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12

Evidence for effects of student participation in designing, planning, implementing and evaluating school health promotion

A systematic literature review

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List of abbreviations

Abbreviation	Complete name
"All"	studies with respect to students involvement in all phases of the project cycle
"PI"	studies with respect to students involvement in planning and implementation of a health promotion measure
"PIE"	studies with respect to students involvement in planning, implementation and evaluation
„Peer"	studies using a peer approach e.g. peer education
"SI"	studies in which students were involved in selection of a topic, planning and implementation of a health promotion intervention
AG	adult-led/teacher-led group
AJHP	The American Journal of Health Promotion
ASSIA	Applied Social Sciences Index and Abstracts
CASP	Critical Appraisal Skills Programme
CG	comparison group
CPCI-S	Conference Proceedings Citation Index- Science
CPCI-SSH	Conference Proceedings Citation Index- Social Science & Humanities
CPH	Critical Public Health
CYE	Children, Youth and Environments
ENPHS	European Network of Health Promoting Schools
ERIC	Education Resources Information Center
FG	focus group discussions or interviews
GHP	Global Health Promotion
HE	Health Education
HEB	Health Education and Behavior
HER	Health Education Research
HIS	highly-involved students
HIV	human immunodeficiency virus
HPI	Health Promotion International
HPS	health promoting school
HRS	highly role-specified
IG	intervention group

Abbreviation	Complete name
IVAC	investigation-vision-action-change approach
JAH	Journal of Adolescent Health
JSH	Journal of School Health
LBIHPR	Ludwig Boltzmann Institute Health Promotion Research
LIS	less-involved students
LRS	less role-specified
MeSH	Medical subject heading
n	Sample size
NA	Not applicable
NR	Number
obs	observation
PE	physical education
PG	peer-led group
PHN	public health nurse
RefID	Reference Identification
RefMan	Reference Manager
SES	socioeconomic status
SHA	student health advocate
STDs	sexually transmitted diseases
Suppl	Supplement
UK	United Kingdom
USA	United States of America
Vol	Volume
WHO	World Health Organisation

Summary

Background

Participation is a core value for health promotion measures in general but empirical evidence of the effects of student participation in designing, planning, implementing and/or evaluating school health promotion is scarce. The aims of this report are to find evidence for the effects of student participation in planning, implementing and evaluating school health promotion measures, to identify beneficial and hindering factors for student participation and if possible to find out about differences in effects for student participation either only in implementing health promotion measures or both designing/planning and implementing health promotion measures.

Design/methodology/approach

We conducted a systematic literature review. Out of 5075 citations, a total of 26 publications met our inclusion criteria and were used for a qualitative analysis of the diverse effects of student participation and an analysis of the hindering and fostering factors for student participation.

Findings

Effects of student participation were categorized into personal effects on students, effects on interactions, effects on other stakeholders, effects on the school as an organization, effects on the local community and effects on the program/project. Reported effects referred most often to personal effects on students (especially satisfaction and motivation of students and acquisition of knowledge, skills and competencies) and to effects on the school as an organisation (especially a participatory culture at school). A few studies also showed negative effects in terms of student participation.

Fostering and hindering factors for student participation were categorized into project, organisational structure, resources, synergies, school culture, motivation and process. Apart from "common sense" facilitators like adequate resources, factors identified indicate that teachers need to find the balance between leading and guiding students through the whole process of participation.

Conclusion

Our review is, as far as we know, the first with respect to the effects of student participation in health promotion measures at school. Health promotion and participation leading to positive outcomes have always been assumed and are both regarded as value itself. With the current review we show evidence that there is more than a value or common sense assumptions and that students' participation in the decisions related with health promotion measures can have positive effects on different levels.

1. Introduction

1.1. Research background and rationale

Participation and democracy in education are not new phenomena (e.g. Dewey, 1916). They have been highlighted from different perspectives and with a focus on varying aims and supposed effects. Over recent years there has been a growing acceptance that children and young people should be more involved in the making of decisions that affect them. Apart from upholding children's rights and fulfilling legal responsibilities, or in the context of citizenship education (Holdsworth, 2000) and school improvement (Lodge, 2005; Rudduck & Fielding, 2006), participation and democracy are core values for health-promoting schools (Buijs, 2009). These values should create an appropriate arena for students to participate in relevant aspects of decision making at school and thus in the processes of teaching and learning (Simovska, 2007). Participation of the target group in the decisions about design and implementation of health promotion programs or projects is thought to be helpful for the applicability, effectiveness and sustainability of such programs (Clift & Jensen, 2005; Reid, Jensen, Nikel, & Simovska, 2008; WHO, 1998). For the assumption that student participation in school health promotion has positive effects to our knowledge no systematic review of the evidence for such a relationship has been conducted.

1.2. Aims and purpose

The main aim of this review is to summarize systematically the existing evidence for the impact of student participation in designing, planning, implementing and/or evaluating school health promotion measures on the effectiveness of these health promotion measures. Another aim of this review is to summarize and analyse possible beneficial or hindering factors for student participation in designing, planning, implementing and/or evaluating school health promotion measures. If possible, it will be interesting to find out if there are differences in outcomes of participating in decisions about school health promotion when students participate either only in one or more phases of the process of designing, planning, implementing and/or evaluating the health promotion measures.

1.3. Review questions

The main review questions are:

- What is the empirical evidence for effects of student participation in designing, planning, implementing and/or evaluating school health promotion measures on the outcome of these health promotion measures?
- What are the beneficial and hindering factors for student participation in designing, planning, implementing and/or evaluating school health promotion measures?
- Are there differences in effects for student participation either only in implementing health promotion measures or in more phases of designing, planning, implementing or evaluating health promotion measures?

2. Methods

2.1. Working definitions

2.1.1. Student participation

We defined student participation as student involvement in the form of exchanges of opinion, knowledge or other resources between various groups of actors to issues of relevance to health in order to participate in decision making regarding priorities, planning, implementation or evaluation of health promotion measures (Potvin, 2007, p. 111).

This definition does not use the term 'participation' to mean 'taking part' or 'being present' but instead suggests that students have some influence over the decisions being made and actions being taken. According to this definition,

simple forms of student participation such as answering questions and taking part in activities (e.g., sports or music) are not considered participation. However, we also do not confine participation to individual decision making (as in curricular choices).

2.1.2. Health promotion measure

A health promotion measure can be a project, program or any other school based initiative with the aim to promote health or health behaviour among the target group.

2.1.3. Health Promotion

In 1984 the WHO launched a new program for health promotion, introducing the term as an umbrella concept to bring together people, ideas and actions that acknowledge the importance of the living conditions and the issues of social capital for participation, or empowerment, in relation to health. The most influential policy document outlining the fundamental strategies for health promotion was the Ottawa Charter, adopted at the first International Conference on Health Promotion (WHO, 1986). The Ottawa Charter defines health promotion as:

"…a process of enabling people to increase control over, and to improve, their health. To reach a state of complete physical, mental and social well-being, an individual or group must be able to identify and to realize aspirations, to satisfy needs, and to change or cope with the environment (WHO, 1986)."

2.1.4. Effects of student participation

The effects of student participation can be positive, neutral or negative. They are demonstrated using empirical – quantitative or qualitative – measures (e.g., questionnaires, interviews, observations) and could be clearly determined to result from student participation in either designing, planning, implementing or evaluating a health promotion measure.

2.2. Identifying research evidence

For identifying research evidence a combination of the following approaches were used:

- Searching electronic databases
- Hand searching key journals
- Contacting experts
- Visually scanning reference lists from relevant studies

2.2.1. Searching electronic databases

A search of international peer-reviewed published literature was undertaken with a focus on empirical studies about student participation in decision making in health promotion measures. The current review is based on a search that was carried out for a previous review focussing on the overall effects of student participation in school decision making (Griebler & Nowak, 2011; Mager & Nowak, 2011). We searched keywords, titles and abstracts in major commercial bibliographic databases of publications published between 1992 and September 2010 (the Applied Social Sciences Index and Abstracts (ASSIA), the Education Resources Information Center (ERIC), PsycINFO, PSYNDEXplus, Scopus, PubMed, Embase, the Social Sciences Citation Index, Social Services Abstracts, Sociological Abstracts, Education Full Text, Social Sciences Full Text, the Cross-Cultural Database, the Science Citation Index Expanded, the Conference Proceedings Citation Index–Social Science & Humanities, Conference Proceedings Citation Index–Science). We used medical subject heading (MeSH) terms when available and free-text keywords when appropriate, and we used the following keyword combinations: (student* OR adolescent* OR child*) AND (participation OR involvement) AND (school) AND ("decision making" OR democracy OR governance OR "health promotion" OR "health promoting"). A detailed description of the electronic database searches is shown in the appendix (see chapter 7.1.1).

2.2.2. Journal hand search

Moreover, a journal hand search was carried out on December 10, 2010 and updated on February 02, 2011. All issues from the previous 12 months and additionally all available supplement issues from 1992 onwards of the following journals were hand searched:

- Children, Youth and Environments
- Critical Public Health
- Global Health Promotion (former Promotion & Education) 1994 -2010
- Health Education
- Health Education and Behaviour
- Health Education Research
- Health Promotion International
- Journal of Adolescent Health
- Journal of School Health
- The American Journal of Health Promotion 2008-2010

After importing all titles and abstracts from the journal hand search into the existing Reference Manager data file, all duplicates were deleted. That means that only titles and abstracts that were not screened earlier (in the database search result screening) were assessed in the abstract review. All additional titles and abstracts were dually reviewed and relevant full text articles were subsequently assessed for their eligibility.

2.2.3. Contacting experts

Nine experts in the fields of health promotion and disease prevention, health and behavioural science, student participation and human environment were contacted to recommend additional unpublished studies to be included in the review.

2.2.4. Manually searching reference lists

We manually searched reference lists of pertinent articles. We applied a semi-automatic method that is based on the Scopus-database (Chapman et al., 2010). All titles that could not be imported in our Reference Manager data file were manually entered. Duplicates were deleted prior to the title and abstract screening.

2.3. Study selection

Study selection was conducted in two stages: an initial screening of titles and abstracts against the inclusion criteria to identify potentially relevant papers followed by screening of the full papers identified as possibly relevant in the initial screening. In order to make the research process transparent, the research strategy is described in this chapter. All abstracts and full papers were reviewed by two researchers independently. In case of disagreement a third reviewer was consulted to reach a decision.

2.3.1. Abstract review

The abstracts or titles (if abstracts were not available) of identified potential studies were assessed using an abstract review form (see chapter 7.2.1). Abstracts in other languages than English, German or Danish were excluded. Books (and dissertations) were excluded because of limitations on time and human and financial resources. A search of books would require a more complex and laborious search process than it was possible to conduct within the given constraints. However, we feel that this limitation does not reduce the value of our review.

Judgements about inclusion may be affected by knowledge of the authorship and other information. To minimize the potential for errors of judgement, abstracts (or titles) for review included only information on the publication year and the journal name, in which the study was published. The names of the authors were not shown to the reviewers. The selection process was piloted by applying the inclusion criteria to 30 papers in order to check that they can be reliably interpreted and that they classify the studies appropriately. The remaining abstracts were screened by one reviewer and then checked by a second reviewer. Duplicates of studies found during abstract review were sorted out. When a definite decision could not be made based on the available information, the study was included. If both researchers assessed an abstract to (not) meet the criteria it was included/ rejected straightaway. If not so, a consensus was found between the researchers or a third reviewer was consulted.

2.3.2. Full text review

Publications that were included during abstract review were passed through the full text review. A full text review form using exclusion criteria was developed and used to reject inappropriate publications (see chapter 7.2.2). Screening was performed by two independent reviewers after a pilot run with four full texts. Disagreements between reviewers were resolved by discussing different assessments and a consensus was found between these two or a third researcher was consulted. A flow chart of the search process is shown in chapter3.2.

2.3.3. Inclusion and exclusion criteria

Inclusion criteria need to be detailed on the one hand, but on the other hand they also need to be practical. Criteria of population, intervention, setting, outcomes, study design and language were used to identify potentially relevant papers. Table 1 shows a list of inclusion and exclusion criteria with detailed explanations.

Table 1: Inclusion and exclusion criteria

	Inclusion criteria	Exclusion criteria
Type of study/ publication	All types of empirical studies or reports describing empirical research are included.	Publications describing anecdotal experience/ not empirical studies. Books and other grey literature are excluded except if suggested by experts.
Language	All studies published in English, German and Danish are considered.	
Participants	Children and adolescents, in any country, aged 5 to 19, who attended primary or secondary school, private or public schools.	Publications describing participation of other populations (university or college students, kindergarten children, teachers, parents, community etc.).
Setting	All papers that describe health promotion measures in the setting school are considered.	Publications describing student participation in another setting than school (e.g. community health promotion).
Intervention	All reports describing student participation in designing, planning, implementing and/or evaluating school health promotion are considered.	Publications not describing student participation according to our definition, i.e. students taking part in health promotion, but not involved in planning, designing, implementing and/or evaluating the health promotion measure. Articles describing participation rates or interventions to increase participation rates in health promotion programs, without involvement of students in the planning or organizing phase of the project. Publications describing individual decision making of students (e.g. choosing sports lessons, etc.).
Outcome	Effects of student participation in designing/ planning and/ or implementing school health promotion measures on the participating students, on other students, on the health promotion measure, or on the school are considered.	Publications without scientific quantitative or qualitative measure of any effects of student participation.

2.4.   Data extraction

We used a structured data abstraction form onto which one reviewer abstracted data from each study. The second reviewer read each abstracted article and evaluated the accuracy and completeness of the abstracted data. We abstracted data concerning the research questions, the location and setting, the type of trial, the theory, the intervention in general and in terms of student participation, a description of comparison, if applicable, (general and in terms of student participation), a description of the participants involved, the data collection process and data analysis process and outcomes, data on implementation and the results in terms of student participation. Two reviewers piloted the data extraction forms using a sample of three studies to ensure consistency and accuracy.

2.5.   Quality assessment

The quality of each included study was rated by two reviewers independently. After each data extraction procedure, each reviewer assigned a quality rating. Disagreements were resolved via discussion and consensus to reach a final quality rating for each study.

We included studies using both quantitative and qualitative methods. The application of quality criteria to qualitative research is widely debated, and there is currently no consensus regarding whether criteria should be used or, if so which criteria to use (Noyes et al., 2008). However, we decided to use a checklist that we generated for the purpose of a previous review (Mager & Nowak, 2011)(see chapter 7.5.2.1). The checklist that we used to judge the quality of qualitative studies is based on several previously published articles and checklists or appraisal tools (Atkins et al., 2008; Cesario et al., 2002; Critical Appraisal Skills Programme (CASP), 2006; Dixon-Woods et al., 2004; Long & Godfrey, 2004; Malterud, 2001; Rowan & Huston, 1997; Spencer et al., 2003). Similarly, for the use in a previous review (Mager & Nowak, 2011), we generated a checklist that we used to rate the quality of survey or cross-sectional studies based on previous checklists used to evaluate quantitative research articles or to write research reports (DuRant, 1994; von Elm et al., 2007) (see chapter 7.5.2.2). To evaluate the quality of studies using mixed methodologies we employed the checklist for qualitative studies.

