Scandinavian Journal of Educational Research

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/csje20

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To cite this article: Petra Nilsson Lindström & Åsa Bringsén (2021): Increased Metacognition About Health and Learning in a Middle School-based Health Promotion Project Using an Action-oriented Research Model, Scandinavian Journal of Educational Research, DOI: 10.1080/00313831.2020.1869074

To link to this article: https://doi.org/10.1080/00313831.2020.1869074

Published online: 14 Jan 2021.

SCANDINAVIAN JOURNAL OF EDUCATIONAL RESEARCH
https://doi.org/10.1080/00313831.2020.1869074

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Increased Metacognition About Health and Learning in a Middle School-based Health Promotion Project Using an Action-oriented Research Model

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ABSTRACT

Health is a resource for pupils' learning. Including health in the curriculum and teaching will enable pupils to understand the connection between health and learning. Action research has proved to be effective from a learning perspective. Our purpose was to explore whether, and how, using action-oriented research methods in a middle school-based health promotion project contributed to metacognition about health and learning. The design was an action-oriented research model using reflection forums: a support group; a project group; and two focus groups of pupils and teachers. The latent content analysis resulted in three categories: (1) *Professional aspects*; (2) *Educational aspects*; and (3) *Structural aspects*, with adherent subcategories. The discussion presents a synthesis of findings about metacognition, with *Structural factors and processes* and *Personal factors and processes*. In conclusion, this article presents how action-oriented research methods, using reflection forums, can contribute to participants' metacognition about health and learning.

ARTICLE HISTORY
Received 8 January 2020
Accepted 30 October 2020

KEYWORDS
Action-oriented research model; health promotion; learning; metacognition; middle school

Background

Health is a resource for pupils' learning and achievement in school, which in turn creates conditions for an active and productive life as an adult (Jackson, 2015). Health promotion is actions focusing on resources (factors and processes) that strengthen, buffering, or maintain health in people's lives, a salutogenic perspective. The opposite health perspective is the pathogenic, which actions focusing on removing and preventing risks (factors and processes) for disease in people's lives (Antonovsky, 1996). Consequently, creating supportive environments for health is a focus area for health promotion, and school is an important arena for promoting the wellbeing of both pupils and staff (World Health Organization, 1986, 1997). However, according to Larsson et al. (2014) health promotion and disease prevention within school health care are often conducted by the school nurse as the responsible person. School health care is primarily individually performed and previous research has reported limited opportunities for personnel such as school nurses to promote health at the group level in schools (Larsson et al., 2014). Cooperation with other professions at the school is therefore necessary for successful health promotion in a broader sense in schools (Reuterswärd & Lagerström, 2010). Teachers' commitment to implementing health into their curriculum could be

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one way of increasing health promotion and getting pupils to understand the importance of health for their learning (Grieg Viig et al., 2010).

The main component in health promotion is respect for people as active participants with control over their own health and development process (Koelen & Lindström, 2005). Therefore, by increasing pupils' influence in their own health promotion, pupils can become more motivated and committed to actively participate and experience health promotion as positive for learning and health (Ozer et al., 2010). How the health promotion has been prepared (with regard to the ideas and thoughts behind the preparation), those involved in the process (i.e., is it a top-down or bottom-up process?), what role the participants have, and whether the concept of running the health promotion is predetermined or flexible might influence the process and results, according to St Leger et al. (2010), and Darlington et al. (2018). It is important for health promotion to consider the local context conditions and which health needs the target group has in focus and start from there when planning a project (Stringer & Genat, 2004). Health promotion needs to be delimited and clear in its external framework, but within the framework, the implementation of health promotion should be done in close cooperation with those participating. So a more flexible way of working is preferable, to follow the health promotion context and its dynamics instead of having one predetermined program to be followed point by point (Jackson & Waters, 2005; Rowling & Jeffreys, 2006). The local context has significance for health promotion implementation and can create both barriers and opportunities (Dahlgren & Whitehead, 2007; Grieg Viig et al., 2010; Shareck et al., 2013). It can include complex conditions that are personal (e.g., leadership, teamwork, personal factors), structural (e.g., way of working, organizational support), contextual (e.g., physical opportunities, history), and societal (e.g., local and national contributors), among other conditions. It is difficult to point out specific impact factors, as these often depend on how the health promotion project and its activities are conducted, but it is important to be aware that there are many aspects that may affect the process and success of a health promotion effort (Darlington et al., 2018).

