establish contacts, the school coordinators were also invited to participate in one international conference or meeting within the ENHPS. While networking was placed as a category within "maintenance and

development of practice" in paper 3, it probably also played a vital role within the HPS experience.

Hargreaves and Fink (2008) note that professional learning networks may increase collaboration across schools and generate excitement about teaching and learning for the teachers involved because teachers seem to learn best by sharing ideas and through collaborative planning. While Turunen *et al.* (1999) indicate that networking ought to be further promoted in HPS in Finland, the seminars and conferences in the Norwegian network seemed to have generated excitement among staff for health promotion. In particular the principals probably capitalized on and felt rewarded by problem-solving and fruitful discussions with colleagues in other schools. On the other hand, collaboration across schools may also have generated some pressure on staff to sustain the HPS approach due to obligations beyond the immediate school community.

The HPS network in Norway also involved an international dimension as well as collaboration with the national resource center. Given that Fullan (2007) argue that "the quality and practicality of a program" influence teachers' motivation to implement change, it seems possible that the teachers and principals felt somewhat privileged because they were involved in an international network coordinated by a university center in health promotion. This seems to be in line with Moore *et al.*'s (2003) findings that teachers, who participated in a school-based sex education intervention, were particularly positive towards being trained by a knowledgeable general practitioner. Hence, staff in the Norwegian HPS may have felt that they were in on something significant, which in part, may explain their positive reactions to the HPS approach.

The HPS experience emerged as a significant reinforcement of health promotion practices. The teachers' and principals' responses indicate that staff during the network period internalized that health promotion was compatible with and in fact benefited the educational

mission of maximized learning. Comments reflect that staff believed that the positive outcomes of health promotion contributed to improved school satisfaction and learning among their students. In some schools, staff seemed to believe that if they wanted to do a good job, they simply could not refuse to continue their involvement in health promotion.

9.2 Teacher motivation for the HPS approach – predisposing factors

The second step in PROCEED is an assessment of the immediate effect the program has on the behavior and its antecedents, as well as on influential environmental factors (Green & Kreuter, 2005) As illustrated in Figure 3, this research identified several determinants that seemed to predispose, reinforce and enable teacher participation in health promotion practice. Following the outline of the model, the predisposing factors in terms of teachers' motivation to participate in health promotion is addressed first.

Several scholars have suggested that the potential effectiveness of the HPS approach lies at the heart of teachers and principals who have positive attitudes to school health promotion, and who demonstrate commitment to translate the principles of the HPS approach into practice (Deschesnes et al., 2003; St Leger, 1998, 2000). At the same time, educational staff often feels overwhelmed by reform initiatives and redefinitions of teacher role expectations (Ballet & Kelchtermans, 2008; Parcel, Kelder, & Basen-Engquist, 2000). Inchley *et al.* (2007) therefore indicate that educational staff may be inclined to view the HPS as yet another "add-on" initiative, and as a consequence, it seems important to consider how it is possible to motivate busy and often over worked teachers for school health promotion.

The initial attitudes of the teachers in the Norwegian network were however positive. One explanation to this may be the combination between careful guiding by the university center in restructuring the schools into health promoting settings, and the freedom given to each school in choosing individual aims and strategies. Because staff was not introduced to

prescribed solutions, they probably did not feel that they were reduced to execute others' decisions, and this may have generated enthusiasm in staff for a health-promoting practice.

Another explanation, and perhaps the most important one, may relate to the introduction of a holistic health concept to the schools, pinpointing a possible link between students' well-being, health and learning. Fullan (2007) suggests that teachers' perceptions of "needs" are vital for successful implementation of change, and because health is an instrumental rather than an ultimate value in school (Green & Kreuter, 2005), such an introductory phase may have prevented a conflict between the goals of education and health promotion. Staff's high intentions to get involved in the HPS at baseline may indicate that they perceived a need for health promotion practices, and further that they identified a match between their professional aims related to teaching and learning and the HPS approach.