The following criteria were the basis for our quality rating: a clear research question; an appropriate theoretical framework; a clear description of appropriate sampling, data collection and data analysis procedures; the findings; the value of the research; ethical issues; and reflexivity (see chapter 7.5.2). We applied cumulative ratings of "good", "fair" or "poor" to each individual study according to its score: the rating "poor" was used for studies up to 50% scores, the rating "fair" was used for studies with scores of 50 to 75% and the rest were rated "good" (see chapter 7.5.2).

2.6.   Data synthesis

The aim of the data synthesis process was to integrate results from various types of primary research (studies employing quantitative, qualitative and mixed methodologies) into a conceptual map describing types of student participation and different effects of student participation. We conducted an integrative synthesis, summarising data from the analysed studies rather than seeking to develop new theories. For this purpose, we used the qualitative content analysis procedure presented by Mayring (2000), which is a qualitative text interpretation process. Qualitative content analysis is an iterative process, in which categories are formed and verified and in which new categories emerge or disappear during multiple rounds of review of the text material. The categories were not predetermined prior to our analysis but rather emerged inductively from the data.

We analysed the abstracted data from each of the studies considering a) the descriptions of student participation processes and structures, b) facilitators and barriers for student participation in school health promotion and c) the effects of student participation in regard to student participation in different phases of the decision-making process.

In the first step in the analysis, the relevant text passages were paraphrased and assigned individual codes. Then, we sorted the individual codes into tentative categories. Those categories and the codes within them were revised and eventually reduced into main categories. The categories were cross-checked by the research team to ensure that they fit the original text passages.

The separate category systems resulted in typologies of:

a) student participation processes and structures,

b) facilitators and barriers of student participation, and

c) effects of student participation, each with its own sub-categories.

During the data analysis process we used the qualitative data analysis software ATLAS.ti (version 6.2.24).

3. Results

In the results section, first a short overview of the search results is given. Thereafter, all included studies are described in detail in a comprehensive table. Then, the effects of student participation are described. in five sub-chapters: Starting with an illustration of the general effects, we proceed with three sections referring to effects in different study groups according to our typology of student participation processes and structures (participation in different phases of the intervention, dominance of the methodological approach adopted in the intervention, and studies with experimental design with a comparison group). The last sub-chapter describing the effects of student participation refers to an attempt to differentiate intended and unintended effects according to the study context. Subsequently, the results concerning facilitators and barriers for student participation reported in the studies are described.

3.1.   Search results

Altogether 5075 abstracts or titles (if abstracts were not available) were screened. Of those, 4985 did not meet our eligibility criteria and were excluded and 90 abstracts were further assessed in the full text review. After this step 67 publications were excluded and 26 publications were included in the qualitative data analysis (see Figure 1).
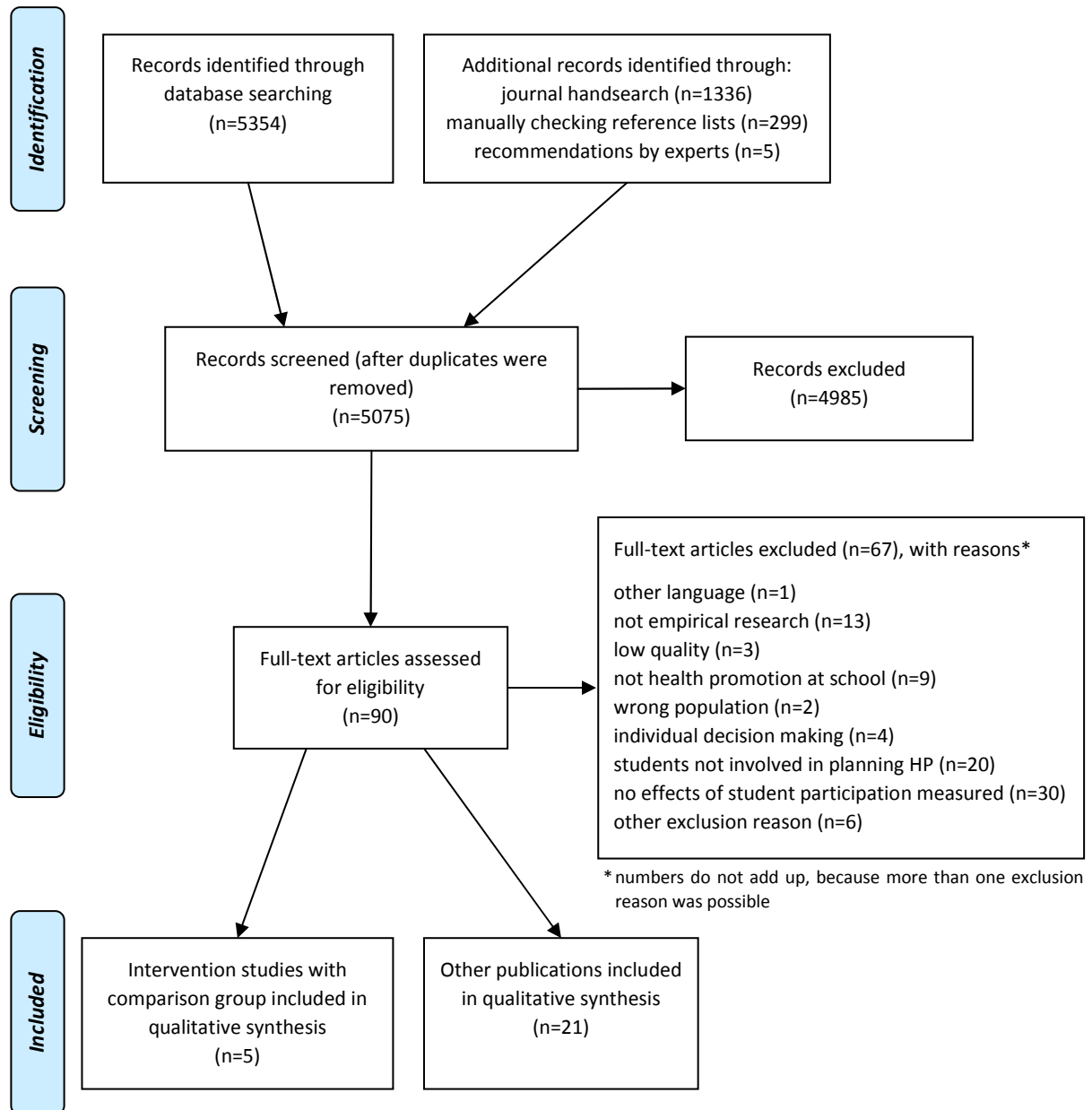
Figure 1: Flow Diagram of the study selection process

3.2. Details of included studies

Twenty-six articles describing 24 studies/projects were included for data synthesis. According to the description of student participation in the original articles we map out a topology of student participation processes and structures consisting of three types of studies: 1) participation of students in different phases of the intervention, which was further divided in four groups, 2) studies showing a dominance of the study approach against the stages student participated in, which was further divided in 3 groups (peer-approach, participatory action research, IVAC-approach) and 3) studies with a comparison group (n=5) which were analysed separately and are described in detail in chapter3.6.

Eleven studies were categorised with respect to the phases students participated in. The four sub-categories built refer to the phases of student participation: One study described participation of students in all phases of a project cycle (selection of topic, planning, implementing, evaluating) (Valaitis & O´Mara, 2005). Participation of students from planning, implementation and evaluation given a predefined topic was described in two articles (Baskin et al., 2009; Hong et al., 2010). We found 5 studies reported in 6 articles in which students participated in topic selection, planning and implementing the project but not in evaluation (Bonell et al., 2010a; Bonell et al., 2010b; Carroll et al., 1999; Gadin et al., 2009; Mandel & Qazilbash, 2005; Rowe et al., 2010). Participation of students in the two phases planning and implementation was described in 3 articles (Brooks & Magnusson, 2006; Lakin & Littledyke, 2008; Salmon et al., 2005).

Eight studies were categorised with respect to the study approach used: Four studies investigated a peer approach (Goenka et al., 2010; Naylor & Cowie, 1999; Strange et al., 2002; Streng, 2007). One study used participatory action research (Lind, 2007) and 3 studies (reported in 4 publications) used the investigation-vision-action-change (IVAC) model or an adaption of it to structure student participation (Simovska, 2008; Simovska & Jensen, 2009; Simovska, 2007; Simovska & Jensen, 2008).

Almost all publications were rated as having either good quality (n=13) or fair quality (n=12); only 1 publication was rated as having poor quality (Mandel & Qazilbash, 2005).

Table 2: Characteristics of included studies

Reference and ID	Topic area	Setting and country	Description of participants / sample characteristics	Characteristics of student participation (intervention characteristics and comparison condition, if applicable)	Study design	Data collection method	Key findings	Quality
Intervention studies with a comparison group								
Birnbaum et al., 2002 (698)	Promotion of healthful eating	16 middle and junior high schools (8 IG, 8 CG)/ at least 20% of students with lower SES Minnesota, USA	Year 7/8 [12/13 years] IG: n= 226, 54% girls; CG: n= 677, 49% girls**	IG: school environment intervention + classroom component + peer leaders (peer leaders were elected by classmates and helped delivering classroom sessions to promote healthful eating using participatory learning); CG: school environment interventions + classroom curriculum (without peer leaders)	School-based, group randomized trial	Pre- and post student survey (n_1=3.878; n_2=3.503)	students in both IG and CG reported higher fruit and vegetable consumption and greater tendency to choose lower fat foods at the post-survey; increase in fruit and vegetable consumption seemed higher in IG than in CG	Good

Evidence for effects of student participation in designing, planning, implementing and evaluating school health promotion

Reference and ID	Topic area	Setting and country	Description of participants / sample characteristics	Characteristics of student participation (intervention characteristics and comparison condition, if applicable)	Study design	Data collection method	Key findings	Quality
Carruth et al., 2010 (679)	First aid skill training and injury prevention	1 high school Southeast Louisiana, USA	43 adolescents (15-19 yrs) IG: n=27, 33% girls; CG: n=16, 76% girls	IG: agricultural science train-the-teacher group students received a 6-week training as peer first-aid instructors and taught first aid at an annual event; CG: did not receive train-the-teacher training	Quasi-experimental, non-equivalent control group design	pre- and post student questionnaires; 2 FG with IG students	Post-test knowledge acquisition scores in the areas first aid and safety/prevention were not sign. different between IG and CG; anticipatory action scores were higher in the IG	Fair
Hamdan et al., 2005 (245)	Promotion of healthy nutrition	10 high schools Minnesota, USA	HIS: n=54, 65% female; 32% in 10th grade LIS: n=343, 59% female; 89% in 10th grade	Student-led promotional activities of lower fat foods at schools with 2 levels of involvement: HIS volunteered for extracurricular activity and were responsible for planning, implementing and evaluating promotion of lower fat foods. LIS participated in material development or promotion implementation as part of a class project.	Cross-sectional study	Survey	More HIS than LIS perceived that the intervention had positive effects on their choosing and eating lower fat foods as well as on their attitudes towards lower fat foods.	Fair
Mellanby et al., 2001 (693)	Sex education	4 secondary schools [UK]	Year 9 students (13/14 yrs) PG: n=1061 AG: n=624 Peer-leaders: group of 3-4 students aged 16/17 yrs Adults: Teacher, healthcare worker	Peer-led sex education sessions; PG: students receiving the intervention delivered by peers; AG: students receiving the intervention by adults	Comparative investigation of peer-led and adult-led sex education	Pre- and post student questionnaires (PG: n=857, 50% girls; AG: n=460,49% girls); doc***	Post intervention: factual knowledge and acquisition of assertiveness skills did not differ between groups; knowledge about STDs was greater in AG; more students in PG felt embarrassed; more students in AG reported of high involvement in the program than in PG	Good
Wilhelmsen et al., 1994 (642)	Alcohol prevention	8 junior high schools (4 in each program condition), reflecting different socio-economic and	Grade 7 students [12/13 yrs] (n=955), teachers	Alcohol prevention program delivered by teachers and peer leaders in classroom sessions: HRS program: detailed pre-planned activities; LRS program: less detailed planned,	Quasi-experimental, non-equivalent control group design	pre- and post student questionnaire (n₁=915, n₂= 909)	HRS students had more benefits and were more satisfied with the program than LRS students; HRS students showed better cognitive and behavioural benefits concerning alcohol	Good

Reference and ID	Topic area	Setting and country	Description of participants / sample characteristics	Characteristics of student participation (intervention characteristics and comparison condition, if applicable)	Study design	Data collection method	Key findings	Quality
		urban-rural setting within school district Bergen, Norway		cooperation and common decisions about program implementation between peer leaders and teachers; [Comparison condition: no intervention]*			use than LRS students.	