Action research as a method of health promotion has proven to be effective from a learning perspective (Ainscow et al., 2004), both with regard to the involvement of pupils and teachers, and with respect to developing teachers' professionalism and increasing the readiness of pupils and teachers alike (Cain & Milovic, 2010; Cardno, 2006; Ozer et al., 2010). When a participant-based perspective is the approach for continuous reflections about health promotion, then problem identification, knowledge creation, and action are triggered. In the field of action research, the participants run the process and the researcher acts as a catalyst by taking responsibility for a scientific approach with related knowledge creation through research. Action research can thus reduce the gap between theory and practice. Collaboration between researchers and practitioners means that the different actors' experiences and knowledge complement each other and create the conditions for a knowledge creation that is directly useful in practice (Fals-Borda, 1991).

Both the actions presented above, when teachers implements health into the curriculum to get pupils to understand the relation between health and learning (Grieg Viig et al., 2010), and when researchers and practitioners collaborate in action research (Fals-Borda, 1991), are examples of possible metacognition. According to Medina et al. (2017) metacognition is understanding of one's own thinking and knowledge through using the knowledge or describing it verbally. Understanding of how you learn, so you can use the right strategy for you, is a controlled and conscious action. Metacognition is affected by internal factors such as cognitive parts, e.g., critical thinking and learning strategies, but also by affective parts such as motivation and attitudes. Metacognition is also affected by external factors such as family context and socioeconomic factors, and the academic school setting, e.g., content, instructions, and teachers (Medina et al., 2017).

Against this background, the purpose of this study was to explore whether, and how, an action-oriented research model in a middle school-based health promotion project contributed to metacognition about health and learning among the participants.

Methods

The Action-oriented Research Model

The starting point for the research part in the project was action research because the idea and purpose came from a principal and teachers in a middle school in southeastern Sweden. The school contacted us two action researchers during 2017 to initiate cooperation in a quality development project with focus on health promotion during January to October in 2018. The teachers at the middle school had stated the idea and aim and already had a draft of a project plan, but wanted to connect with researchers to strengthen the project, both during the process and afterwards to publish the project's findings. The middle school pupils in grades four to six (n = 105) and their teachers (n = 9) were to participate in the project. Collaboration and active participation including teachers' and pupils' contribution and influence were important components of the action research process. Action research can be carried out using various methods (Greenwood & Levin, 1998), and the choice of methods should be based on a pragmatic approach focusing on the current research context and related research issues (Johnson & Onwuegbuzie, 2004). Previous experiences from health-focused action research show the importance of project-related communication and reflection (Bringsén, 2010; Nilsson, 2010; Nilsson, 2017). Hence, an action-oriented research model was implemented in the project, based on reflections at various levels: a support group; a project group; in classes, and two focus groups, please see Figure 1 for an overview of the whole project.

The *support group* consisted of the principal (n = 1/meeting and 1 in total), the deputy head (n = 1/meeting and 1 in total), pupils (n = 3-4/meeting and 10–12 in total), teachers (n = 3-4/meeting and 9 in total), school health care team (n = 1/meeting and 1 in total), and researchers (n = 2/meeting and 2 in total). Voluntary pupils (both boys and girls) from each class were jointly appointed by their class and took turns participating in the group during the project. The total number in the group per meeting varied depending on the number of pupils and teachers that could attend each time (n = 10–12/meeting). An introduction meeting for the support group was conducted