Responses in paper 2 and 3 further indicate that qualities of leadership also may have built teachers' motivation to engage in health promotion. To integrate the HPS into the ongoing life of the school may involve a "re-culturing" in staff because principals and teachers may need to question and change their beliefs and habits (Fullan, 2007; Inchley et al., 2007). Principals or distributed leaders in the Norwegian HPS who allowed for such a process to take place in the teacher group, and who clearly and positive in tone communicated visions reflecting where they wanted to go in health promotion responsive to their contexts, seemed to succeed in sharing their commitment with staff and to build motivation for the approach. For example, the leaders in the case study school emphasized direction-setting leadership because they aimed to identify important goals for the school as an organization, and also to encourage the individual teachers to include the goals of the organization among their own. Here, the school leaders guided staff in adopting the HPS as an overall strategy for the school's operations building on their existing practice. The school inspector underscored that such a method of introduction built teachers' motivation and prevented feelings of rejection

because it did not come into conflict with their current operations and did not add too many new tasks to teachers' schedules. Also Rosas *et al* (2009) indicate that when health promotion efforts are integrated into ongoing school improvement processes duplication of efforts are avoided and the likelihood of sustainability increased.

Last, the teachers may also have been motivated to engage in health promotion practices because of the general school context at the commencement of the HPS. By tradition, schools in Norway have exerted little pressure on accountability (Møller et al., 2005), and in the beginning of the 1990s, schools highlighted the importance of the social learning environment in order to obtain academic as well as social goals (Imsen, 2006). Also at present, the Norwegian Education Act states that schools are expected to build psychological and physical healthy environments that promote health and learning (The Ministry of Education and Research, 2003). However, simultaneously, the educational system is challenged by accountability measures in the form of tested achievements and school results (Hoaas, 2008, 2009; Møller et al., 2005). In the current climate, it can be questioned if educators are convinced that scarce resources should be allocated to improving students' health. Although, a most recent governmental proposition put forward after the data collection in paper 3, allows reason for optimism. Proposition No. 55 (2008-2009) aims to extend the school week with two class periods of PA promotion in order to enhance students' capacity to learn (The Ministry of Education and Research, 2009). Hence, it seems to signal commitment and awareness in the Norwegian government of the important relationship between health and academics.

9.3 Reinforcing teacher participation in HPS

While the assessment of predisposing factors indicated that the majority of teachers were motivated for participation in health promotion practices, an assessment of the rewards perceived by the teachers following participation is also important because it indicates

whether or not the teachers will act again on health promotion. Figure 3 indicates how perceptions of positive outcomes, the HPS experience and teachers' internalization of a link between health promotion and academic performance reinforced health promotion practices. Likewise, collaborations with external partners in the community seemed to reinforce health promotion. This issue is however discussed in Section 9.6.

Data from three time points indicate that staff perceived several positive outcomes of their involvement in health promotion practices. First, at three-year follow-up, staff perceived that the HPS approach enhanced the social environment and improved relations within school and between school and the outside community. Secondly, more than a decade later, the teachers in the case school expressed that watching students enjoy and excel in PA reinforced them to hold on to PA promotion. And eventually, at 14-year follow-up, the principals uttered that for example students' enjoyment around a healthy meal or positive feedback following a sport tournament encouraged them to maintain health promotion practices.

Day *et al.* (2007) propose that effective teachers are central to sustain reform and renewal in school, and further that for teachers to be effective, they must feel that their professional work is bringing about positive change in their students. Taken together, the three papers indicate that staff perceived that they were effective in making progress towards meeting the needs of the school through the health-promoting practices that had been established. Given the importance placed in the PP-model on positive reinforcement as central to maintain behavior, the teachers' positive experiences seemed to play a key role in sustaining the HPS approach.