Student participation in all phases of a project from selection of topic to evaluation

Reference and ID	Topic area	Setting and country	Description of participants / sample characteristics	Characteristics of student participation (intervention characteristics and comparison condition, if applicable)	Study design	Data collection method	Key findings	Quality
Valaitis and O'Mara, 2005 (608)	Community development	1 inner-city school with over 600 students from junior kindergarten to grade 8 Southwestern Ontario, Canada	19 students (4 males, 15 females; 12 in grade 7 and 7 in grade 8; including 6 of a minority group) 4 female adult facilitators (incl. 2 senior nursing students, school PHN and author of study)	Students moved through a community development process including needs assessment, prioritizing issues, planning community actions, implementing and evaluating them; students get support when working in groups	Single school case study	Participant observation, student interviews (all students), adult interviews, document analysis; 2 short open-ended surveys	Students run a store and achieved improvements in the washrooms and the greening on the grounds. Students earned recognition for their work. Students gained a sense of achievement e.g. felt they were making a difference and where excited when viewing their live websites (gaining ownership).	Good

Student participation in selection of topic, planning and implementation

Reference and ID	Topic area	Setting and country	Description of participants / sample characteristics	Characteristics of student participation (intervention characteristics and comparison condition, if applicable)	Study design	Data collection method	Key findings	Quality
Bonell et al., 2010b (664) Bonell et al., 2010a (676)	Reduction of substance use	2 intervention schools:**** Woodbridge: urban school, 45% of students black or other minority ethnicity, 21% receiving free school meal Hillside: suburban school, 3.5% black or other minority ethnicity, 7% receiving free school meal/ Greater London	"Action teams" included student representatives, teachers, parents, other school staff Woodbridge: 2 student representatives Hillside: 4 student representatives Woodbridge: 30 student mediators (year 9 and 10), regarded as disengaged by staff Hillside: 50 new prefects (year 11)	Interventions to reduce substance use in both schools: needs survey among students; "action teams" to determine priorities for action, developing agreed rules by consultation of student/school councils, implementing key priorities both schools established or strengthened student mediators to combat bullying	Case-study in 2 schools	Needs-survey among year 8 and 10 students; pre- and post-intervention surveys of year 7 students (11-12 yrs, n_1=614, n_2=735); Semi-structured interviews with students (8 participating ones, 17 not participating ones), interviews with action team members, staff, head teacher;	Students overcame their initial reluctance to speak, improved their communication skills and gained self-confidence. Participation brought the best out of some students. School rules were changed in a collaborative process. Student satisfaction of having a say. Collaboration in designing the rules increased awareness of project and led to a better understanding of school decision making. Re-writing new school rules built better	Good

Reference and ID	Topic area	Setting and country	Description of participants / sample characteristics	Characteristics of student participation (intervention characteristics and comparison condition, if applicable)	Study design	Data collection method	Key findings	Quality
		and South-West England, UK				observations (meetings, training-session)	peer relationships and improved communication between them. Some teachers became more open with their students. Staff was very pleased about the changing of school-rules. Involvement in this process led to a better acceptance of the more applicable rules and improved school engagement. Collaborative approach encouraged students to work harder. A better school climate toward an increased feeling of security and a participatory culture resulted as well, i.e. students opinions were taken seriously. But still scepticism if new rules will change anything.	
Carroll et al., 1999 (111)	Violence prevention	3 high schools located within a specific high-risk neighbourhood/ Ottawa-Carleton, Canada	"Youth Action Committee" 8 student volunteers from 3 schools School A (n=15), mean age: 16.9 yrs, 47% girls; School B (n= 148), mean age: 16.2 yrs, 64% girls; School C (n=185), Mean age: 17 yrs, 45.5% girls	Student-driven violence prevention project: PHN established the "Youth Action Committee", a team consisting of student volunteers who selected a project theme based on the needs assessment. The team planned and implemented project activities (noon-hour discussions and a television talk show)	process and impact evaluation in 3 schools	Structured Interviews with committee members; questionnaire for all students	Opportunity to learn about existing resources; participatory approach proved to be beneficial to all student members of the Committee; acquired skills in leadership and in community action	Good
Gadin et al., 2009 (212)	Health promotion	1 school including preschool/ socially unstable catchment, high	Age- and gender segregated workgroups led by teacher: 5-8 students, grades 1-6, 7-12	Schoolwork was replaced by student-centred group work on health issues; after discussions students were asked for proposals for improvement at	Single school case study	document analysis (proposals and documentation of committee	Students and school health committee identified categories and proposed topics for change. These	Fair

Reference and ID	Topic area	Setting and country	Description of participants / sample characteristics	Characteristics of student participation (intervention characteristics and comparison condition, if applicable)	Study design	Data collection method	Key findings	Quality
		mobility, high proportion of low income families and children with divorced parents 12% migration/ Sweden	yrs "school health committee": 6 students (one of each grade), 2 parents, 2 school staff, principal, school nurse	school to enhance their health; proposals were published at school; "School health committee" was introduced to prioritize students' proposals and to develop strategies to realize improvements		meetings); observation of committee meetings	proposals were not influenced by age of students. Student' suggestions were taken seriously and a lot of changes were implemented, e.g. serving pizza at school on World Book Day.	
Mandel and Qazilbash, 2005 (369)	Establishing feedback mechanism	1 school-based health centre Boston, USA	"Youth Advisory Board": n=12, 100% girls, grade 9 (13-15 yrs)	Establishment of feedback mechanism: "Youth Advisory Board" at a school-based health centre: students identified and prioritized, designed and implemented projects	Single school case study	[not described]	Students identified obstacles to youth participation and increased awareness of school-based health centre services; Youth Advisory Board identified service gaps, e.g. gaps in prevention efforts at school and need for improvements in health education. Board members became more critical towards the health services at school.	Poor
Rowe et al., 2010 (689)	Nutrition education	1 primary school active in health promotion Ipswich, Southeast Queensland, Australia	School: 40 pre-school students, 180 primary-aged students School survey: conducted by 19 senior school students (aged 11-12 yrs) among 300 students, school staff members, parents and broader community Adults: School staff: principal, 10 teaching staff members, specialist, support and ancillary staff members	Students conducted a survey to form a vision of an ideal school; HPS committee identified the priority areas and made program plans; to promote healthy eating habits a "Kids Café" was suggested, planned and implemented by students	Single school case study	4 FG with students in groups of 5-7 (year 4-7, aged 8-12 yrs) In-depth interviews (n=23) with representatives of the school community: 4 school staff members, 4 program co-ordinators; 8 parents and tuckshop representatives, 7 students, health service and	The development of the Kids Café provided real-life experimental learning activity and increased students learning engagement; they acquired preparation and advocacy skills.	Fair

Reference and ID	Topic area	Setting and country	Description of participants / sample characteristics	Characteristics of student participation (intervention characteristics and comparison condition, if applicable)	Study design	Data collection method	Key findings	Quality
						community agency workers; document analysis (planning documents, school HPS progress report, committee meetings, etc.); observations of meetings and whole-school community activities		
Student participation in planning, implementation and evaluation								
Baskin et al., 2008 (675)	Obesity prevention	1 urban public school with app. 450 students (kindergarten through grade 8), predominately African American community Southern USA	113 African American students (grade 7 and 8, mean age 12.8 yrs)	Obesity prevention program: a needs assessment among students, staff and parents was conducted; students contributed to program development and implementation; students were continually asked for feedback to improve the program	Single school case study	structured FGs with students and school personnel; document analysis (meeting minutes)	Students liked the program and learned a lot; several students improved their diet or physical activity habits; participatory process was helpful in identifying relevant program content.	Good
Hong et al., 2010 (273)	Sexual and reproductive health promotion	1 public middle school (grade 7 to 9), rural area Anhui Province, China	"Core working group": 102 students (10-14 yrs), 15 teachers and 12 parents	Sexual and reproductive health promotion: "Core working group" was responsible for needs identification, design, implementation and evaluation of the program; Adolescent trainers developed program content and activity under supervision of adults and implemented the program using participatory learning; after each sessions group reflections were held (evaluation)	Single school case study; technical collaborative action research	Qualitative data obtained through participatory activity and group discussions	Students learnt a lot of things beyond textbook knowledge and applied this knowledge in their daily life; information was disseminated to their families. Students expressed satisfaction with the program and participatory process. Participatory approach contributed to an appropriate and specific program that met students' needs. Parents and other stakeholders agreed also	Good

Reference and ID	Topic area	Setting and country	Description of participants / sample characteristics	Characteristics of student participation (intervention characteristics and comparison condition, if applicable)	Study design	Data collection method	Key findings	Quality
							that developmental process was appropriate.	
Student participation in planning and implementation								
Brook and Magnusson, 2006 (087)	PE participation	1 secondary school, in a poor health area United Kingdom	initially: n=163, Year 8/9 [12-13 yrs], then whole school n=815 Year 7-11 [11-15 yrs]	Changes to PE classes based on the critique of students; students re-designed PE uniform and suggested new activities; changes in physical environment based on student feedback; students got more choice in respect to PE uniform and activities	Single school case study	5 FGs: with 31 students (81% girls; year 9, 14-15 yrs) self-identified as previously being PE adverse; at time of study active participants; observations (PE lessons)	Cultural shift towards more inclusive practices (replacement of stigmatizing behaviours like being picked last). Students were able to display previously hidden physical abilities which changed peers' perception of them towards improved peer relationships; Different effects reported depending on gender: increased self-confidence among girls, while boys reported an reduction of aggressive interaction with male peers; Girls valued having control over aspects of PE uniform; their new uniform freed them from concerns over displaying their bodies; skill sharing program component as valuable confidence building experience including the opportunity to work with others outside of their friendship group.	Fair
Lakin and Littledyke, 2008 (327)	Nutrition	2 primary schools (school A: small rural school, Year 6; school B: larger, semi-rural school)	School A: year 6, 10-11 year olds, class teacher (=head of school) School B: students in year 3 (aged 7-8 yrs) and year 6	School A: Children had the opportunity to explore decision-making process; participatory learning methods (healthy eating)	2 single school case studies	School A: interviews with students and class teacher; class observation School B: interviews	School A: Changes in school provision of healthy food and giving children responsibility over vegetable production. Students	Fair

Reference and ID	Topic area	Setting and country	Description of participants / sample characteristics	Characteristics of student participation (intervention characteristics and comparison condition, if applicable)	Study design	Data collection method	Key findings	Quality
		Gloucestershire, UK	(aged 10-11 yrs)	School B: Children grow and harvest vegetables under adult supervision and prepared and served school meals; Children had a say via school and class councils and were consulted about designing the menu		with head teacher, governor, teacher, group of Year 3 (aged 7-8 years) and Year 6 (aged 10-11 years) students (5 in each group); observations (school grounds, classroom display and classroom activities)	became more involved with school meal preparation which resulted in a strong sense of involvement and achievement. Similar findings at School B: Improvements in attitudes and awareness of health and food and an increased openness to try new vegetables. Students were growing their own vegetables and liked the new school food. Students increased their understanding about farming, growing and healthy eating and were able to speak with confidence when engaged in discussions about these topics.	
Salmon et al., 2005 (503)	Drug prevention	9 schools, government-maintained and came from 3 adjoining local authority areas South West England, UK	students (n=249, 11-18 yrs) from 9 schools taking part in one Rock Challenge competition event	Students were encouraged to engage in the development of all aspects (theme, choreography and costume design) for a dance competition (Rock Challenge – Performing art programme to promote healthy lifestyles)	Qualitative longitudinal study in 9 schools	10 FG with 3-6 students on competition day (50 students, 86% girls, mean age 14.3 yrs, 11-18 yrs) One month later: qualitative post-performance survey	Students developed organising skills and gained experiences, e.g. recognising the value of diversity of people, collaboration and participation itself. Student-adult relationships as well as peer relationships improved through the program including extending social networks by making new friends. Students developed confidence and identified a number of positive aspects about themselves and their	Good

Reference and ID	Topic area	Setting and country	Description of participants / sample characteristics	Characteristics of student participation (intervention characteristics and comparison condition, if applicable)	Study design	Data collection method	Key findings	Quality
							relationships. Students enjoyed their involvement. Negative effects refer to a minority of students the program was relevant to and the opportunity for drug-related discussions coming out of the programme was not shared across the whole school community.	
Student participation using a peer approach								
Goenka et al., 2010 (682)	Tobacco prevention	16 schools (4 private and 4 state founded or governmental Schools each in Delhi and Chennai) India	Peer leaders: n=781 (402 from Delhi, 379 from Chennai) all students: n=5564 (2823 in Delhi and 2741 in Chennai) of grade 6 and 8 [11-13 yrs] teachers: n=125 (67 in Delhi and 58 in Chennai)	Tobacco prevention program: Peer leaders were elected by their classmates and trained to deliver classroom sessions (4-6 peer leaders in each class)	Process evaluation in 16 schools	systematic qualitative observations (classroom sessions); documentation (feedback forms for peer leaders, attendance forms); student self-administered survey	Students improved their health behaviour with respect to substance use. Observations showed that peer leaders act as work relief for teachers in delivering classroom sections. Communication between peer-leaders and students mediated program implementation.	Fair
Naylor and Cowie, 1999 (696)	Prevention of school bullying	51 schools (grammar, comprehensive and independent schools) and colleges (urban and rural settings) England (n=49), Wales (n=1), Scotland (n=1), UK	Secondary school students of schools in which peer support system was in place (n=2313); teachers (n=226)	Combating school bullying via peer support system: Peer supporters were trained to offer friendship or support in everyday interaction with peers, mediation to address bullying, mentoring or counselling for other students	Cross-sectional study of 51 schools	Questionnaire: Year 7 [11 yrs] (n=934), Year 9 [13 yrs](n=902), peer supporters (n=477), teachers involved (n=118), teachers not involved (n=108)	Peer support system was found helpful among system users. Peer supporters acquired skills and teachers were freed to do other things. The system provided somebody who listens and provided the strength to overcome bullying problems. School climate improved due to reduced bullying.	Fair

Reference and ID	Topic area	Setting and country	Description of participants / sample characteristics	Characteristics of student participation (intervention characteristics and comparison condition, if applicable)	Study design	Data collection method	Key findings	Quality
Strange et al., 2002 (695)	Sex education	14 co-educational comprehensive secondary schools central and southern England, UK[#]	Peer-educators: Year 12 students (aged 16/17 yrs) who volunteered (n=505, 65% girls) Students receiving peer-led sex education: Year 9 (aged 13/14 years) (n=2109, 52% girls)	PG: students received peer-led sex education AG: students received teacher-led sex education	Cohort study of 14 schools	Pre- and post peer-educator questionnaire (n_1=463; n_2=331) FG with sample of peer educators in each of the schools	Peer educators gained communication skills, became more confident when talking to others without getting embarrassed and became more open-minded e.g. by accepting the others opinion. They also learnt dealing with difficult situations in the classroom. Peer educators increased knowledge about STDs and became more cautious on sexual matters. Also participants' sexual behaviour changed and a majority of them changed their opinions on sexual matters. Program involvement helped peer educators to make new friends and increase their respect for teachers. Furthermore, participation improved peer educators' learning engagement, but the program interfered with studies. However, the program was useful to life outside school (e.g. becoming more confident what they want from a sexual relationship). Gender had influence on some effects, on others no influence was shown (e.g.	Good

Reference and ID	Topic area	Setting and country	Description of participants / sample characteristics	Characteristics of student participation (intervention characteristics and comparison condition, if applicable)	Study design	Data collection method	Key findings	Quality
							no influence in attitude change regarding gender)	
Streng, 2007 (562)	Student health advocates	1 high school with Caucasian school population/ Minnesota, USA	6 former student health advocates (83% girls)	Student health advocates are students who volunteered to be trained as peer health advocates to delivered classroom lessons	Single school case study	interviews with student health advocates (n=6)	SHAs (student health advocates) had to grow up when acting as positive role models. For instance, they overcame their nervousness and fear about speaking in front of a group. They acquired skills and knowledge including health knowledge. SHAs arouse admiration among students and perceived it as positive "cool" experience. Sharing beliefs with other SHAs was perceived as meaningful involvement.	Good
Student participation using participatory action research								
Lind, 2007 (350)	Mental health	1 alternative senior high school/ Canada	Students at school ranged 14-19 yrs; Research team: 4 students, 2 teachers, 1 PHN and 1 researcher (author)	Mental health promotion through participatory action research: Research team constructed an interview guide, conducted interviews, discussed and analysed their findings, interpreted the meaning of the stories and published the findings; student co-researchers participated in evaluation of being a co-researcher, student researchers were involved in planning, acting and reflecting the research	Single school case study	Team members interviewed students, student alumni, parents, the school nurse, former and current staff; transcripts of ream meetings	Interviewing was perceived as positive experience; Interviewer and interviewee felt really good. Research team meetings were surrounded by a participatory atmosphere (e.g. toward an opening for all voices).Young researchers gained ownership over project and personal power when speaking in their own words. Being listened to increase the self-confidence and	Fair