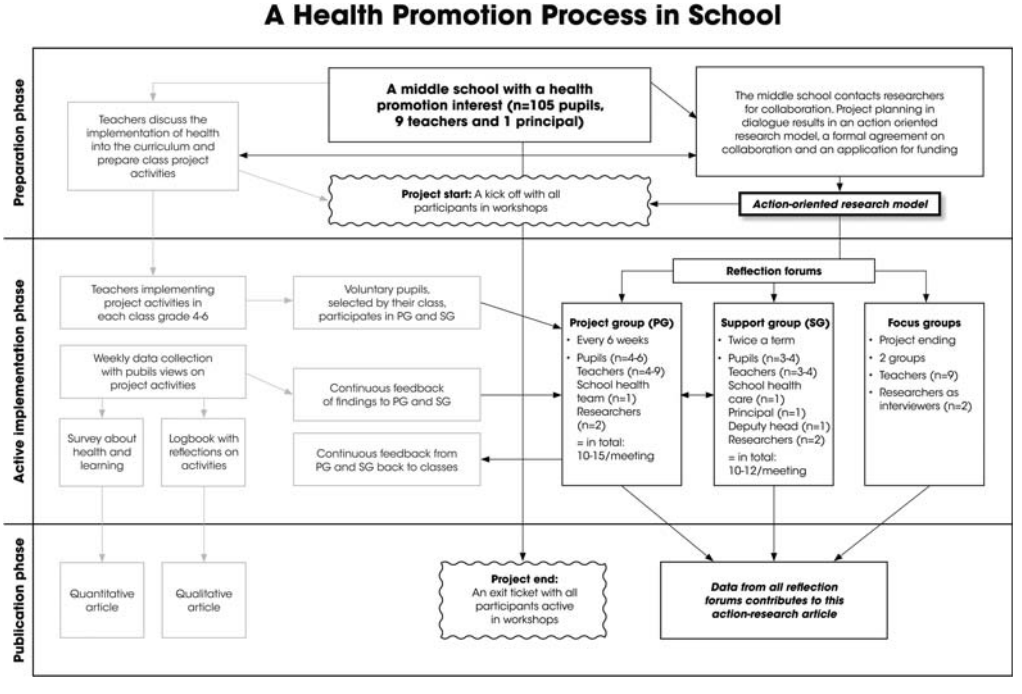

Figure 1. An overview showed with a flow chart of the conducted action-oriented health promotion project.

in August 2017, as a support for the planning of the project in general, and the role and implementation of the research component specifically. The support group then met twice a term during the project to get information about the progress of the project from the researchers' reports from findings and to discuss, among other things, project implementation, function, and research-related issues, such as questions to explore the participants metacognition about health and learning.

The *project group*, consisting of pupils (n = 4-6/meeting and 10–12 in total), teachers (n = 4-9/meeting and 9 in total), school health care team (n = 1/meeting and 1 in total), and researchers (n = 2/meeting and 2 in total) met in reflection forums every six weeks. One to two voluntary pupils (both boys and girls) from each class were jointly appointed by their class and took turns participating in the group during the project. The total number in the group per meeting varied depending on the number of pupils and teachers that could attend at each meeting (n = 10–15/meeting). The participants engaged in project-related discussion and reflection concerning for instance implementation at class level and changes throughout the project. Discussions about project-related aspects that were raised at the support group's meetings were also held. The researchers participated in the project forum by providing a continuous report on project findings, and these were discussed in the project group together with other actual specific research-related issues, such as questions to explore the participants metacognition about health and learning.

Two focus groups were held with all the participating teachers (n = 9) after the project ended, to capture their experiences of participating in the project as a teacher and in the reflection forums. The arrangement with two focus groups made it possible for the teachers to participate in the study during working hours. The researchers (n = 2) were acting as interviewers in the focus groups.

At each reflection forum for the support group, project group, and focus groups, data was gathered through field notes and sound recordings of the communication during the meetings.

Context

The middle school where this research was done has a total of approximately 320 pupils and about 30 employees. The school includes preschool class, a leisure center, and grades one to nine. The school has three teacher teams for different grades: (1) preschool to grade three; (2) grades four to six; and (3) grades seven to nine. In this study were grade four to six participating, in grade four are the pupils 10–11 years old, in grade five 11–12 years old, and in grade six 12–13 years old. In grades four to seven, all pupils take physical activity as a subject twice a week and have aerobic exercise (20 min) every day. At the school, the school health care team is primarily concerned with the individual pupil's needs and interests as a starting point. The primary goal is to ensure that the pupils feel well at school. The team consists of principals, the school nurse, school physician, special teachers, curator, and school psychologist.

Implementation of Health in the Curriculum

The overall goal of the quality development project was that the middle school would develop a multidisciplinary thematic project where pupils, teachers, the school health care team, and the researchers would collaborate for health promotion. The middle school had previous year increased the physical activity during school hours and were now interested in further health development through health promotion. Health (physical, social, and psychological) was planned to be a running theme through the curriculum of language development, natural science/mathematics, aesthetic learning, and physical activity in three focus areas. These were: (1) the body's external and internal structure and function; (2) physical and mental health and ill health; and (3) puberty, sexuality, and the development of life. All teachers in grades four to six participated. It was a joint decision among the teachers to implement this new project and all the teachers had been involved in the planning of the project. It was a good mix of teachers with varying age, work experience and gender (6 men and 3 women), The purpose of the researchers' role was to provide continuous support to the project's

planning, implementation, and follow-up through collaboration, reflection, and knowledge creation through research.