9.4 School and leadership characteristics enabling teacher participation in HPS

However positive the teachers were, not all the teachers who intended to get involved in various health promotion practices did so. A discrepancy between intention and behavior is not uncommon in behavioral research (Bennett & Murphy, 1998), and as suggested by the PP-

model, the motivation to act needs in most cases to be followed by the deployment of resources (Green & Kreuter, 2005). PROCEED involves an assessment of resources in terms of time, personnel, and materials required by the program (Green & Kreuter, 2005). Attending to how such resources inherent in school juxtapose with administrative, organizational and policy factors, and as such facilitate or hinder teachers to pursue what they in fact intend to and want to do in health promotion, is therefore important. In Figure 3, the principals' commitment, leadership practices and also teachers' skills in health promotion play a significant part in enabling or discouraging teacher participation in health promotion.

In paper 2 and 3, all principals, even those who had not been employed during the network period, signaled their commitment to a health-promoting practice. The principals seemed to believe that their students' capacity to learn was linked to their health and well-being, and some commented that because of their student population, they had no choice but to embrace health promotion practices in order to be effective in school. Thus, despite the current climate of annual public assessment, evaluation and monitoring, they seemed sincere in their intentions to sustain health promotion as part of the daily fabric of the schools.

Several leadership practices seemed to facilitate teachers' participation in health promotion. To some degree, the identified practices correspond with the major categories of successful head teacher leadership practices identified by Leithwood and Day (2007). One practice of great importance seemed to be the principals' assignment of leader responsibilities in health promotion to specific teachers who then collaborated with the administration and teachers in developing and implementing health promotion practices. The principals did for example enable the teachers to take the lead in health promotion through a reduction in teaching obligations, or through capacity building. Also Inchley *et al.* (2007) recommend that responsibilities in health promotion are distributed beyond the principal because an intervention is only truly institutionalized when it is independent of key staff. One of the

network schools illustrates her point. Here, the principal reported in 2008 that health promotion practices had not been integrated into the ongoing life of the school. Whilst the retired principal had played a key role in the HPS, he had not created opportunities for others to take on responsibilities in health promotion. Given that he, according to the current principal, had not planned for his succession, there seemed to have been no transfer of experience in health promotion when he retired.

Another practice that seemed to play a key role in enabling the teachers to act on their motivation for health promotion was the building of a collaborative teacher group and a positive teacher climate. This practice seemed to match the broad category labeled *Designing the organization* which refers to the creation of structures and organizational infrastructure that allow staff to make the most of their motivations and capacities (Leithwood & Day, 2007). Ballet and Kelchtermans (2008) suggest that a positive norm embedded in the organizational culture support schools in dealing with external pressure to change, and Rowling and Jeffreys (2006) propose that a positive school climate involves teachers in decision making, creates ownership in staff of improvements, monitors progress as well as student involvement and democracy. In the case study school, the leaders seemed to have been successful in fostering a positive climate and a collaborative teacher group that embraced the HPS approach. Here, staff expressed a collective norm of willingness to innovate and improve, and there seemed to be a dynamic and healthy balance between the characteristics of individual teachers and the school as an organization. The teachers seemed to be motivated to accomplish goals that were personally important to them for example in PA promotion because they seemed to find themselves in a teacher group that was conducive to accomplishing health promotion goals.

In order to create collaborative teacher groups in health promotion, the principals applied various strategies. One principal for example looked for teachers with competence in

health promotion who matched the school's vision and practice when employing new staff, another principal used her annual "coworker conversations" as a place to deal with a lack of follow-up related to health promotion practices, and almost all referred to the value of listening to staff, trust in teachers' work and give them a voice in the development of health promotion practices. The principals believed that ownership to health promotion practices was created and rooted in staff when the teachers felt competent in participating in such behaviors. Therefore, they argued that it was vital to highlight priority areas and responsibilities in health promotion in accordance with the teachers' skills and interests.

St Leger *et al.* (2004; 2007) seem to mirror the principals reasoning stating that it is not easy for teachers to embrace school wide actions and community partnerships within the HPS, if they have not received training to implement actions and collaborations extending beyond the classroom where they usually practice. During the network period, the university center provided the schools with relevant educational material and literature about health promotion work among children and youth, however, the responsibility for training of teachers was left to each school. Thus, the extent to which teachers participated in professional development in health promotion varied. For example, in the case study school the principal groomed a new teacher to take the lead in PA promotion because the head teacher in this field was about to retire. She also offered intellectual stimulation to the entire teacher group through interaction with and counseling by colleagues in health promotion. Accordingly, she, but also other principals in the network, seemed to practice what Leithwood and Day (2007) describe as *Understanding and Developing people*. This leadership practice aims at building teachers' knowledge and skills as well as their dispositions to keep applying that knowledge and skills in challenging circumstances.