Reference and ID	Topic area	Setting and country	Description of participants / sample characteristics	Characteristics of student participation (intervention characteristics and comparison condition, if applicable)	Study design	Data collection method	Key findings	Quality
							participatory capacity arose among research group members. Students gained new insights and developed a sense of reality. Their interest in health promotion increased.	
							Ownership came with responsibilities and was perceived as difficult.	
Student participation using the IVAC approach								
Simovska, 2007 (539) Simovska and Jensen, 2008 (540)	Web-based collaboration project on health issues	Primary and lower secondary schools Czech Republic, Denmark, Sweden, Macedonia, Iceland, Portugal, Slovenia	2 project cycles: Young Minds I: approx. 100 students in 4 classes (from Denmark, Czech Republic, Macedonia, Sweden) Young Minds II: approx. 100 students in 4 classes (from Iceland, Macedonia, Portugal, Slovenia) age range: 13-16 yrs teachers and facilitators in each country	Web-based European collaboration project on issues related to health: Students identified problems on health issues and took action to tackle these problems. Students created web-pages presenting their research findings and evaluated their own websites. Findings were also presented by students at a ENHPS Conference Topics in Young Minds I:Youth, culture and alcohol consumption Topics in Young Minds II: Well-being and the school environment	Qualitative project evaluation	document analysis (web-site content); Semi-structured interviews conducted with students (n=16) and teachers (n=8)	Students were encouraged to think about problems. Action orientation increased motivation and learning engagement as well as ownership of learning process among students. Students had greater possibilities to make choices in the course of learning and were satisfied with it. Meaningful involvement was perceived as positive experience. Students developed a number of skills (e.g. collaboration skills), gained health literacy and developed competencies to bring about health-promoting changes. They improved their self-confidence as well. Student-adult	Good Fair

Reference and ID	Topic area	Setting and country	Description of participants / sample characteristics	Characteristics of student participation (intervention characteristics and comparison condition, if applicable)	Study design	Data collection method	Key findings	Quality
							relationship improved, e.g. when teachers realized what's important to students.	
Simovska, 2008 (702)	Overweight and obesity	1 Montessori school, relatively disadvantaged neighbourhood Maastricht, the Netherlands	student council: students between 11-14 yrs Shape Up working group: local coordinator, local facilitator, a member of the school	Health promotion and health education concerning prevention of overweight and obesity – "Shape Up": A team (student council) was responsible for planning and implementation of health-promoting changes concerning the determinants of overweight and obesity. Students decided which health promotion changes to bring about. Three issues were selected: Safety around school, playground for the 'gypsy-like' community and healthy school canteen.	Single school case study	Observations during school visits; document analysis (Shape Up web portal, notes, project documentation, reports); interview with headmaster, teachers, local facilitator and local coordinator; group interviews with students; Survey: with all students in class 6-8 (11-14 years)	Even academically less successful students and younger ones participated. Students developed a range of skills (e.g. communication, collaboration, and problem-solving skills) and students learnt through experience. Students recognized to articulate in a way others could understand them. Health-related effects refer to a gain of health literacy and improved health behaviour. Effects on personal development refer to increased self-confidence and gaining a sense of achievement. Students learnt to persist in difficult situations and used these as opportunities to learn. They had realistic perceptions with respect to the difficulties when initiating changes. Students' motivation to work with health issues increased. Students were satisfied with their	Fair

Reference and ID	Topic area	Setting and country	Description of participants / sample characteristics	Characteristics of student participation (intervention characteristics and comparison condition, if applicable)	Study design	Data collection method	Key findings	Quality
							involvement which was perceived as positive experience. Effects on school as organisation mainly refer to establishing a participatory culture and changes in infrastructure at school (e.g. safety around school) and in the local community and changes in rules (e.g. new rules about healthy food). Success of healthy lunch had influence on parents' behaviour and commitment on new policy on candy at school. Negative effects refer for instance to the collaboration with people from community and to the feeling of not being taken seriously. Mediating effects refer among others to students' academic performance and on gender.	
Simovska and Jensen, 2009 (701)	Overweight and obesity	73 schools (at nursery, primary and secondary level) in 19 cities in 19 EU countries	Local authorities and schools from 19 cities in 19 EU countries; age of children and young people was 4-16 years 73 schools, 2.300 students, 140 teachers, Project coordinated by local coordinator, local	Health promotion and health education concerning prevention of overweight and obesity – "Shape Up": Students were involved in identifying determinants linked to childhood overweight and obesity and guided to develop solutions, plan and take action to bring about changes; varying forms and stages of involvement from	Process evaluation of project in 73 schools in 19 cities in 19 EU countries	Document analysis (annual project reports, web portal contents, monitoring reports); questionnaire on local coordinator (n=11) and local facilitator	Most countries show similar effects, especially with respect to changes to school as organization (changes in class content, changes in rules and infrastructure) and also effect on the local community were reported (e.g. co-use of community	Fair

Reference and ID	Topic area	Setting and country	Description of participants / sample characteristics	Characteristics of student participation (intervention characteristics and comparison condition, if applicable)	Study design	Data collection method	Key findings	Quality
			facilitator, local promoting group in each city: city council employees, employees of national health and/or education ministries Project activities included professionals (architects, technicians, city planners and representatives from local village boards)	country to country		perspectives (n=16)	facilities). Personal effects mainly refer to the development of action competence and increase in knowledge. Learning through experience includes organising events and dissemination of information. Health-related effects refer to health literacy and improved health behaviour. IVAC-approach was successful in involving students in genuine and authentic ways. This resulted in increased motivation and sense of ownership among students.	

HIS, highly-involved students; LIS, less-involved students

HRS, highly role-specified; LRS, less role-specified

IG, intervention group; CG, comparison group

PG, peer-led group; AG, adult-led/teacher-led group

FG, focus group discussions or interviews

obs, observation

[xx], assumption if not stated in the publication

* we concentrated on the results comparing HRS and LRS

STDs, sexually transmitted diseases

SES, socioeconomic status

SHA, student health advocate

** in this study 2 more groups were investigated (control group and school environment intervention only), which were not of interest for this review and are thus not reported here.

*** Material used/developed in the sessions

PHN, public health nurse

HPS, health promoting school

PE, physical education

*****in this study 2 intervention and 2 comparison schools were included, but only the intervention schools were described in the articles*
ENPHS, European Network of Health Promoting Schools
[#] *this study included overall 27 schools, but the 13 schools acting as controls (continuing teacher-led sex education) were not further described in the article and no comparisons between the PG and the AG were made*

3.3. General effects of student participation

We analysed all effects of student participation that were described in the primary research included in this review and generated a category system of outcomes studied in the literature. The 11 main categories and 53 sub-categories of effects are listed and described in detail in Table 3. Table 3 also shows in which studies and study-groups the respective categories or sub-categories were present. The categories may be generally sorted into seven meta-categories. The first 6 meta-categories refer to positive effects of student participation and one category summarises all negative effects. The number in parentheses refers to the number of studies showing one or more effects in the particular meta category:

1) **personal effects on students** (18),

2) **effects on interaction and relation** (9),

3) **effects on other stakeholders** (6),

4) **effects on the school as an organisation** (11),

5) **effects on the local community** (1),

6) **effects on the program/project** (4) and

7) **negative effects** (6).

Additionally, factors that mediate effects were listed separately. In the following, each main effect category will be briefly summarised. To increase the readability of the following chapters, meta and main categories are printed in bold font.

The 5 intervention studies with comparison groups were not included in this analysis and will be reported separately, because the studies had too diverse foci to be analysed together. In the following description 19 studies (reported in 21 publications) were analysed. The 2 articles by Bonell et al. (2010a; 2010b) were analysed together, because they investigated the same study. Likewise with two articles by Simovska, that both report results from the same project (Simovska, 2007; Simovska & Jensen, 2008).

3.3.1. Personal effects on students

The meta-category "personal effects on students" subsumes six further main categories: 1) **skills, competencies and knowledge**, 2) **health-related effects for students**, 3) **personal development**, 4) **satisfaction, motivation and ownership**, 5) **influence on student perspectives** and 6) **usefulness for life in general.**

Skills, competencies and/or knowledge were shown to be increased in 12 out of 19 studies (Baskin et al., 2009; Bonell et al., 2010a; Bonell et al., 2010b; Carroll et al., 1999; Hong et al., 2010; Naylor & Cowie, 1999; Rowe et al., 2010; Salmon et al., 2005; Simovska, 2008; Simovska & Jensen, 2009; Simovska, 2007; Simovska & Jensen, 2008; Strange et al., 2002; Streng, 2007). Particularly, increased knowledge was shown by 7 studies (Baskin et al., 2009; Bonell et al., 2010b; Hong et al., 2010; Rowe et al., 2010; Simovska, 2008; Simovska & Jensen, 2009; Streng, 2007) and an array of different skills (communication skills, collaboration skills, decision-making and problem-solving skills, organisational skills) was reported by 7 studies (Bonell et al., 2010a; Salmon et al., 2005; Simovska, 2008; Simovska & Jensen, 2009; Simovska, 2007; Strange et al., 2002; Streng, 2007).

In more than half of the studies (10 studies) **health-related effects** for students were reported. Improved health behaviour was shown by 6 studies (Baskin et al., 2009; Goenka et al., 2010; Simovska, 2008; Simovska & Jensen, 2009; Strange et al., 2002) and an increase in health literacy was also shown by 6 studies (Lakin & Littledyke, 2008; Simovska, 2008; Simovska & Jensen, 2009; Simovska & Jensen, 2008; Strange et al., 2002; Streng, 2007). Two studies reported better mental health (Brooks & Magnusson, 2006; Lind, 2007) and 1 study showed increased physical abilities (Brooks & Magnusson, 2006).

In 11 studies **personal development** of students due to their participation was reported. Nine of those showed an increase in self-confidence or self-esteem (Bonell et al., 2010a; Bonell et al., 2010b; Brooks & Magnusson, 2006; Lakin & Littledyke, 2008; Lind, 2007; Salmon et al., 2005; Simovska, 2008; Simovska & Jensen, 2008; Strange et al., 2002; Streng, 2007). Five studies reported an increase in self-efficacy and/or gaining a sense of achievement (Lakin & Littledyke, 2008; Lind, 2007; Naylor & Cowie, 1999; Simovska, 2008; Valaitis & O´Mara, 2005).

In general, personal effects on students were shown in all but one studies (i.e. 18 out of 19 studies) (Gadin et al., 2009). Within this meta-category, effects falling in the category 4 "**satisfaction, motivation and ownership**" were

most often shown. Particularly satisfaction with the participatory process was reported in 8 studies (Bonell et al., 2010a; Bonell et al., 2010b; Brooks & Magnusson, 2006; Hong et al., 2010; Naylor & Cowie, 1999; Salmon et al., 2005; Simovska, 2008; Simovska, 2007; Streng, 2007). All studies using participatory action research (Lind, 2007) and the IVAC approach (Simovska, 2008; Simovska & Jensen, 2009; Simovska, 2007; Simovska & Jensen, 2008) reported an increase in student motivation and commitment. All studies using the IVAC approach also showed increased ownership over the product or work (Simovska, 2008; Simovska & Jensen, 2009; Simovska & Jensen, 2008) and the study using participatory action research showed that students gained ownership over the project (Lind, 2007). Four studies also showed that participation was perceived as a positive experience for the students (Lind, 2007; Simovska, 2008; Simovska, 2007; Streng, 2007) and 3 studies showed increased learning engagement as a result of student participation (Bonell et al., 2010b; Simovska, 2007; Simovska & Jensen, 2008; Strange et al., 2002). In 2 studies students were satisfied with the program (Baskin et al., 2009; Hong et al., 2010) and in 1 study they were satisfied with the changed infrastructure in the school (Lakin & Littledyke, 2008).

Nine out of 19 studies showed an influence on **student perspectives concerning health issues**; especially gaining new insights was reported in 6 studies (Brooks & Magnusson, 2006; Lakin & Littledyke, 2008; Lind, 2007; Salmon et al., 2005; Simovska, 2008; Strange et al., 2002). A shift of focus toward resources/possibilities instead of difficulties and obstacles was reported in 3 studies (Lakin & Littledyke, 2008; Simovska, 2008; Simovska & Jensen, 2008).

Only the study by Strange et al. (2002) associated student participation with effects for **life in general** (e.g. better communication with partners or usefulness for the future career of students).

3.3.2. Effects on interaction and relation

Nine studies (Bonell et al., 2010a; Bonell et al., 2010b; Brooks & Magnusson, 2006; Lind, 2007; Salmon et al., 2005; Simovska & Jensen, 2009; Simovska & Jensen, 2008; Strange et al., 2002; Streng, 2007; Valaitis & O´Mara, 2005) reported effects of student participation on interactions and relations at school – mainly referring to improved **peer relationships** (6 studies) (Bonell et al., 2010a; Bonell et al., 2010b; Brooks & Magnusson, 2006; Lind, 2007; Salmon et al., 2005; Strange et al., 2002; Streng, 2007) and/or improvements of **student-adult relationships** (4 studies) (Bonell et al., 2010a; Bonell et al., 2010b; Salmon et al., 2005; Simovska & Jensen, 2008; Strange et al., 2002). Two studies showed that students felt more **recognized** (by peers) (Streng, 2007; Valaitis & O´Mara, 2005). Improved **peer-cooperation** was reported in 2 studies (Brooks & Magnusson, 2006; Simovska & Jensen, 2009).

3.3.3. Effects on other stakeholders

Effects on other stakeholders were reported in 6 studies (Bonell et al., 2010b; Goenka et al., 2010; Hong et al., 2010; Naylor & Cowie, 1999; Simovska, 2008; Simovska & Jensen, 2009). A **work relief for teachers** (Goenka et al., 2010; Naylor & Cowie, 1999) and **satisfaction of other stakeholders** (beside students) with the participatory process (Bonell et al., 2010b; Hong et al., 2010) and **dissemination of information** (Hong et al., 2010; Simovska & Jensen, 2009) was reported by 2 studies each. Influence on **parents' behaviour and commitment** was reported just once (Simovska, 2008).

3.3.4. Effects on the school as an organisation

Effects on the school as an organisation were reported in 11 out of 19 studies (Bonell et al., 2010a; Bonell et al., 2010b; Brooks & Magnusson, 2006; Gadin et al., 2009; Lakin & Littledyke, 2008; Lind, 2007; Mandel & Qazilbash, 2005; Naylor & Cowie, 1999; Simovska, 2008; Simovska & Jensen, 2009; Simovska, 2007; Simovska & Jensen, 2008; Valaitis & O´Mara, 2005). After the meta category personal effects on students this is the second most occurring meta category. Changes refer primarily (in 7 studies) to a **cultural shift toward a participatory culture**, i.e. taking students seriously, listening to them and acting upon their inputs (Bonell et al., 2010a; Bonell et al., 2010b; Brooks & Magnusson, 2006; Gadin et al., 2009; Lind, 2007; Simovska, 2008; Simovska & Jensen, 2009; Simovska, 2007; Simovska & Jensen, 2008). This cultural shift was reported in all studies using a PAR or IVAC approach (Lind, 2007; Simovska, 2008; Simovska & Jensen, 2009; Simovska, 2007; Simovska & Jensen, 2008). **Changes or improvements in infrastructure or new infrastructure** were reported by 4 studies (Lakin & Littledyke, 2008; Simovska, 2008; Simovska & Jensen, 2009; Valaitis & O´Mara, 2005); Changes in **school rules or policies** or introduction of those were reported by 3 studies (Bonell et al., 2010a; Simovska, 2008; Simovska & Jensen, 2009). **Changes to the curriculum** or new class content were shown by 1 study (Simovska & Jensen, 2009). Improved **school engagement** was shown in 2 studies (Bonell et al., 2010a; Bonell et al., 2010b; Simovska, 2007). Also just a few studies showed a **better acceptance of or compliance with new rules** (1 study) (Bonell et al., 2010a; Bonell et al., 2010b), a **better school climate** (2 studies) (Bonell et al., 2010a; Naylor & Cowie, 1999), and the **identification of service gaps** (2 studies) (Gadin et al., 2009; Mandel & Qazilbash, 2005).