Analysis

The analysis was inspired by Graneheim and Lundman (2004) and a latent content analysis was conducted with the support of these following research questions: (1) What happened in the different reflection forums?; (2) What experiences from the project (i.e., how metacognition about health and learning was created by project-based learning and how the project affected them and their work situation) were discussed during the reflection forums?; (3) What function do reflection forums have for the participants?; and (4) What are the strengths and weaknesses of the action-oriented research model?. In the analysis, PNL performed the analysis, and ÅB was as a discussion partner during the analysis, finally the authors also had a comprehensive discussion about findings. All recorded data and field notes from the different reflection forums (support group; project group; and focus groups) were seen as the unit of analysis. First, all data was listened to and read through, and a naïve understanding of the data created the overall theme. Second, a latent analysis was made from the above four stated research questions. Third, an abstraction was made when the details based of the research questions were read and put together into categories. Three categories emerged, each of these were then analyzed and three subcategories were identified in each category. Fourth, the categories and subcategories were defined and named based on their content (Graneheim & Lundman, 2004). The study purpose was fulfilled with the model of analysis based on the theme, categories, and subcategories in total. Since we have done a higher level of data interpretation (a latent analysis) of both field notes and digital data, there are no manifest citations to report on each category or subcategory.

Ethics

The research was conducted in accordance with the Swedish law for research ethics (SFS 2003: 460) and the ethical review application was approved by the Regional Ethical Review Board in Lund (Dnr: 2018/254). Participation was voluntary and written, informed consent was collected from all participating teachers, representant from school health care team, pupils (and their parents/guardians) that participated in the reflection forums. Pupil and teacher participation in the reflection forums were all based on voluntariness, and the participants shifted so that more persons could take part. The possibility of canceling participation in reflection forums was available throughout the project. If this were to happen the pupils contribution had not been used as research data.

Findings

The action-oriented research model with the different reflection forums (support group; project group; and focus groups) contributed to participants reflecting and expressing their opinions, i.e., building metacognition on project-based learning about health and learning and on how the project affected them and their work situation. The analysis yielded one overall theme titled

Table 1. Overview of the analysis showing the overall theme, main categories, and adherent subcategories.

Theme	Metacognition about health and learning		
Categories	*Professional aspects*	*Educational aspects*	*Structural aspects*
Subcategories	- Professional practice - Teachers' development - Collegial reflection	- Changes in didactic methods - Pupil influence - Pupil development	- Structure of the project process - Feedback of findings - Catalysts

Metacognition about health and learning, and three main categories: (1) *Professional aspects*; (2) *Educational aspects*; and (3) *Structural aspects*. These three categories had three subcategories each (see Table 1).

(1) Professional Aspects

Professional Practice

The teachers said that working cross-disciplinary and collaboratively to promote health gave the members of their team a common language in practicing their profession, regardless of the subject they taught. They taught joint lessons and their work became more efficient as they designed tasks together, though adapting the tasks and work of the classes to the pupils' level of development. In this way, more thought went into designing the tasks and the teachers often included several skills in the same task, making co-assessment by several teachers possible, which was experienced as effective. In order to develop a common language, it was important to carefully talk through the structure of the teaching and who would do what among the colleagues. This also made it easier to continue on from where a colleague had stopped his or her lesson, which contributed to flexibility.

It should be noted that teachers who taught practical aesthetics perceived their pupils to be a little reluctant to integrate health into this curriculum. The pupils expected to work in a practical way (such as sewing, carpentry, painting, etc.) on those lessons without having to think about any theoretical relationship to health also in that work. These teachers therefore had to change their plans and sneak in the health theme and relate the curriculum to health in a different way to make it work. All teachers stated that they practiced their profession differently than before, now with another pedagogical variation during the course of the project, such as walking classroom, and films, and this variation was made available to all pupils, not just to those with special needs. Gradually, the teachers gave the pupils more influence on pedagogical variation in the different curricula and listened to the pupils' requests and suggestions throughout. Something the teachers also introduced more consciously were short breaks with physical activity called "brain breaks" and also mindfulness exercises; these breaks were perceived to increase the pupils' concentration. The teachers pointed out that changing their way of teaching had resulted in different discussions with the pupils compared to before. The teachers thought that the pupils felt more open to impressions from, for example, the media, which they then related to the project health theme. The teachers described how the pupils requested health-related discussions based on various health-related elements (such as effects on the brain from physical activity or stress reactions etc.) they had consumed from media in their spare time.