Another significant aspect of leadership was the development of policies supporting the HPS approach as well as a systematic documentation of experience in writing (also

discussed in section 9.6). Where policies and curricular plans were developed supporting the HPS, health promotion practices seemed more likely to be integrated into the ongoing life of the teachers. This seems to be associated with what Leithwood and Day (2007) refer to as *Managing the teaching and learning program* which also describes how a leader translates guiding ideas into practice by establishing plans and schedules to achieve specific results. Similarly, how the principals monitored health promotion practices seemed to encourage sustainability. The university center introduced the schools to evaluation as recommended by the PP model, and several principals commented that they used self-evaluation as a tool to improve in health promotion. As one principal stated "we ask: why were they successful *(in health promotion)*? Well, it probably went well because they did this and this and this…" Also other scholars indicate that self-evaluation plays an important role in school health promotion (Turunen et al., 2006), and Deschesness *et al* (2003) argue that when teachers reflect on what works and how things work in health promotion this may lead to the identification of achievements that on the next occasion may sustain teachers' interest and motivation. Pedder and MacBeat (2008) propose that organizational learning is facilitated when schools adopt a critical stance to their own practice. In the case study school, critical discussions and an assessment of progress over time seemed to lie at the heart of staff's interaction. Here, the principal and teachers reflected on the needs of their students in conjunction to the national curriculum, their current operations, previous experiences and available resources, and then, instructional strategies were chosen in line with the aforementioned.

9.5 Teacher participation in HPS

A key element in PROCEED concerns if those who have a role in implementing the program in fact do so (Green & Kreuter, 2005), and figure 3 indicates that teacher participation is the linchpin in a HPS. It is therefore relevant to question if the schools'

intended transformation into health-promoting settings contributed to teachers' involvement in health promotion practices. At three year follow-up, the majority of teachers reported being involved in the HPS. For example, 94 % of staff reported having participated in work to improve the social environment, whereas the least involvement was reported for work with cross curricular teaching plans in health promotion with 69 % of staff having been involved. At the same point in time, all the teachers in the case study school participated either "very much" or "much" in PA promotion, and also in 2005, the focus group teachers reported that all were involved. Finally, in 2008, the principals in particular highlighted PA promotion, outdoors activities and healthy eating as aspects of the HPS that had been integrated into the daily operations of staff as part of an overall strategy to enhance the students' school satisfaction.

Hargreaves *et al.* (2001) propose that "professional discretion" influence teachers' effort to incorporate change into their ongoing practice. This implies that teachers are able to adapt a new program into their own way of teaching and invest their personal interest and enjoyment into the program. Another study from the Norwegian network indicates that the way the HPS was implemented seems to have fostered good conditions for professional discretion among the teachers because the teachers' personal interests seemed to match well with the aims of the HPS (Viig, Tjomsland, & Wold, 2009). While the principals highlighted the importance of choosing priority areas in health promotion based on the teachers' existing skills, they also underscored the need for skills development in health promotion. It seems probable that characteristics of the HPS approach in combination with the exercise of leadership within the schools encouraged teacher participation because it allowed the teachers to connect the commitments and skills embedded in their personal lives with their performance in health promotion.

9.6 Environmental changes in the HPS

The next step in PROCEED is an assessment of the relationship between the behavior and its environment; it is this relationship that makes the combination of educational and ecological approaches a significant attribute of health promotion (Green & Kreuter, 2005). In the current research, it is relevant to question if the HPS approach had an effect on the school environment. Figure 3 indicates that the staff perceived positive changes in the school environment. At three-year follow-up, a high proportion of the teachers reported that the HPS approach enhanced the students' social environment and strengthened relationships among students and school staff. Likewise in the case study school and at 14-year follow-up, the informants linked health promotion practices to positive changes in the school environment. For example, some principals reported that increased opportunities for PA outdoors led to student interactions across grades and age groups and therefore to improved social environments. Other principals linked the reduction in racism, bullying, and vandalism to their health-promoting practice.