3.3.5. Effects on the local community

Just one report (Simovska & Jensen, 2009) shows effects on the local community mainly with respect to the co-use of community facilities to extend the opportunities for physical activity for students.

3.3.6. Effects on the program or project

Only the 2 studies involving students from planning to evaluation (Baskin et al., 2009; Hong et al., 2010) associate student participation with orientation to needs of program content. Two other reports show successful participation in program (Simovska, 2008; Simovska & Jensen, 2009).

3.3.7. Negative effects

Six studies (Bonell et al., 2010b; Lind, 2007; Naylor & Cowie, 1999; Salmon et al., 2005; Simovska, 2008; Strange et al., 2002) showed negative effects of student participation on the individual or the project level. On the individual level, some students felt ignored or not taken seriously, participation was sometimes seen as challenging and ownership was difficult and came with responsibilities. Other shown negative effects on the individual level referred to students meeting new rules with scepticism if they will change anything and to student participation interfering with their studies. In terms of the program, negative effects referred to the small amount of students the program was relevant to or used by and to the lack of dissemination of discussion outcomes.

3.3.8. Factors that mediate effects

Apart from the effects of student participation, a few factors that may mediate effects were identified by 5 studies (Brooks & Magnusson, 2006; Gadin et al., 2009; Goenka et al., 2010; Naylor & Cowie, 1999; Simovska, 2008; Strange et al., 2002): initial resources of students (e.g. academic performance) (Naylor & Cowie, 1999; Simovska, 2008); socioeconomic background (Simovska, 2008); gender [some showed gender differences (Brooks & Magnusson, 2006; Simovska, 2008; Strange et al., 2002), some did not (Strange et al., 2002)]; age of students (Gadin et al., 2009); more enthusiasm about benefits among involved-ones than among users (Strange et al., 2002).

Table 3: Effects of student participation

Meta-category	Main effect category with sub-categories	Description	Study ID	Study-group
Personal effects on students				
	Skills, competencies and knowledge			
	Increased communication skills	Student development of articulation skills, particularly learning to express their own views in a way others could understand them and learning about fighting with arguments for what they want; developing presentation skills; learning to make contact and communicate with people from the community	562, 676, 695, 702	Peer, IVAC, SI
	Improved collaboration skills	Student learning about acting in collaboration with others and making difficult decisions together	539, 702	IVAC
	Improved decision-making skills	Student learning about making difficult decisions	702	IVAC
	Increased problem-solving skills	Student learning about finding ways to meet challenges and to overcome problems.	695, 702	Peer, IVAC
	Increased organisational skills	Student learning about organising events, planning the budget and fundraising as well as to follow through action plans	503, 701, 702	PI, IVAC
	Increased learning capacity	Students increased their learning capacity	701	IVAC
	Applied knowledge	Students learnt through action and experience e.g. growing and preparing healthy food, creating games and applying this gained knowledge to their everyday life	689, 273, 701,702	SI, PIE, IVAC
	Learning research skills	Students learning about researching links between healthy eating and well-being	701	IVAC
	Increased action competence	Student learning about taking action if they want something and bring about health promotion changes but also to act in the local community	701, 702	IVAC
	Developing skills and competencies (not specified)	Students acquiring new skills or gaining competencies	562, 696, 540, 702	Peer, IVAC
	Increased knowledge (not specified)	Students gaining useful knowledge or learning a lot	689, 273, 675, 562, 664, 701, 702	SI, PIE, Peer, IVAC

Meta-category	Main effect category with sub-categories	Description	Study ID	Study-group
	Opportunities to acquire knowledge and experience	Students had the opportunity to acquire knowledge and experiences in leadership and community action	111	SI
	Health related effects for students			
	Improved health behaviour	Improvements in health behaviour related to healthy eating and physical activity but also sexual behaviour (e.g. using condoms) and reducing substance use or changes of students' lifestyles	675, 327, 682, 695, 701, 702	PIE, PI, Peer, IVAC
	Health literacy	Increases in health-related knowledge e.g. about sexually transmitted diseases or pregnancy. Student awareness, thinking and understanding about healthy eating. Students gaining health competences to bring about health promoting changes	327, 562, 695, 540, 701, 702	PI, Peer, IVAC
	Increased mental health	Interaction increased mental health for interviewer and interviewee. Changed uniform reduced barriers for taking part in physical education and freed from concerns	87, 350	PI, PAR
	Increased physical abilities	Former hidden physical abilities were shown and impacted positively on peer perceptions	87	PI
	Personal development			
	Influence on personality	Students becoming a better person or becoming more patient. Participation brought the best out of students	562, 664, 695	Peer, SI
	Developing social responsibility	Acting as good peer-role model made it necessary to grow up. Increased responsibility as role model but also over vegetable production; given power did not lead to arrogance	327, 562, 702	PI, Peer, IVAC
	Increased self-confidence and self-esteem	Development of self-confidence and self-esteem; improved student self-regard. Students overcame their initial reluctance to speak in front of a group or in discussions, i.e. became more outspoken	87, 327, 503, 562, 664, 676, 659, 350, 540, 702	PI; Peer, PAR; IVAC, SI
	Increasing self-efficacy/gaining sense of achievement	Students gaining sense of achievement, accomplishing something they thought they could not do; gaining a sense of personal power; feeling that they were making a difference ; developing a sense of self-efficacy	608, 327, 696, 350, 702	All, PI, Peer, PAR, IVAC
	Learning persistence	Student development of persistence when faced with difficulties, i.e. continuing their work when things do not go as planned	702	IVAC
	Satisfaction, motivation and ownership			

Meta-category	Main effect category with sub-categories	Description	Study ID	Study-group
	Increased student motivation and commitment	Increased student motivation and commitment; enthusiasm about the topic (e.g. health promotion, health issues); being heard as motivational experience	350, 539, 540, 701, 702	PAR, IVAC
	Positive experience	Participating as peer-leader or interviewer as positive experience; involvement in real-life action and gaining new experiences was perceived as exciting and positive; gaining a broader perspective was valued by students	562, 350, 539, 702	Peer, PAR, IVAC
	Increased learning engagement	Increased learning engagement, i.e. determination to do well at school and work harder. Student learning in a more focused, authentic and meaningful way (e.g. using the net for discussing issues instead of playing games)	664, 695, 540	SI, Peer, IVAC
	Satisfaction with participatory process	Student satisfaction, fun and enjoyment with their involvement as well as with their function (e.g., as student health advocate). On the other side the peer system was found very useful among the users. Students valued gaining influence (i.e., having a say, choice or control of process aspects). Students perceived sharing skills and beliefs as meaningful involvement	273, 87, 503, 562, 664, 676, 696, 539, 702	PIE, PI, Peer, IVAC, SI
	Satisfaction with program	Student satisfaction with program; students perceived program as beneficial; enjoyment of the special training styles (e.g., group working, role playing, games)	273, 675	PIE
	Satisfaction with changed infrastructure	Increased satisfaction with school food	327	PI
	Gaining ownership of project	Gaining sense of ownership of research project	350	PAR
	Gaining ownership with own product/work	Gaining or increased student ownership of their individual and group work, the learning process or over the actions taken (e.g. self-grown food)	608, 327, 540, 701, 702	All, PI, IVAC
	Influence on student perspective			
	Gaining new insights	Students recognized participation, team-work, collaboration and diversity of different people as values; new experiences in general and particularly about food production and PAR as new teaching method; encouraging reflections and increased open-mindedness and tolerance; student development of a meta-perception of their learning and communication with others (students recognized the need to articulate in a way the others could understand)	087, 327, 503, 695, 350, 702	PI, Peer, PAR, IVAC
	Shift of focus	Changed orientation towards resources instead of deficits, using obstacles as opportunity to learn. Improvement in attitudes and awareness of health and healthy foods. Student encouragement to think about problems	327, 540, 702	PI, IVAC

Meta-category	Main effect category with sub-categories	Description	Study ID	Study-group
	Developing a sense for reality	Realistic estimation about the difficulties of realising changes and visions and about the necessity of assistance provided by adults. Student awareness of the difference between taking action and bringing about change. Realization that active decision-making involves more effort than living with supplied answers	350, 702	PAR, IVAC
	Increased awareness of project/infrastructure	Student awareness of the project and of the school-based health centre services increased as well as their critical attitude towards the health services at school	369, 676	SI
	Better understanding of school decision-making	Increased understanding of the functioning of school decision-making and more appreciation of council work	664	SI
	Usefulness for life in general	Effects to life outside school e.g. improved communication with their partners and more confidence about what they want from a sexual relationships; usefulness for peer educators' future career	695	Peer
Effects on interaction and relation				
	Better student-adult relationships	Better relationships and communication between students and adults especially teachers. Enhanced mutual understanding (e.g. more appreciation of teachers efforts among students, teachers being more open with their students); increased respect of students for teachers; teachers getting to know students better	503, 664, 676, 540, 695	PI, SI, IVAC, Peer
	Improved peer relationships	Better peer relationships (e.g. reduction of aggressive interaction) and more communication among peers. Increased peer network (gaining new friends). Better relationship between different age groups. New friendships and sense of belonging among student health advocates because of similar shared values, beliefs and goals	087, 503, 562, 664, 676, 695, 350	PI, Peer, PAR, SI
	Improved peer cooperation and skill sharing	Increase in peer cooperation e.g. older students prepared training material and helped younger ones to participate in an activity. Sharing skills among peers (e.g. older students teaching physical skills to younger ones)	701, 087	IVAC, PI
	Student recognition	Students feeling recognized; peer leaders were respected by other students and arouse admiration among children	608, 562	All, Peer
Effects on other stakeholders				

Meta-category	Main effect category with sub-categories	Description	Study ID	Study-group
	Satisfaction of other stakeholders (beside students) with participatory process	Satisfaction among stakeholders including parents, teachers and administrator with developmental process; satisfaction with new rules among staff	273, 664	PIE, SI
	Work relief for teachers	Peer leaders as support for teachers	682, 696	Peer
	Influence on parents behaviour and commitment	Parents motivation to support new school policies; influence on the family patterns concerning lunch pack	702	IVAC
	Dissemination of information	Promotion of project and dissemination of information on healthy living to passers-by; general benefits for peers and family by dissemination of knowledge	701, 273	IVAC, PIE
Effects on school as an organisation				
	Better acceptance of and compliance with rules	More consensual and applicable rules; better acceptance of and compliance with rules by students; students intention not to break the rules they helped making	664, 676	SI
	Improved school engagement	Positive attitude to school and enhanced school engagement among students; student involvement gave greater sense of ownership of the school; students enjoying school more	664, 676, 539	SI, IVAC
	Change in or new class content	New contents in health education lessons; health subjects incorporated in different subjects. New forms of and new opportunities for physical activity at school (e.g., new dance lessons, rocket-ball activity, new sports training)	701	IVAC
	Changes in or new policy/rules	New school policies (e.g. banning sweets, establishment of snack time at school, healthy prizes for winners of competitions) but also concerning student participation; new rules ensuring equity in using the school playground	676, 701, 702	SI, IVAC
	Changes in or new infrastructure	Establishment of new infrastructure (e.g., school canteen, vegetable garden, climbing wall, new school playground, bicycle park); change in the provision of food or the food offer at school (healthy canteen, changed content of the vending machine, more healthy offers, less unhealthy options); new opportunities for physical activity at school (e.g., more sport competitions); new procedures at school (e.g., breakfast club, students cooking a hot meal together with their teachers once a week)	608, 327, 701, 702	All, PI, IVAC

Meta-category	Main effect category with sub-categories	Description	Study ID	Study-group
	Participatory culture	Shift towards more inclusive culture, i.e. more cooperative and supporting, trusting and respectful atmosphere. Increased sense that students' voices and views are acknowledged and valued, listened to and acted upon	212, 087, 664, 676, 350, 539, 540, 701, 702	SI, PI, PAR, IVAC
	Better school climate	Reduction of bullying and increased sense of security among students; peer support system perceived as improving school climate (somebody who listens and shows that somebody cares at school)	676, 696	SI, Peer
	Organising events	Students organising games on health issues, a "Healthy Disco" and a walking initiative, invited others to participate	701	IVAC
	Identification of service gaps/suggestions for improvement	Identification of service gaps, gaps in prevention efforts at school and needs for improvements; suggestions for improvements by students	212, 369	SI
Effects on the local community (infrastructure)		New opportunities for physical activity in the community (e.g. use of sport facilities); improvements of the local environment like playgrounds and green areas; safety of the traffic around the school	701	IVAC
Effects on program/project				
	Need-oriented and relevant lessons/ program content	Formative assessment and participatory process was helpful in identifying relevant contents and to frame lessons need-orientated	273, 675	PIE
	Successful participation	Successful approach in involving students in genuine, active and authentic ways; different kind of participation depending on the academic success; new forms of student influence	701, 702	IVAC
Negative effects		Negative effects were shown on the individual and program level. On the individual level, some students felt ignored or not taken seriously, participation was sometimes seen as challenging and ownership was difficult and came with responsibilities; student scepticism if new rules will change anything; participation interfered with studies. In terms of the program, negative effects referred to the small amount of students the program was relevant to or used by and to the absent dissemination of discussion outcomes	503, 664, 695, 696, 350, 702	SI, PI, Peer, PAR, IVAC
Factors that mediate effects		Different factors that mediate effects of student participation were described by some studies: initial resources of students (e.g. academic performance, socioeconomic background); gender (some showed gender differences, some did not); age of students; more enthusiasm about benefits among involved-ones than among users	087, 212, 682, 695, 696, 702	PI, SI, Peer, IVAC

PI, studies with respect to students involvement in planning and implementation of a health promotion measure

IVAC, studies using the investigation-vision-action-change approach
SI, studies in which students were involved in selection of a topic, planning and implementation of a health promotion intervention
PIE, studies with respect to students involvement in planning, implementation and evaluation
All, studies with respect to students involvement in all phases of the project cycle
Peer, studies using a peer approach e.g. peer education, peer support-system
PAR, studies using participatory action research

3.4. Effects of student participation depending on participation in different phases of the intervention

In the following sub-chapter we will illustrate the effects of student participation according to different stages of an intervention where the students participated in decision-making.