Teachers' Development

The project led to the teachers challenging themselves regarding their teaching. They opened up both for pedagogical variation, by relating their subject to health, and for increasing the involvement and influence of their pupils in new ways. The teachers did not receive any specific training prior to relating their subject to health, but through their own ideas and collegiate discussions they implemented health in their teaching. The teachers were more open to experiencing where the teaching was going without everything being predetermined. Moreover, they learned more about health than they had known before. They also became more involved in their colleagues' teaching on a personal level by creating greater flexibility to follow each other's teaching instead of safeguarding their own territory. This gave less feeling of stress and greater satisfaction as the teachers were now co-assessing tasks. There were times during the project when the teachers felt pressured to "deliver" within a certain timeframe, but nevertheless they experienced this as strengthening as it made them realize that they had managed more than they had thought.

The teachers expressed that they wanted to continue working in this way due to the many personal gains.

Collegial Reflection

The teachers reported that the collegial reflection had increased during the course of the project. They had gained greater cooperation and communication, had come to know each other better, and showed greater commitment to each other and discovered new competencies among each other. This was achieved by discussing lesson planning and evaluating lessons together. Thus, work team planning became very important and this made it easier for the teachers to move more effortlessly between classes. Combined morning planning was described to be important as it made them feel in control of the day. Similarly, during the afternoon coffee break, the teachers could talk about what had happened during the day. Previously, teachers had often felt a sense of loneliness in the teaching, but this had decreased significantly throughout the project. Because the affinity between colleagues had increased, the teachers felt that they trusted each other much more. There was much more teaching with a more common purpose and this had contributed to different, and more profound, discussions among the work team than before. For example, teachers talked more about how to best deal with pupils with special needs (with or without diagnosis, e.g., neuropsychiatric disability) and helped each other more than previously when difficult situations arose. One difficulty that was mentioned was that some colleagues were located in other buildings at the school, and this sometimes made collaboration difficult, as they did not meet naturally during the day.

(2) Educational Aspects

Changes in Didactic Methods

The pupils described that reflecting through logbooks, weekly questionnaires, and reflection forums throughout the project had helped them develop their self-insight and think about their own learning process, i.e., reflect how they themselves learned best. Pupils and teachers reported that these activities about pupils' metacognition about their own learning had been difficult to understand and perform for both pupils and teachers at the beginning. According to the pupils, the activities had gradually contributed more and more to self-directed learning. The teachers expressed they wanted to continue using the logbooks for reflection, even after the end of the project.

Another example given by the teachers was the in-depth work done by the pupils at the end of each project part. The pupils expressed that they had greater control over their own learning process and the content of the in-depth work, which they experienced as fun and therefore which they put much effort into. The pupils further expressed that they needed greater pedagogical variation now that they knew the possibilities exist. The teachers emphasized that, through various didactic methods, they had learned more about the pupils as individuals, holistically, not just in relation to a specific curriculum. This process also made the more pupils with special needs (with or without diagnosis) more clearly visible, which enabled the teachers to give them greater support. The teachers felt that the pupils' sense of context had increased by taking more responsibility for their own learning. The process had meant that the learning had become understandable, manageable, and meaningful to the pupils. The teachers and pupils agreed that the pupils had developed in their thinking and thereby had also widened their world view, as they were more aware and asked more qualified questions based on what they had seen or heard from other curricula or from the media linked to the project content.

Pupil Influence

The pupils highlighted that they had not been involved at the start in writing the project plan. Both pupils and teachers saw this as a lesson for the future: it was important to involve the pupils from the start. This would ensure that even better conditions were created for being at the same level at the start of the project. However, the participation in the project group and the support group was experienced extremely positively by the pupils and they stated that it contributed to significant pupil influence, since the pupils' voice was as important as the adult participants' voices. The pupils expressed that the various activities of the project had given them a greater understanding of what pupil influence is and can be. The pupils recognized that short physical activity breaks and mindfulness exercises contribute positively to learning and now demanded themselves during a lesson that everyone should take a break and move before continuing to work. There is no doubt about the fact that pupil influence had increased significantly during the course of the project, and that the pupils now demanded more pupil influence, which the teachers felt was very positive.