However, because teachers and principals may be transferred to new settings, there is always, as Hargreaves and Fink (2004) suggest, a tendency for change to fade away even in innovative schools. This study indicates however that the established health promotion practices were sustained and transferred to new comers in six of the seven schools included in Paper 3. Although the HPS experience was passed on from experienced teachers to new teachers, sustainable leadership on behalf of the principal or distributed leader in health promotion seemed to be a key force. Many principals prepared for succession of health promotion practice "not as an afterthought" but on a regular basis. They continued to communicate health promotion visions and develop collective meanings in the staff related to the incentives and rewards of health promotion. As noted by several teachers, health

promotion practices seemed to be “in the walls” and “at the bottom of school” – thus, creating lasting improvements in the school environment.

Sustained health promotion practices were however also related to the formalization of health promotion plans and policies. At three-year follow-up, a high proportion of the teachers reported that the HPS approach had had an effect on the development of a health-promoting curriculum. At 14-year follow-up, the principals suggested that the formalization of experience in curriculum and activity plans contributed to maintain health promotion as a priority area. Some principals indicated that once health promotion practices had been written into the curriculum, the teachers were more committed. Green and Kreuter (2005) note that policy development is about joining forces to support positive change. Hence, the request by the university center for a formalization of health promotion in policies and curricula probably contributed to the schools’ sustained foci on positive school environments.

9.7 External influences on health promotion practices

While the discussion above concentrated on the association between a health-promoting practice and the school environment, also the extent to which the schools collaborated with various groups in the local community as well as influences at the national level seemed to influence the sustainability of health promotion practices. At three -year follow-up, less than half of the staff responded that the HPS had had an effect on their collaboration with partners in the local community. Yet, at 14-year follow-up, the principals commented that partnerships with for example health promotion specialists or with community sport teams encouraged the teachers to continue their focus on health promotion. Other studies also emphasize that intersectoral collaboration is a key to the sustainability of the HPS approach (Inchley et al., 2007; Laurence et al., 2007).

At the national level, a shift in policy or school reform may contribute to the weak record of sustainability of change in school over time (Day et al., 2007; Fullan, 2005;

Hargreaves & Fink, 2004; Yonezawa & Stringfield, 2000). Simons and Kelctermans (2008) argue that due to persisting policy reforms, the new virtue of a teacher is to be able and willing to change to the needs of the external context. In the case study school, the principal and school inspector seemed to possess such qualities. Rather than being distracted by external influences, the leaders had, as suggested by Penligton *et al.* (2008), the ability to look to the future and to ensure that the school's strategic vision either kept pace or pre-empted national policy changes. They responded to new policy recommendations not as impositions but as opportunities for improvement, and then, the teachers layered the new practice into their existing practice. For example, the case study school used its enrolment as one of the experimental schools in The Physical Activity and Healthy Meals project (Samdal et al., 2005) to improve their extended PA practice. It was also one of 200 schools selected to implement the new school reform, Knowledge Promotion, one year earlier than expected (The Ministry of Education and Research, 2006). The staff always, however, claimed the freedom to adjust recommendations so that the new practice met the needs of their students. Other principals did not seem to live and learn as easily with changing circumstances and recommendations. Some felt more pressured to improve test scores in literacy and numeracy as emphasized by the national curriculum plan from 2006. And even if they held on to health promotion practices, they did not seem to be as explorative in finding creative ways to further develop the HPS.

9.8 Improved health, well-being and learning – a realistic outcome for HPS?

Given that the previous steps in PRECEDE - PROCEED has been successfully diagnosed and implemented, change in health or social conditions should be the output end (Green & Kreuter, 2005). In Figure 3, the final outcome is improved health and well-being among the students. While only the case study examines outcomes at the student level, a large proportion of the teachers reported that the HPS had had an effect on the school environment.