Eleven studies were categorised with respect to the phases the students participated in (Baskin et al., 2009; Bonell et al., 2010a; Bonell et al., 2010b; Brooks & Magnusson, 2006; Carroll et al., 1999; Gadin et al., 2009; Hong et al., 2010; Lakin & Littledyke, 2008; Mandel & Qazilbash, 2005; Rowe et al., 2010; Salmon et al., 2005; Valaitis & O´Mara, 2005). The following four groups arose: 1) participation from selection to evaluation, i.e. in all phases of the intervention, 2) participation in selection of a topic, planning and implementation of the project, 3) participation in planning, implementing and evaluation of the project, and 4) participation in planning and implementation.

This grouping shows that students participated at least in the planning and implementation phase but not always in the selection of the topic and the evaluation phase. The following sections describe the studies including the effects in terms of student participation in each of these categories. To make reading more comfortable we highlighted the meta categories.

3.4.1. Effects of student participation in all phases of the project cycle

Only 1 study was found that describes student participation in all phases of the project cycle – from **selection** of the topic and **planning** to **implementing** and **evaluating** the project. The study by Valaitis and O'Mara (2005) investigated a community development project with a participatory action research component. It was a single case study that used qualitative methodology for process evaluation. The study quality was rated as good. The article focused on describing enabling and constraining factors, therefore only few results on effects of the student participation in the community development project were reported.

Personal effects on students were shown with respect to personal development, especially increasing self-efficacy and **satisfaction** with their developed websites and the feeling of making a difference as well as having ownership of their work. Effects on **interaction and relation** refer to **students feeling recognized**. **Changes to infrastructure** as effects on the **school as organization** relate to improvements in and outside school e.g. improvements in the washrooms and the greening on the grounds.

3.4.2. Effects of student participation in selection of topic, planning and implementation

In 5 studies (reported in 6 articles) student participation in all stages of the project cycle except evaluation, i.e. **selection of topic, planning** and **implementing**, was reported (Bonell et al., 2010a; Bonell et al., 2010b; Carroll et al., 1999; Gadin et al., 2009; Mandel & Qazilbash, 2005; Rowe et al., 2010). The studies were located in Canada, Sweden, UK, USA and Australia. Three articles reported about single school case studies and one study is a process and impact evaluation in 3 schools. Both articles by Bonell et al. (2010a; 2010b) deal with case studies in 2 schools and were therefore analysed jointly. Mostly qualitative methods like interviews, focus groups, observation and document analysis were used for data collection. The age groups in these 5 studies are varying from primary level (Bonell et al., 2010a; Bonell et al., 2010b; Gadin et al., 2009; Rowe et al., 2010) with students aged 7 to 12 years, to high school level with students aged 13 to 18 years (Carroll et al., 1999; Mandel & Qazilbash, 2005).

In 3 studies (Bonell et al., 2010a; Bonell et al., 2010b; Carroll et al., 1999; Rowe et al., 2010) students were also involved in the needs assessment for the health promotion project. In 3 studies (Carroll et al., 1999; Gadin et al., 2009; Rowe et al., 2010) a participatory action research component was included. In the study by Mandel and Qazilbash (2005) a "Youth Advisory Board" was installed at a school-based health centre to act as a feedback mechanism. Carroll et al. (1999) evaluated a student-driven violence prevention project, i.e. the "Youth Action Committee", that was established by a public health nurse and student volunteers from 3 neighbouring schools. In the study by Gadin et al. (2009) regular schoolwork was replaced by student-centred group work and a "school health committee" consisting of students, parents and school staff was introduced to develop strategies to realize improvements. Rowe et al. (2010) reports about the establishment of a "Kids Café", which was suggested, planned and implemented by students and which is embedded in a whole school health promotion approach. The articles by Bonell et al. (2010a; 2010b) describe the "action teams" that were installed in two schools to determine the priorities for action, to develop rules and to implement the key priorities. Both schools had also student mediators in place.

The quality of 2 studies (Bonell et al., 2010a; Bonell et al., 2010b; Carroll et al., 1999) was rated as good, two studies (Gadin et al., 2009; Rowe et al., 2010) were rated fair and one study (Mandel & Qazilbash, 2005) was rated poor quality, reaching just three of 26 possible points.

In terms of their reported effects the studies investigating student participation in the topic selection, planning and implementation are not easily comparable, because they mostly show different effects. Four of the five studies reported only a few effects. Most effects were shown by Bonell et al. (2010a; 2010b).

However, a few similarities appeared. All studies in this group of five showed **personal effects on students** except the study by Gadin et al. (2009). Although referring to different subcategories, four studies showed **increased skills, competencies and knowledge**. In detail, the study by Bonell et al. (2010a; 2010b) described an increase in communication skills and a not further specified increase in knowledge, the study by Rowe et al. (2010) showed applied knowledge, i.e. developing a Café as real-life learning activity and acquisition of preparation and advocacy skills. The only effect shown in the study by Carroll et al. (1999) referred to opportunities to acquire knowledge and experience in leadership and community action. **Health-related effects** were reported by none of the five studies in this group. **Personal development** effects were reported only by Bonell et al. (2010a; 2010b) referring to an influence on personality and increased self-confidence and self-esteem through participation. Two studies (Bonell et al., 2010a; Bonell et al., 2010b; Rowe et al., 2010) showed that participation led to **increased satisfaction, motivation and ownership**, namely an increased learning engagement was shown by both. The study by Bonell et al. (Bonell et al., 2010a; Bonell et al., 2010b) further described satisfaction with the participation process. **Influences on student perspective** were reported by two studies (Bonell et al., 2010a; Bonell et al., 2010b; Mandel & Qazilbash, 2005) referring to an increased awareness of the project. The study by Bonell et al. (2010a; 2010b) additionally showed a better understanding of school decision-making. None of the five studies reported effects with respect to the **usefulness** of participation **for live in general**.

Effects on interaction and relation and **effects on other stakeholders** (beside students) were reported only by Bonell et al. (2010a; 2010b) referring to **better student-adult relationship and improved peer relationship** as well as to satisfaction of other **stakeholder with the participatory process**.

Three studies (Bonell et al., 2010a; Bonell et al., 2010b; Gadin et al., 2009; Mandel & Qazilbash, 2005) reported effects on the **school as an organisation**. Two studies each described similar effects concerning the **identification of service gaps** (Gadin et al., 2009; Mandel & Qazilbash, 2005) and a **participatory culture** (Bonell et al., 2010a; Bonell et al., 2010b; Gadin et al., 2009). Bonell et al. (2010a; 2010b) showed **better acceptance of and compliance with rules** that were made by students and adults, i.e. also **new rules**, **improved school engagement** as well as a **better school climate**, namely an increased sense of security at school.

One study each reported a **negative effect** referring to scepticism if new rules will change anything (Bonell et al., 2010a; Bonell et al., 2010b) and a **factor that mediate effects**, which referred to the age of students as not having influence on suggestions of proposals (Gadin et al., 2009).

3.4.3. Effects of student participation in planning, implementation and evaluation

Two studies reporting student participation in **planning, implementation** and **evaluation** (but not in selection of the topic) were found (Baskin et al., 2009; Hong et al., 2010). In both studies also a needs assessment among students or in collaboration with students was conducted. Both studies were single school case studies and used qualitative methods for process evaluation and their quality was rated as good. Both studies included students in middle school age (between 10 and 14 years, grades 7 to 9). In the study by Hong et al. (2010) a "core working group" consisting of 102 adolescents, 15 teachers and 12 parents were designing, implementing and evaluating the sexual and reproductive health promotion program. This study also used technical collaborative action research.

The two studies (Baskin et al., 2009; Hong et al., 2010) referring to student participation in planning, implementation and evaluation of school health promotion showed two similarities with respect to **personal effects on students**, namely **increased knowledge,** which was not further specified in the articles, and increased **satisfaction** with the program. The study by Hong et al. (2010) further reported that gained **knowledge was applied** to students' everyday life and satisfaction with participation among students. Health-related effects were only reported by Baskin et al. (2009) referring to some students who report positive changes of eating habits and/or to physical activity.

Neither of these studies reported effects on **interaction and relation**, effects on the **school as an organisation**, on the **local community**, **negative** or **mediating effects**.

Only the study by Hong et al. (2010) showed effects **on other stakeholders,** particular stakeholders beside students were **satisfied** with the developmental process of the sex education program (Hong et al., 2010) and deemed the

process appropriate. Families and peers experienced benefits by **dissemination** of knowledge e.g. about HIV transmission.

Both studies showed **effects on the program**, in particular that the program-content was **need-oriented** due to the participatory process.

3.4.4. Effects of student participation in planning and implementation

Three studies were found that reported effects of student participation in **planning** and **implementing** health promotion at school (but not in selection of the topic or evaluation of the health promotion project). In the single school case study (secondary school) by Brook and Magnusson (2006) students got the chance to re-design their physical education uniform and suggest new physical education activities. Lakin and Littledyke (2008) reported about 2 primary schools where students had the opportunity to explore decision-making processes and to grow and harvest vegetables themselves. Salmon et al. (2005) described the experiences of students from 9 schools taking part in a performing art program to promote healthy lifestyles ("Rock Challenge"). Students were encouraged to take part in all aspects of preparation for the dance competition. All 3 studies were carried out in the UK and used qualitative methods for data collection. The case studies were rated with fair quality (Brooks & Magnusson, 2006; Lakin & Littledyke, 2008) and the study by Salmon et al. (2005) was rated with good quality.

The three studies in this group were about the promotion of healthy lifestyle by an art program (Salmon et al., 2005), healthy eating (Lakin & Littledyke, 2008) and the changes of physical education (Brooks & Magnusson, 2006).

Effects on the meta-category **personal effects on students** were described in all of the three studies in this group. However, within this meta-category, mostly different effects were shown. In particular, only the study by Salmon et al. (2005) showed increased **organisational skills.** The two other studies (Brooks & Magnusson, 2006; Lakin & Littledyke, 2008) reported (different) **health-related effects** referring to improved health behaviour (positve changes of eating behaviour) and health literacy (Lakin & Littledyke, 2008) or increased mental health and increased physical abilities (Brooks & Magnusson, 2006), respectively. Despite these differences, all studies in this group showed effects with respect to **personal development** of students, in partcular increased self-confidence and self-esteem. Additionally the study by Lakin and Littledyke (2008) showed the development of social responsibilty among students as well as an increased self-efficacy. All studies showed effects concerning **satisfaction, motivation and ownership**, with only two studies (Brooks & Magnusson, 2006; Salmon et al., 2005) describing effects with respect ot the same sub-category, namely statisfation with the participatory process, e.g. sharing skills, gaining more choice as well the chance to express preferences. In the intervention reported by Lakin and Littledyke (2008) students grew their own food and were actively involved in food preparation. They gained ownership of their self-grown food and reported increased satisfaction with school food. **Influence on student perspectives** illustrated in gaining new insights were reported by all studies in this group, e.g. students recognized participation as value and appreciated diversity of people and collaboration. Additionally to this effect, the study by Lakin and Littledyke (2008) reported a shift of focus, in particular improvement in attitudes and awareness of health and food as well as increased openness to try new vegetables. Participation effects with respect to **usefulness for life in general** were reported in none of these studies.

Two studies (Brooks & Magnusson, 2006; Salmon et al., 2005) showed two effects on **interaction and relation** each. Both reported **improved peer relationships** because of the opportunity to increase their social network and better relationships among peers. One study each described a **better student-adult relationship** through participation (Salmon et al., 2005) and **improved peer cooperation** (Brooks & Magnusson, 2006).

Although two out of the three studies (Brooks & Magnusson, 2006; Lakin & Littledyke, 2008) showed **effects on school as an organisation**, both studies show different ones. While the effect reported by Lakin and Littledyke (2008) referred to **changes in school infrastructure**, in particular the provision of healthy food, the effect Brook and Magnusson (2006) reported with respect to this main category referred to a cultural shift towards a more **participatory culture** including inclusive practices and a more cooperative and supporting atmosphere.

None of the three studies reported **effects on the local community**, on the **program** or on **other stakeholders** beside students.

Only once a **factor that mediates effects** was reported (Brooks & Magnusson, 2006) referring to different effects of student participation depending on gender. While girls reported an increase in self-confidence in this study, boys reported a decrease in aggressive interaction.

Negative effects in this group were reported just once (Salmon et al., 2005) referring to the fact that the art program was only relevant to a minority of pupils and that the discussion coming out of this program was not shared across the whole school.

3.4.5. Key points

In summary, 11 studies could be classified according to the phases of a health promotion measure where student participated in. These studies were further divided into four groups. Participation occurs primarily in the planning and implementation phase of a project but less often in the phase of evaluation. The comparability of shown effects within the groups was complicated by the heterogeneity of shown effects, making comparability between groups hardly possible or only possible on a generalized level like our meta effect categories.

Nearly all studies (all but one) showed **personal effects on students** and none of the 11 studies showed **effects on the local community**. There was no conclusive pattern regarding the other main effect categories.

3.5. Effects of student participation depending on the methodological approach adopted in the interventions

Not all studies could be grouped according to the stages of a project where students participated in. Some studies showed a dominance of the research approach against the participation component and where therefore grouped together in this respect.

Eight studies showed a dominance of the chosen study approach against stressing the phases of the project cycle the students participated in and were grouped according to their approach into: 1) studies using a peer approach, 2) studies using a participatory action approach and 3) studies using the IVAC approach.

3.5.1. Effects of student participation using a peer approach

Four studies were found that specifically investigated the effects of school health promotion using a peer approach (Goenka et al., 2010; Naylor & Cowie, 1999; Strange et al., 2002; Streng, 2007). In three studies peer leaders were delivering classroom sessions, in the study by Naylor and Cowie (1999) a peer support system was evaluated in 51 schools in the UK. In all fours studies, peer educators or peer supporters were trained to deliver classroom sessions or to support, mentor or counsel their classmates. In one study (Goenka et al., 2010) peer educators were elected by their classmates, whereas in another study volunteer students were recruited by the school nurse to be student health advocates (Streng, 2007). The studies by Strange et al. (2002) and Streng et al. (2007) were rated as good quality and the studies by Goenka et al. (2010) and Naylor and Cowie (1999) were rated with fair.

All four studies using a peer approach showed **personal effects on students**, specifically **improved skills, competencies and knowledge**, **health-related effects**, **personal development** and **satisfaction, motivation and ownership** was shown by most of them. Two studies showed an increase in communication skills (Strange et al., 2002; Streng, 2007) and students developing skills and competencies in general (Naylor & Cowie, 1999; Streng, 2007); an increase in knowledge (Streng, 2007) and in problem-solving skills (Strange et al., 2002) was shown by 1 study each. Two studies reported showed **health related effects** concerning improved health behaviour (Goenka et al., 2010; Strange et al., 2002) and increased health literacy (Strange et al., 2002; Streng, 2007), respectively. Using a peer approach had also influence on **personal development** of the students. Two studies showed an influence on personality (e.g. becoming more patient) and an increase in self-confidence, especially when talking about sexual issues (Strange et al., 2002; Streng, 2007). Students developing social responsibility (in terms of being a role model as peer educator for other students) was also shown (Streng, 2007). Two studies (Naylor & Cowie, 1999; Streng, 2007) showed satisfaction with the participatory process.