Pupil Development

The teachers said that the health theme that permeated the project functioned as a catalyst and created greater development of parts of the curriculum that had been perceived as problematic for some pupils (e.g., writing in Swedish). The motivation for schoolwork in general had increased among the pupils and this had led to greater success in coping with individual tasks. The pupils now often connected different curricula and saw the points of overlap between them; they had not done so before, according to the teachers. Both teachers and pupils experienced the pupils' health development during the project as generally positive, and gave physical, psychological, and social examples. Physically speaking, spontaneous movement activities had increased and more pupils were also more active in their spare time. Many pupils had changed their habits and lifestyle; for example, they drank more water during school hours because they now understood that maintaining fluid balance is important. Psychologically, the pupils had developed more grit and independence because, through metacognition about learning, they had gained a greater awareness of themselves, how they learned, what needs they had, and what suited them best in terms of school work. Through including various health aspects in schoolwork, the pupils had also developed greater life skills. Socially speaking, togetherness and community had increased across the entire middle school. Because of the overall health theme of the project, the pupils now had a school-related theme to talk to each other about.

Both teachers and pupils had perceived that older pupils in grade six had been more negative towards different activities in the project compared to younger pupils. They said that this was probably not just related to the project but also had to do with the general development phase for the age group. Pupils at that age undergo puberty and this can entail, e.g., mood swings, a desire for liberation, and creation of their identity. Pupils and teachers expressed that there were probably some natural developmental reasons among the sixth graders showing resistance and negativity generally.

(3) Structural Aspects

Structure of the Project Process

The teachers reflected that time had been an important factor during the project. Time is needed to develop a good structure for a project and it is an important aspect to discuss regarding future projects. Time for continuous individual and joint planning was important to the teachers; there had been a lack of time at some point during the project. The days on which a supply teacher had been called in as an additional resource had given them more time for planning; also, a study day during the school term had given them extra planning time, which was valuable. The teachers said that they had worked more than their actual working hours and some had even used their spare time to work

on project-related things. The extra time spent on weekends and school holidays had been compensated by the school and this was appreciated. The teachers had learnt that in future they would need to demand more project time from the principal ahead of the time, as they needed to be released from other development work at the school if working on a project such as this. They suggested having a contract that stipulated what the project time should be used for, and whether there would be other teaching commitments for the teachers in addition to project-related work. Other time-related aspects were that scheduling could become either an obstacle or an opportunity for collaboration between the teachers in the project. The teachers also suggested having a startup day per semester when the teaching team could discuss how topics in the curriculum could be linked.

Feedback of Findings

The support group consisting of participants from all levels was considered important by all participants because the researchers continuously gave feedback on findings, which created a concerted effort and a direction in which the project would go. The participants argued that the researchers had given weight to the project outside the school, for example when the teachers presented the project and its findings to the public. The researchers' efforts to continuously feedback findings had contributed to a greater seriousness among, and responsibility for, the pupils in respect of the project's findings. The teachers perceived the continuous feedback and discussion as very positive and said that it gave them direction and new ideas for development during the project.

Catalysts

The teachers had begun a project plan by the time the researchers entered the project. The teachers expressed that the researchers had contributed to the project plan by making it become even clearer and gain more weight. In the project group, the researchers discussed the project's progression, content and development with teachers and pupils; teachers and pupils alike felt that it was positive that someone gave objective feedback on what was happening in the project. The teachers expressed that the researchers had acted as catalysts for knowledge development by creating motivation and commitment. Among other things, the discussions in the various reflection forums had created curiosity about research possibilities within the teachers' own subject areas, and stimulated thoughts about opportunities for their own teaching and new research collaborations in the future.

Discussion

The action-oriented research model with different reflection forums used in this project has been shown to contribute to metacognition on health and learning among participating teachers and pupils. During the reflection forums, the space was given for ongoing discussion and reflection on what happened in the project, what caused this to happen, and what resulted from it. The approach is consistent with action research, which, according to Kemmis and McTaggart (1988), is participatory, collaborative, and self-reflective and also is a form of social action towards improvements towards a common goal.