Thus, given that Figure 3 indicates that improved school environments support positive outcomes among the students, it is not unlikely that results were attained also at the student level. The principals commented that health promotion practices benefitted their instructional program of teaching and learning because positive school environments maximized students' learning. Such a view corroborates with a growing number of studies suggesting that personalized and caring educational environments is one potential contributor to positive change in terms of higher attendance, school satisfaction and academic performance (Danielsen, Samdal, Hetland, & Wold, 2009; Klem & Connell, 2004; Murray et al., 2007; Rosenfeld, Richman, & Bowen, 2000). Although as Klem and Connell (2004) argue, a positive school environment, in which students feel that adults and friends care about their learning as well as about them as individuals, is a necessary and foundational condition, but not always sufficient to promote academic success. Nevertheless, the current research indicates that the HPS approach holds potential to improve students' well-being and health through positive school environments.

9.9 Limitations

Based on the recent and growing literature with guidelines for evaluations of the HPS approach (Resnicow & Page, 2008; St Leger et al., 2007), several aspects of the evaluation presented here face challenges. For example, Nevo (2006) proposes that the first step in performing evaluation is to develop an understanding of the nature of the program before major data collection is performed. Moore *et al.* (2003) suggest that when experimental designs are applied in the school setting, a smaller qualitative study ought to be performed prior to data collection in order to develop an understanding of the content of the intervention. Without this, he argues, the intervention is treated like a black box. Likewise, Rowling and Jeffreys' (2006) object to evaluation studies of school health promotion that view schools as sites where measurements occur across schools for specific individual health behaviors.

Instead, they propose that evaluations of school health promotion should attend to how health promotion strategies have been adjusted to fit the 'growth' state of each school and therefore do not work equally well in different contexts (Rowling & Jeffreys, 2006). Based on the above reasoning, it can be argued that the qualitative data should have been collected prior to the quantitative data in the current research. A qualitative phase to start with might have ensured a better fit between the questionnaires and the health promotion developments tailored to the needs of each school and the process in staff of embracing the HPS approach. Moreover, if this study had been designed as a mixed methods study in the first place, a larger qualitative sample would have been included. Even if the analyses of school documents in paper 3 add credibility to the interview data, the findings would have been strengthened if also the teachers' and the students' perspectives had been included.

Although most important, is perhaps the issue whether it was ethically right or not to charge one institution with both the coordination and the evaluation of the network. According to Simons (2006, p. 246), evaluation need to be independent without fear or favor; "he who pays the piper", Simons comments, "should not call the tune". Hence, the mutual role of the university center was not ideal, and even though the researcher in charge of this thesis had not taken part in the network, she was probably perceived as a representative from the university center because of her employment there. The informants may for that reason have been tempted to "show off" and perhaps speak less freely about negative aspects of the network. Moreover, the researcher herself may also have been influenced by her colleagues' previous evaluations and experiences, and consequently she may have approached the data collection and analyses with inherent assumptions about the schools' merits. Simons (2006) argues that evaluation is about distinguishing good from bad, and it is possible that the researcher, because she was not on neutral ground, unconsciously paid more attention to the merits of the network than to other less thriving factors (for example the lack of teacher

training in health promotion). Looking at it from the other end, however, one can argue that because the researchers were familiar with the schools and the dynamics within the network, the inferences drawn were more insightful.

Another challenge to the current research is the use of staff's self- report (Leurs, Bessems, Schaalma, & de Vries, 2007). Having been involved in the HPS, the teachers may be biased in over-reporting their involvement and perceived outcomes. They may for example think that students' school satisfaction has improved because of their own involvement in the HPS, or they may have been inclined to focus on the positive outcomes rather than on other more negative outcomes of their work. Green and Kreuter (2005) reason however that students, teachers, and parents ought to be involved in determining what should be regarded as valuable outcomes of school health promotion. And even if there is the chance of bias, the staff's self-reports may produce knowledge of conditions that are central for the success of HPS.