Several effects on **interactions and relations** could be shown. Two studies (Strange et al., 2002; Streng, 2007) showed improved **peer relationships**, as in more opportunities to make new friends and positive connections with other students due to similar values and goals. One study reported about **student recognition**, i.e., respect or admiration of other students towards the student health advocates (Streng, 2007). Only the study by Strange et al. (2002) associated student participation with effects for **life in general** (e.g. better communication with partners or usefulness for the future career of students).

Two studies in this group (Goenka et al., 2010; Naylor & Cowie, 1999) reported **effects on other stakeholders**, in particular teachers who experienced a work relief. **Negative effects** were reported in two studies referring to a small acceptation (small number of users) of the peer support system (Naylor & Cowie, 1999) and to problems to reconcile intervention and school studies as a fifth of interviewed peer educators agreed to (Strange et al., 2002). In 3 studies (Goenka et al., 2010; Naylor & Cowie, 1999; Strange et al., 2002) gender emerged as a possible factor that mediates effects. Strange et al. (2002) showed on the one hand that gender had an influence on the effects (e.g., rating of usefulness of being a peer educator to future career higher among females) and on the other hand that there was no

differences between boys and girls in attitude change or changes in confidence. Other mediated effects reported in this group referred to differences between users of a system and executive peer supporter and teachers. The latter showing more enthusiasm about the system than the users (Strange et al., 2002).

3.5.2. Effects of student participation using participatory action research

Only one study using participatory action research met our inclusion criteria. The study by Lind (2007) describes a mental health promotion project in Canada that was carried out using participatory action research. A research team consisting of 4 students, 2 teachers, 1 public health nurse and the author herself were jointly planning, acting and reflecting the research. The research team prepared and conducted interviews to collect positive stories of students that were making a difference at the school. They analysed the data and presented their findings to the Board of Education. The study by Lind (2007) showed no increase in knowledge and/or skills. **Personal effects on students** refer to **health-related effects** for students particularly an increase in mental health reported by students (interviewer and interviewee), to **personal development** in terms of developing self-confidence and gaining a sense of personal power but also to **motivation**/enthusiasm because of being heard and a sense of ownership over the research project. But this ownership came with responsibilities and it was seen as difficult, i.e. **negative effects** were shown. Doing research (interviewing) was seen as positive experience among students who gained new experiences and developed a sense for reality in terms of realizing that active decision-making involves more effort than living with supplied answers. Participatory action research showed **effects on interaction and relation**, particularly improved peer relationships. Effects on the **school as an organization** refer to the **development of a participatory culture**, particularly in group discussions where the atmosphere was trusting and respectful. The quality of the study by Lind (2007) was rated as fair.

3.5.3. Effects of student participation using the IVAC approach

Two project reports describe the "Shape Up" project, a European health promotion and health education initiative with the aim of preventing childhood overweight and obesity (Simovska, 2008; Simovska & Jensen, 2009). The project was carried out in schools in 19 European countries and used the Investigation-Vision-Action-Change (IVAC) model as theoretical framework. The IVAC model provides a framework for the development of health-promoting strategies that ensure that the insight and knowledge that students acquire during the project is action-orientated and interdisciplinary and, therefore, conducive to the development of action competence. For the purposes of Shape Up, the model was complemented to emphasise the selection and critical reflection (i.e. evaluation) phase (Simovska et al., 2006). The main perspectives of the IVAC approach in Shape Up were a) selecting and investigating a theme, b) developing visions, c) taking action and initiating change and d) reflecting critically, or evaluating. One of the project reports summarises the case studies of all countries (Simovska & Jensen, 2009) and one report describes the case study in Maastricht only (Simovska, 2008). Especially the comprehensive report shows varying kinds and phases of student participation. The quality of the publications was rated as fair.

Two articles describe the project "Young Minds", which was a web-based European collaboration project on issues related to health (Simovska, 2007; Simovska & Jensen, 2008). Students from altogether 8 European countries created a web-site on health issues and used it as discussion forum. Students identified health problems and tackled these problems with action at their own schools. They presented their findings at an ENHPS conference. The IVAC model was adapted to structure student participation in the Young Minds project and the educational framework was characterized by the use of information and communication technology as an interactive platform for cross-cultural communication and collaboration. The two articles describing the Young Minds project were analysed jointly. The quality of the articles was rated fair and good.

In general, of all studies most effects were shown by the studies using the IVAC approach. One reason for this is that two of the included publications are comprehensive project reports (Simovska, 2008; Simovska & Jensen, 2009) and much more extensive than a journal article can be. The one report presents findings from 19 countries and thus an array of effects (Simovska & Jensen, 2009).

All studies using the IVAC approach showed **personal effects on students**, and specifically increased skills, competencies and knowledge, health-related effects and satisfaction, motivation and ownership.. Especially the two reports about Shape Up (Simovska, 2008; Simovska & Jensen, 2009) showed a whole array of **increased skills, competencies and knowledge**. The Young Minds project, on the other hand, showed only improved collaboration skills (e.g., making difficult decisions together) and developing other competencies (Simovska, 2007; Simovska & Jensen, 2008). All three studies showed **health related effects**, namely an increase in health literacy (Simovska, 2008; Simovska & Jensen, 2009; Simovska & Jensen, 2008), and both Shape Up studies showed also an improvement in health behaviour (Simovska & Jensen, 2009) (Simovska, 2008). An increase in **student motivation** and commitment as well as **ownership** over their work or the project was also shown by all three studies (Simovska & Jensen, 2009)

(Simovska, 2008; Simovska, 2007; Simovska & Jensen, 2008). The Young Minds project led to **increased learning engagement** (Simovska & Jensen, 2008) and participation as **positive experience**, like meaningful involvement, and satisfaction with the participatory process, in particular with having a choice and experience something different than normal were also reported by both projects (Simovska, 2008; Simovska, 2007).Common influences on **student perspectives** refer to a shift of focus e.g. concentration on resources instead of deficits and the use of obstacles as opportunity to learn (Simovska, 2008; Simovska & Jensen, 2008). Gaining of new insights e.g. developing a meta-perception and recognizing that you had to articulate in a way the others could understand and developing a sense for reality like having realistic perceptions of difficulties and estimations of changes were shown just once (Simovska, 2008). With respect to effects on **personal development**, developing social responsibility, increasing self-efficacy and learning persistence were reported only by one Shape Up study (Simovska, 2008). An increase in self-esteem or self-confidence was shown by both projects (Simovska, 2008; Simovska & Jensen, 2008).

Only a few effects on **interaction and relation** could be shown. Better **student-adult relationships**, that is, teachers getting to know students better, in Young Minds (Simovska & Jensen, 2008) and **improved peer collaboration** was reported by Shape Up (Simovska & Jensen, 2009).

Influence on **other stakeholders** were reported by Shape Up only: the **dissemination of information** and **influence on parents' behaviour and commitment** e.g. family patterns concerning lunch pack and parents motivation to participate and support the new school policy.

Many effects on the **school as an organisation** were shown. All three studies reported the development of a **participatory culture** (Simovska, 2008; Simovska & Jensen, 2009; Simovska, 2007; Simovska & Jensen, 2008). In Shape Up, a lot of **changes in infrastructure** or establishment of new infrastructure was reported, e.g., new healthy school canteen or improvement of food at school, vegetable garden at school, changes in the playground, new possibilities for physical activity at school (Simovska, 2008; Simovska & Jensen, 2009). Also **new or improved rules** and **policies** were reported (Simovska, 2008; Simovska & Jensen, 2009). One report also showed that students participated in establishing **new class content**, e.g. new dance lessons or new content in health education classes (Simovska & Jensen, 2009). As a result of the Young Minds project students had **improved school engagement**, i.e. enjoyed school more (Simovska, 2007).

Just one Shape Up report (Simovska & Jensen, 2009) of all included studies showed effects on the **local community**, e.g. extending the opportunities for physical activity by co-using of community facilities.

Negative effects concerning students who felt being not taken seriously and collaboration as challenge for students were just reported by Simovska (2008). The same report names initial resources (e.g. students' academic performance and socioeconomic background) and gender as factors that mediate effects.

3.5.4. Key points

In summary, eight studies showed a dominance of the chosen study approach against stressing the phases of the project cycle. These studies were further differentiated in three groups. A comparison of the effects within and between these groups raises problems similar to the ones described for the comparison of studies/study groups with respect to the phases students participated in. However, all studies showed positive effects in the meta-category **personal effects on students**.

All studies applying the IVAC-approach showed **personal effects on students**, in particular a gain in **skills, competencies and knowledge**, **health-related effects**, and **satisfaction, motivation and ownership** Furthermore, all studies in the "IVAC-group" showed effects on **school as an organisation**.

Although all studies using a peer approach showed **personal effects on students**, no consistent effects in their main categories were found. None of the four studies in this group showed **effects on the local community** or **on the project**.

We only found one study using participatory action research.

3.6. Effects identified in studies with experimental design including a comparison group

Five of the 23 included studies were comparing an intervention with a comparison group (see Table 2). They were mainly conducted in the USA and the UK at high schools or secondary schools (age range of students 12-19 years). All

these studies investigated a peer approach meaning that peers were trained as peer leaders, peer first aid instructors or peer mediators and delivered lessons (with teachers). None of these studies used qualitative methods only.

Hamdan et al. (2005) studied the level of involvement in the provision of a student-led health promotion intervention aiming at the promotion of lower fat foods. They differentiated between highly-involved and less-involved students, the difference being that the highly-involved students volunteered for an extracurricular activity to carry out the project and the less-involved students were participating because their class teachers implemented the project during class time. The results showed that more highly-involved students than less-involved students indicated that the peer-led promotional intervention changed the way they chose foods, afforded them the opportunity to try lower-fat foods and fruits and vegetables they would otherwise not have tried, influenced them to eat more fruits and vegetables, improved their attitude towards lower-fat foods, and had the impression that more students eat lower fat-foods in the school cafeteria.

In the study by Wilhelmsen et al. (1994) two intervention conditions of an alcohol prevention program delivered by peer leaders and teachers were compared. In the first condition, the highly role-specified program, the classroom teacher and peer leaders were trained to implement pre-planned activities that were outlined in the program manual. In the second condition, the less role-specified program, the classroom teacher and peer leaders were trained to cooperate and to make their own decisions about the implementation of the program. Otherwise, the two conditions were similar. The results of the program evaluation showed that students in the highly role-specified program reported more satisfaction with their participation in the program, had higher activity levels, more learning benefits and benefits from the program work than the students in the less role-specified program. Additionally, students in the highly role-specified program also reported a higher degree of involvement in the program. The highly role-specified version of the alcohol prevention program was also more effective in influencing cognitive and behavioural variables; i.e., students in the highly role-specified program reported better attitudes towards drinking, subjective norms, a higher intention to abstain from drinking and less frequent alcohol use.

In the study by Carruth et al. (2010) a group of high school students that completed a 6-week train-the-teacher training to become first aid instructors and subsequently taught first aid to other students at an annual event were compared with students that did not receive the training. The results showed that knowledge acquisition in the areas first aid and safety/prevention after the training and the event was not significantly different between the two groups. However, the anticipatory action scores were higher for the peer-teaching group compared to the nonteaching group. Focus group results with the peer-teachers also showed that the students developed from initial anxiety and a lack of confidence about the teaching assignment to self-assurance and enjoyment of the teaching content.

In the study by Birnbaum et al. (2002) four groups with differing levels of exposure of an intervention to promote healthful eating among young adolescents were investigated: 1) a control group, 2) school environment interventions only, 3) classroom curriculum plus school environment interventions, and 4) peer leaders plus classroom curriculum plus school environment interventions. For the current review, only the comparisons between groups 3 and 4 are of interest and will be described shortly. Peer leaders were elected by classmates and helped delivering classroom sessions to promote healthful eating using participatory learning. Both groups, the students in the classroom curriculum plus school environment intervention and the students who received additional peer education, reported increased fruit and vegetable consumption and a greater tendency to choose lower fat foods. The increase in fruit and vegetable consumption seemed to be higher in the peer-leader group.

The study by Mellanby et al. (2001) took a different approach by comparing a sex education intervention that was delivered by peers with the same intervention delivered by adults. The results showed that the increase in factual knowledge from pre- to post-intervention did not differ between peer- and adult-led interventions. However, the differential increases in mean scores for knowledge of sexually transmitted diseases were greater for the adult-led intervention compared to the peer-led intervention. The acquisition of assertiveness skills that could be used to prevent being pressured into doing something they did not want to do was similar after both interventions. There was a difference in attitudes, in the way that students in the adult-led group were more likely to agree that girls get a bad reputation if they have sex and less likely to answer that boys get a bad reputation if they have sex. In addition, more students in the peer-led sessions felt embarrassed during the sessions compared to the adult-led sessions. A higher proportion of students in the adult-led program were highly involved in the program compared to the peer-led intervention.

In summary, the studies using experimental design with a comparison group show that there are a number of positive effects of student participation, mainly personal effects on students, such as health-related behaviour. However, in one case the peer-led intervention showed less positive effects compared to the adult-led group, referring to a lower proportion of students involved in the peer-led program and to students feeling embarrassed during the peer-led session.

3.7. Intended and unintended effects

Apart from finding evidence for effects in terms of student participation, we were interested if the reported effects were always intended by the project managers or authors or if unintended effects also emerged. Therefore, we tried to reconstruct the context of all included studies except for the studies with a control group design.

All included studies were dealing with health promotion interventions. In more detail, five studies (Baskin et al., 2009; Lakin & Littledyke, 2008; Rowe et al., 2010; Simovska, 2008; Simovska & Jensen, 2009) were about obesity prevention and/or healthy eating and physical activity. Participation, collaboration or community development was the topic of five interventions (Brooks & Magnusson, 2006; Gadin et al., 2009; Mandel & Qazilbash, 2005; Simovska, 2007; Simovska & Jensen, 2008; Valaitis & O´Mara, 2005). Three interventions (Bonell et al., 2010a; Bonell et al., 2010b; Goenka et al., 2010; Salmon et al., 2005) were dealing with substance use. Two studies were about violence prevention/reduction (Carroll et al., 1999; Naylor & Cowie, 1999) or sex education/sexual health promotion respectively (Hong et al., 2010; Strange et al., 2002). One study each investigated peer education (Streng, 2007), mental health (Lind, 2007) and health promotion in general, respectively (Carroll et al., 1999).

Interestingly, just ten (Carroll et al., 1999; Gadin et al., 2009; Lakin & Littledyke, 2008; Lind, 2007; Mandel & Qazilbash, 2005; Rowe et al., 2010; Simovska, 2008; Simovska & Jensen, 2009; Simovska, 2007; Simovska & Jensen, 2008) of the 21 studies had a special focus on participation, meaning that the participation-component of the intervention or the research approach using a participation-component was explicitly of interest.