Table 2. Overview of structural and personal factors and processes synthesized from the findings subcategories.

Synthesized findings	Structural factors and processes	Personal factors and processes
Subcategories from the findings	- *Professional practice* - *Changes in didactic methods* - *Structure of the project process* - *Feedback of findings* - *Catalysts*	- *Pupil influence* - *Teachers' development* - *Collegial reflection* - *Pupil development*

Table 2 presents the synthesized findings based on the subcategories that emerged in the analysis. *Structural factors and processes* include contextual items like the working methods in the project and support from the organization (Darlington et al., 2018). The structural aspects can be linked to the project's basic concept of having health as an overall theme for teaching, and also to how the framework for the project was initially planned. The outer frame included, for example, the idea that the health theme would consist of focus areas. That there would be increased pupil influence and an openness to new didactics among the teachers was clear. The lesson content itself, however, would be provided by pupils and teachers together, and the teachers would follow the pupils' learning progression with openness. This approach is flexible and action-oriented (Darlington et al., 2018; St Leger et al., 2010) and differs from traditional health promotion projects where the frame and content often are predetermined. In an action-oriented project, the participants are active and are given ample scope in determining the project's progression based on their needs (Fals-Borda, 1991; Kemmis & McTaggart, 1988).

Our findings show that the teachers in our study changed their way of teaching, as they offered more didactic variation in their lessons and discussed their teaching and co-assessment more with their colleagues than previously. During the course of the project, the teachers were responsive to what happened in their teaching, and through daily discussions with their colleagues their teaching content would change, and these actions were discussed as positive and creative during the project-related reflection forums. Reporting on a similar project, Grieg Viig et al. (2010) argue that it is through interaction and discussions with other participants in a project that teachers developed in relation to their own development and to the health promotion project.

Other structural factors and processes that our findings showed were different perspectives on the project process and the importance of the researchers' presence. For example, time was described as an important factor in the process, including time for: lesson planning, discussing teaching, and ongoing project development. Similar results are highlighted by Grieg Viig et al. (2010) who report that lack of time for project-related activities is perceived as a hindrance by teachers in health promotion programs. In our study, the researchers' regular feedback of results through reflection forums gave the teachers the opportunity to change their teaching and content during the project and also gave a deeper understanding of both teachers and pupils, which enabled the project work to actually lead to improvement. The discussions in the different reflection forums also gave the teachers impetus to think about research in relation to their own subject and professional performance. Cardno (2006) reports that research presence in health promotion builds up teachers' interest and capacity for research. Similarly, Chang et al. (2014) argue that it is important to have support from researchers during a health promotion project to create engagement with teachers and drive health promotion in school. To summarize, it can be said that the content of the subcategories here, which link to the structural factors and processes, can be related to sustainable learning (Graham et al., 2015), as the project increased both the teachers' and the pupils' commitment to learning and provided greater understanding of their own learning and professional practice.

Personal factors and processes include personal development of the participants, teamwork, and leadership (Darlington et al., 2018). The subcategories that can be linked to personal factors and processes in our study are shown in Table 2. The subcategories relate to personal development of teachers and pupils individually and to how the teachers together with pupils developed through the project. Collegial reflection among teachers contributed to increased cooperation and commitment for each other's teaching through joint planning and evaluation of lessons. *Colleague* (Nilsson 2017) has shown that collegial reflection is important for promoting both teachers' work-related learning and their wellbeing. Our findings show that the teachers' personal development increased when they challenged themselves as teachers by being more flexible about their lesson content and professional practice, and that they also gave the pupils more influence than before. A study by Cain and Milovic (2010) found that teachers' professional development was strengthened by projects of an action-oriented nature, and Phillips et al. (2010) argue that such projects contribute to increase teachers' self-efficacy through positive experiences of their efforts.