A teacher self- report questionnaire was found not to be a valid measure by Resnicow *et al.* (1998) when he examined the validity of three measures of teachers' recall of the delivery of a school based nutrition program with health outcomes at the student level. Because the interview data in this study appeared superior to self-report questionnaires, Resnicow *et al* (1998) suggest that the presence of an interviewer may encourage teachers to respond carefully and truthfully when being interviewed about their actions. From this perspective, an advantage of this research was the use of several methods. And although completeness with regard to teacher participation probably was not achieved, knowledge about the staff's values concerning school health promotion is in itself an important outcome.

Also the longitudinal and voluntary nature of the surveys represented a challenge in terms of maintaining the staff's interest in responding to the questionnaires. As suggested by the incomplete data set in the quantitative sample, response rate bias is likely because it is

possible that the most positive teachers, those who Rogers (1995) refers to as innovators and early adopters, are overrepresented in this sample. Given that the network in addition consisted of 10 schools that applied for participation due to an interest in health promotion, it is likely that the teachers and principals in the HPS were more positive to school health promotion than staff in other Norwegian schools even before entering the network. Therefore, it must be underscored that the findings here only reflect the motivation and participation of teachers and principals in the HPS that were eligible for a longitudinal study. Also Tossavainen *et al.* (2004; 2004) note that because of small sample sizes in Finnish ENHPS studies, the results may not provide a basis for drawing conclusions that matter across all Finnish schools.

Criticism may also be directed towards the use of only one variable to measure the teachers' attitudes towards the approach. Because of the diversity of HPS developments in the network, the teachers may have understood the concept of a HPS in different ways. It is therefore possible that this variable was not adequately operationalized to detect change between the two points of measurement, and that a multi item measure reflecting the different areas within the HPS might have been a more valid measure. This is in line with Leurs *et al'*s (2007) argument that multiple items should be used to assess teachers' participation and attitudes in school health promotion.

As long as the thesis does not provide objective indicators of the status of health promotion practice at commencement, it may be questioned if the staff's perceptions of change and positive outcomes relates to the HPS experience or other developments in society. Turunen *et al.* (2006) suggest that research in the school setting is challenged by making a distinction between program effects and the effects of other factors in the society. After commencement in 1994, researchers and policy makers have for example expressed concern related to sedentary lifestyle among children and youth, and several national health promotion

initiatives have been launched to address this concern. Paper 2 showed that external influences like the forth mentioned did affect the case study school's priority areas and vision. It therefore seems reasonable to raise the question whether the school's extended PA practice had developed also without such external influences. Research in public health often aims to determine effect through the inclusion of control groups. However, in the school setting, the use of a control group is difficult due to cross-contamination between staff, students and parents in one school to control schools (Laurence et al., 2007). In addition, it can be argued that it is unethical to restrain from health promotion practices in control schools.

Dooris (2006) suggests that evaluation of settings based health promotion interventions may benefit from theory based evaluation, and in particular "theories of change". Other scholars advocate a pragmatic standpoint and the adoption of mixed methods in evaluation research (Greene, Benjamin and Goodyear, 2007; Shaw, Greene and Mark, 2006). These scholars refer to what seems to be the main strengths of this research. First, the application of the PP-model was useful because it helped to identify important areas for data collection and data analyses. Next, the mixed methods design and a pragmatic standpoint made it possible to add a longitudinal perspective to the research which allowed for change to take place and reveal its impact on the schools' operations. Last, whereas the case study reflected the particularities of one context, paper 1 and 3 produced knowledge of teacher characteristics and leadership characteristics across contexts. In combination, the three papers seemed to generate a comprehensive picture of the teachers' and principals' involvement in the Norwegian HPS.

10. Conclusions and implications

The findings indicate that the teachers and principals in the Norwegian HPS were motivated in terms of their attitudes, expectations and intentions at the start of the schools' integration of the HPS approach into the ongoing life of the schools. A high level of

participation and positive outcomes was reported at three-year follow-up. After 10 years, a motivated teacher group also seemed to be at the core of the case study school's sustained PA promotion practice, and after 14 years, health promotion practices seemed to be sustained in six schools. Teachers' motivation seemed to be linked to the interplay between individual teacher characteristics, school characteristics and leadership practices. The HPS experience, describing how staff seemed to internalize the potential link between health promotion practices and learning as well as the transfer of experience as staff turned over, emerged as vital for the sustenance of practice. Although there remains much to learn about the wider dissemination of the approach, this thesis as a whole indicates that the HPS is a promising framework that seems to appeal to teachers and principals.

Five core messages have been extracted from this research. The first is that in order to implement and sustain health promotion practices in the school setting, staff plays a significant part. In the Norwegian network, the teachers and principals seemed to be motivated and committed to build supportive environments and partnerships to create the health and well-being of the students. The second is that staff's participation in health promotion practices seems to be reinforced by their own perceptions of positive outcomes. The third is that for teachers to integrate health promotion practices into the fabric of the school, they need to be supported by their principals. The fourth is that whilst teachers' effectiveness seems to depend on head leadership, staff as a whole and perhaps particularly principals seems to be motivated through collaboration with partners in the community and through national networks. The fifth message is that national policy statements and reforms seem to have an effect on the implementation and sustainability of health promotion practices in school.

10.1 Implications for practice

Several implications may be extracted from the messages above. First, because leadership turned out to be a key force in the network schools, district offices and policy makers ought to motivate principals for school health promotion. Efforts should also be taken to establish sustainable leadership in order to create lasting improvements in health promotion as staff turn over. Secondly, because teachers matter, principals need to build shared visions and employ management strategies that encourage health promotion practice. Third, because the staff was influenced not only by factors within the local schools, but also by the ENHPS network, regional HPS networks may be established to create structures for learning and shared responsibilities across schools. Fourth, teacher education in school health promotion seems useful to sustain staff's commitment. Likewise, and as emphasized by Turunen *et al.* (2006), it may also be productive to pay attention to the association between professional development of the individual teacher and learning within the school organization. Fifth, national policies to facilitate sustainable improvement in school health promotion are advocated.

A final comment relates to what remains at the heart of the HPS approach - students' health, well-being, and learning. It seems prudent to question whether the same logic also applies for staff. Is it possible that improved health and well-being among staff enable them to perform better and as such also generate positive outcomes at the student level? Because then, as St Leger *et al.* (2007) argue, HPS should probably also pay attention to their capacity as health promoting worksites.

10.2 Implications for research

Valuable knowledge seems to be generated from in depth analyses of HPS that represent different challenges and opportunities in health promotion. While this research in particular focused on what teachers do in HPS and how health promotion practices may be

facilitated through leadership within school, also the failures in school health promotion should be explored to seek improvement (Turunen et al., 2004). Given the race towards better achievements in the current school climate, it also seems important to further explore the relationship between health and academic performance (Murray et al., 2007).

Because high schools are more resistant to the influence of school reform than elementary schools (Giles & Hargreaves, 2006), in depth studies at this level are particularly warranted. Future studies may also combine quantitative components in terms of students' behaviors and attainments with qualitative portraits of those who are involved. Whereas the main focus in this research was on the staff, other case studies need to include the students and the parents, and even partners in the community. Moreover, as government recommendations and national policies seem to influence school health promotion, this level warrants attention.

Turunen *et al.* (2006) indicate that the methods used to evaluate the HPS approach should be a critical target of development. Not surprisingly, the current research concludes that theories of change may be attractive to evaluation studies of HPS because such theories direct attention to the causal chain between individual and school factors that matters when schools pursue the HPS approach. Moreover, experiences from the Finnish Network advocate action research in school health promotion (Turunen et al., 2004). Because teachers are used to try new methods and to distinguish good practice from bad practice, the school setting may be particular susceptible for participatory research methods that involve collaboration between researchers and practitioners. Such collaboration may prove useful to promote reflective practice and perhaps also a speedy translation of scientific knowledge into information and advice that can improve schools in a health-promoting direction.

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