The pupils felt that they had more influence, partly through the teaching and project activities, and partly through participation in the reflection forums. They also felt that their voice and opinion gained greater value through the project. Griebler et al. (2017) state that participation in health promotion can have positive effects on pupils' influence, through motivation, feeling of ownership, increased knowledge and experience, and also health-related effects. This is supported by our study where pupils thought that they were developing during the project in relation to both better school performance and health, among other factors through increased physical activity both during and after the school day. The pupils expressed their understanding of how health and learning affected each other through the project. Bälter et al. (2018) posit that increased physical activity during and after the school day has benefits for the brain in general as well as for learning. The content that links to the personal aspects in our study can be related to strengthening empowerment for both the teachers as a group, and teachers and pupils individually from a health perspective. Cardno (2006) argues that empowerment provides the conditions for genuine change because, through its own strength, change comes from within the individual him or herself and his or her will.

An action-oriented project that involves teachers and pupils in all stages of the implementation of a project is preferable, as it increases the involvement of teachers and pupils, according to Ozer et al. (2010). However, there are many factors to take into account when planning a health promotion project in school, such as the legitimacy of the project from the point of view of the principal and interested teachers; relevant goals; adequate resources; collegiality between teachers; pupil engagement; and collaboration between different stakeholders (Deschesnes et al., 2010; Viig & Wold, 2005). Through an action-oriented research model with reflection forums, as presented in this article, obstacles to, and opportunities for, a project's implementation and content can be discussed with everyone involved and at all stages of the project's implementation from start to finish. Thereby, metacognition on what is happening in the project can be reached. Awareness should be made that reflection takes time; however, the benefits largely outweigh the time sacrifice.

Limitations

Limitations such as ethical considerations and trustworthiness must be considered after completion of a study (Graneheim & Lundman, 2004). In this study, ethical considerations were met as participation in the reflection forums was voluntary and all participants had signed an informed consent form (Codex, 2020). Trustworthiness is here considered in terms of credibility, transferability, dependability, and confirmability (Graneheim & Lundman, 2004; Stringer & Genat, 2004). The credibility of the study may have been limited by power and confidentiality constraints. The pupils in the reflection forums may not have wanted to say negative things about the project in the presence of their teachers and other school staff. But because the researchers and teachers constantly encouraged them to be open and say what they wanted, pointing to the confidentiality agreement, and were careful about the way they asked the pupils' opinions, this risk was minimized. Credibility was also strengthened by having participants with different roles (e.g., pupil, teacher, principal), sex, ages, and teachers with various professional experience.

To allow transparency and transferability (Graneheim & Lundman, 2004), the context, the project, the participants, the action research process with data collection, and the latent content analysis was described. As the pupils who participated in the reflection forums took turns and represented different classes, and therefore differed in age and sex, transferability to other settings is strengthened and a comprehensive view of pupils' opinions were reached.

There is always a risk that an analysis is guided by the researcher's pre-understanding. To minimize this risk and strengthen the dependability and confirmability (Graneheim & Lundman, 2004), two researchers collaborated in the present latent content analysis. This allowed for questions between the researchers and discussions during the analysis. In action research, the researcher strives to achieve an equal relationship with the participants, all contributing to the project as experts based on their role, as well does the researcher. The quality of findings should therefore

member-checked with the participants throughout the process to ensure that the researchers describe true findings and have not interpreted their own ideas (Stringer & Genat, 2004). This study findings were member-checked by a few of the participating teachers, who confirmed the findings' dependability. A study's confirmability is also about the researchers finding unpredictable results. Prior to the study, we anticipated that various stories and reflections about the project activities would emerge from the reflection forums. Therefore, it was surprising that the participants, the teachers and pupils together, had such deep reflections about the project activities during the reflection forums that metacognition about health and learning arose in such a clear way.

Conclusion

In this article, we have presented findings from a middle school-based health promotion project conducted an action-oriented research model. The model consists of different reflection forums (a support group; a project group; and focus groups), which have been shown to contribute to participants' metacognition on what happened in the project and how the project affected them and their work and learning situation. Three main categories are presented in the findings: (1) *Professional aspects*; (2) *Educational aspects*; and (3) *Structural aspects*. Each category had three subcategories. In the discussion, a synthesis of the different aspects of the participants' metacognition is presented, and it was argued that both *structural factors and processes* and *personal factors and processes* are important for health promotion in schools. Structural factors and processes include the working methods of the project and support from the organization, while personal factors and processes include aspects such as personal development of the participants, teamwork, and leadership in the project. With an action-oriented research model that includes reflection forums, obstacles and opportunities for the project's implementation and content can be discussed with everyone involved in the project at all stages of the project's implementation from start to finish, and this has proven to be a major success factor in the present study.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

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