To catch the context in more detail, we had a closer look at both the study or intervention objectives and the predefined outcomes. The latter refer to expected outcomes defined before analysing the data collected as opposed to outcomes emerging from data analysis itself (e.g. categories emerging from qualitative analysis). Even if this "context aspects" not necessarily had to deal with effects in terms of student participation, we interpreted/translated these study aspects in our effect-categories where applicable (e.g. aims or outcomes referring to self-esteem were considered as personal development), just to get an insight in the aspects the studies or interventions, respectively, focused on.

However, the majority of studies aimed to investigate also less specified aspects, such as the participants' experiences related to the intervention. Some of these studies also investigated unintended effects explicitly (Bonell et al., 2010b; Simovska & Jensen, 2009), which made a translation more challenging. Therefore, a translation into (our effect) subcategories was not conclusive. As a consequence, we decided to interpret the "study context" less strict with respect to our meta- and main-categories instead. Here is an example for illustration: if one study was about opinions regarding the program or tried to find out about the potentials and barriers of the program or approach used we interpreted this as focus on program/project and therefore as "effects on program/project". If an aim was about collaboration with the school-community, we translated as both (effects on) interaction and relation and (effects on) school as organisation. We are aware that this approach may overemphasize "intended" effects in terms of student participation, however, it seemed the most promising approach to us.

Effects reported in terms of student participation in topic-areas (=effect meta and/or main-categories) which were not explicitly in the focus of the study were regarded as unintended effects. On the contrary, effects reported in terms of student participation in topic-areas (=effect meta and/or main-categories) which were explicitly in the focus of the study (with respect to our translation work) were regarded as intended effects. The results of the analysis on intended and unintended effects are presented in Table 4. The table illustrates the (non-)conformance of the aspects the studies focused on (= grey cells; context) and the effects in terms of student participation shown in the studies (marked as "1"), i.e. conformance is shown by grey fields filled with "1"s otherwise there is non-conformance.

Most studies focused on health and aspects of school including a change of school climate and/or culture. The highest "match" between study focus and shown effects appeared with health-related effects, development of skills and competencies and effects on school as an organizations, followed by usefulness for life in general and effects on local community. Personal development of students as well as satisfaction, motivation and ownership was most frequently among the unintended effect.

Interestingly, six studies focused explicitly on negative effects. The same number of studies showed negative effects but only in three cases there is a consistency between the focus of the study and the reported negative effect. Therefore, we had a closer look at the negative effects and possible reasons why some studies showed negative effects whereas others did not. Might there be a link between the negative effects shown in the studies and the mode of recruitment of students to participate in the intervention?

Recruitment of students for participation in decision-making about designing, planning, implementing or evaluating school health promotion could be done in different ways: participants may be volunteers, recruited by teachers,

selected by peers, or the whole class/school participated. Trying to answer the question if the mode of recruitment was associated with the effects of student participation, we did not find a conclusive pattern. Only in a minority of studies students had the chance to volunteer or were recruited after showing interest (Bonell et al., 2010a; Carroll et al., 1999; Lind, 2007; Mandel & Qazilbash, 2005; Strange et al., 2002; Streng, 2007); in the majority of studies students were selected by teachers or peers or the whole class/school participated. Two studies with student volunteers showed negative effects (Lind, 2007; Strange et al., 2002); however, it was not clear in these papers if these negative effects have been reported by other individuals than the volunteers or the volunteers themselves. Another problem referred to studies not describing details on recruitment for all participating students.

Another interesting aspect deals with the duration and intensity of the intervention and the question if there is an association with the scope of effects in terms of student participation reported. There was no conclusive association found with respect to the duration of the intervention. Some studies did not describe the duration but the number of occasions the students participated and/or delivered classroom sessions. Only two studies did not describe any of these details.

In summary, in this section we started an attempt to reconstruct the research context to find out about intended and unintended effects in terms of student participation and why some studies showed negative effects whereas others did not. Our interpretation problems of the study context are calling to handle our results with care. However, so far shown intended effects seem to refer prior to health, knowledge acquisition and school, whereas personal development and satisfaction seem less often as intended effects.

Table 4: Overview intended and unintended effects

	All		SI				PIE		PI			Peer				PAR	IVAC			∑context	∑effects	∑intended	∑unintended	∑ Intended without effect
	608	664 + 676	111	212	369	689	675	273	87	327	503	682	696	695	562	350	539 + 540	702	701					
Skills competencies and knowledge*		1	1			1	1	1			1		1	1			1	1	1	9	12	**8**	4	1
Health-related effects for students*							1		1	1		1		1	1	1	1	1	1	**14**	10	**9**	1	5
Personal development*	1	1							1	1	1		1	1	1	1	1	1		7	11	4	**7**	3
Satisfaction, motivation and ownership*	1	1				1	1	1	1	1	1		1	1	1	1	1	1	1	9	15	7	**7**	2
Influence on student perspective*		1			1				1	1	1		1			1	1	1		10	9	7	2	3
Usefulness for life in general*														1						4	1	1	0	3
Effects on interaction and relation	1	1							1		1		1	1	1	1			1	6	9	5	4	1
Effects on other stakeholder		1						1				1	1					1		4	6	2	4	2
Effects on school as an organisation	1	1		1	1				1	1			1			1	1	1	1	**11**	11	**8**	3	3
Effects on the local community																			1	5	1	1	0	4
Effects on program/project							1	1										1		9	4	4	0	5
Negative effects		1									1		1	1		1	1			6	6	3	3	3
Factors that mediate effects				1								1	1	1			1			1	6	1	5	0

PI, studies with respect to students' involvement in planning and implementation of a health promotion measure

IVAC, studies using the investigation-vision-action-change approach

SI, studies in which students were involved in selection of a topic, planning and implementation of a health promotion intervention

PIE, studies in which students were involved in planning, implementation and evaluation

All, studies in which students were involved in all phases of the project cycle

Peer, studies using a peer approach e.g. peer education, peer support-system

PAR, studies using participatory action research

1, effect in terms of student participation shown in the study

Context, sum of studies focussing on this special aspect (= grey cells)

Effects, sum of reported effects in terms of student participation (= all fields with a "1")

Intended, sum of described effects of student participation which were "asked" for (intended) (= grey fields with a "1")

Unintended, sum of described effects of student participation without asking explicitly (unintended) (= fields with a "1" without a grey shade)

Intended without effect, sum of topic areas the study/intervention focused on without showing effects in terms of student participation (= grey fields without a "1")

*, these main categories belong to the meta category "personal effects of students"

3.8. Facilitators and barriers for student participation

The implementation of the health promotion measure could face both facilitating and hindering factors with respect to student participation. We qualitative analysed facilitators and barriers that were reported in the included publications and formed categories. Based on the single categories we elaborated a category scheme with six groups: project organisational structure, resources, capacity, school climate, motivation and process. As the intention of this scheme was a description of facilitating and hindering factors, there is no information considering the frequency of evidence. Each group was further elaborated through subcategories. Table 5 summarises the subcategories that are subsumed under the six groups. We grouped facilitators and corresponding barriers as they emerged from the studies. However, not for each facilitator an equivalent barrier was reported and vice versa. Therefore, for some subcategories of facilitators and barriers no equivalent is described.

Table 5: Summary table of facilitators and barriers

	Facilitator	Barrier
Project organisational structure	Use of theoretical framework	Uncertainty / undefined
	Common goals and aims	Lack of common goal
	Clear leadership / visions	
	Team structure	
	Tools to facilitate cooperation	
	Integration of student participation into regular curriculum	Student participation as add-on / not integrated into "daily business"/additional workload
Resources	Enough resources (money infrastructure)	Lack of/ need for more resources (money, infrastructure)/ problems with technical infrastructure
	Enough time	Lack of time / time restrictions
	Support for teachers	
	Information and training for teachers	Lack of information
	Adult support for students	Need for education / preparation of students
	Information and training for students	
		Human resources
	Intermediate entity / external facilitator	
	External support – connection between school and local community/agencies	
		Lack of support (general)
Synergies	Synergies between student participation and existing projects	Competition between student participation and other projects
		No synergies
	Using networks / communication channels at school/collaboration	
	Building on earlier experiences	
	Interaction	
School culture	Participatory and cooperative school culture	Negative school atmosphere
	Enjoyment / enthusiasm	Negative attitude/prejudice towards student participation / no commitment
	Respect / recognition	Lack of respect / recognition
Motivation	Ownership / commitment	Lack of ownership by adults
		Frustration with divergent expectations or with decision-making process
	Intrinsic reward	Lack of motivation

		Sustainability of students motivation
	Use of motivational tools	Lack of external rewards
	Use of external/extrinsic rewards / incentives	
	Communicate benefits	
Process	Attitude change	Need of attitude/role change
	Stepping back among teachers/adults	Finding balance between leading and guiding
	Autonomy for students/influence of students	Tokenism
	Involving as many students as possible (also disadvantaged and quieter ones)	Difficulties with recruitment
		Involvement of only a fraction of students
		Slow progress

After this outline of main- and sub-categories, now the codes summarised under these will be described in more detail, starting with the project organisational structure. We understood structure as "observation" structure (e.g. the framework used) and as an orientation aid for the participants such as common goals.

Table 6: Facilitators and barriers concerning the project organisational structure

	Facilitator	**Barrier**
Project organisational structure	Use of theoretical framework: Frameworks and common approaches as underlying guidance structure student participation. They can be open, meaning that the given structure can be used in a flexible way.	Uncertainty On the opposite uncertainty, unawareness of needs and unclear roles were stated as barriers in some studies.
	Common goals and aims Common goals and aims ensure a shared focus and allow goal driven behaviour among participants.	No common goal The absence of common goals or a shared focus may result in tensions between priorities e.g. between school leadership and teachers.
	Clear leadership / visions Leadership with clear visions to push the project forward seem to be facilitating student participation.	
	Team structure One study stated that board structure maximized youth contribution.	
	Tools to facilitate cooperation Gaining a consensus might be struggling. Tools like games, use of criteria or information and communication technology and group reflection were described as facilitator in gaining consensus and enabling participation and collaboration.	
	Integration of student participation into regular curriculum Involvement of schools in planning the intervention shall ensure space for the project within the curriculum from the very beginning	Student participation as add-on Participatory projects seem to be an additional workload, especially for teachers but also for students. Sometimes participation of students is seen as challenging and the existing workload does not allow anything more.

Further structural aspects are the resources provided for the project. Infrastructure, money, time but also human resources and support and knowledge were here understood as resources.

Table 7: Facilitators and barriers concerning resources

	Facilitator	Barrier
Resources	Sufficient resources (infrastructure) Providing enough room/space and other facilitates project implementation.	Lack of or need for resources (money, infrastructure)/ problems with technical infrastructure Inadequate or missing resources (space or money) or problems with existing facilities may lead to frustration or a lack of motivation of participating teachers and students.
	Sufficient time Enough time for the engagement of participants and for the participation process itself is important.	Lack of time / time restrictions Participation takes time and time restrictions mean that participants cannot fulfil their work as participants appropriate (e.g. do not prepare for meetings/tasks) and that participation competes with other obligations.
	Support for teachers Teachers need support to be able to support students. Teachers need to be provided with appropriate and continuous support to sustain their participatory work with students. Information and training for teachers Training of teachers was associated with better implementation and outcomes. Efficient, appropriate in-service training seems to facilitate implementation. Concise manuals may be very helpful.	Lack of information Lack of information can lead to a decrease on teacher's commitment.
	Adult support for students Students need support and guidance/assistance to participate. Different forms of adult support and guidance were described in the studies, i.e., emotional support and adults acting as positive role models but also step-by-step guidance and supervision. Information and training for students Apart from (emotional) support and guidance students need to acquire knowledge and competences via training/workshops	Need for education / preparation of students Giving adolescents power without assistance was described as barrier. Participations and interaction with others is complex and therefore requires training. If programs were not highly specified they require pre-familiarity with the programme content and more pre-training.
		Human resources Peer leader training and supervision requires personal.
	Intermediate entity / external facilitator An intermediate entity or an external facilitator who coordinates the activities facilitates e.g. peer education, the communication between students and other people or organisations and relives teachers' workload.	
	External support – connection between school and local community/agencies Involvement of local stakeholders (decision-makers, manager of funding agency) was appreciated by	

	Facilitator	Barrier
	students. Formal contracts between schools and project provider were also described as facilitating.	
		Lack of support (general) Lack of support from parents and teachers was reported as barrier.

In contrast to the resources (time, space/infrastructure, money, and knowledge) which are provided, synergy was seen here as something the project (or the students) can draw on, like experiences or using social networks and collaboration to use synergies.

Table 8: Facilitators and barriers concerning synergies

	Facilitator	Barrier
Synergies	Synergies between student participation and other existing projects Ensuring synergies among similar existing interventions or links between the project and curricular activities or everyday practice were described as facilitating student participation.	Lack of synergies Student participation with a different emphasis than regular teaching or parallel similar projects with no synergies was reported as barriers. Competition/tension between student participation and other projects Participation can compete with other obligations (e.g. lessons) and desires (e.g. meeting friends), which makes it difficult to organize taking part on all (on time).
	Using networks / communication channels at school/collaboration Good relationships and ensuring collaboration with local entrepreneurs or peers are summarized under this sub-category as well as the attempt to extent social networks (win new people to participate). One study refers to the equal contribution of tasks among all participating students as facilitator.	
	Interaction Communication and mutual feedback among peers increased interaction as well as collaboration on the internet. Sharing information and reflections opens opportunities of action and knowledge.	
	Building on earlier experiences Building on the experiences acquired through participation on earlier projects may make participating easier (with time).	

Structures can be defined, resources can be provided and synergies can be drawn on but school climate and attitudes cannot be arranged. A participatory culture at school or negative attitudes towards student participation and mutual respect are things that cannot be defined and assigned but have to grow within a school.

Table 9: Facilitators and barriers concerning the school culture

	Facilitator	Barrier
School climate	**Participatory and cooperative school culture** The existence of a participatory and/or cooperative culture at school mean amongst other things encouraging all parties to participate, value them and share power. Another aspect refers to an uncensored atmosphere with open-minded participants, mutual trust and encouragement of students to speak.	**Negative school atmosphere** A negative environment between teachers and students was reported as barrier.
	Enjoyment / enthusiasm Enthusiasm from stakeholders and enjoying project activities were reported as facilitators.	**Negative attitude/prejudice towards student participation / no commitment** Lack of acceptance of the system by students and/or teachers as well as scepticism among teachers due to participation seen as additional workload or reluctance to accept it were summarized by this sub-category. As well as the general prejudice among teachers about a new pedagogical method.
	Respect / recognition Respect for other people and for their ideas is seen as facilitator.	**Lack of respect / recognition** Lack of mutual respect and recognition may be a barrier.

Motivation can be seen as a cultural aspect. We decided to use motivation as a single category and understand it as the dependence of the project on the actors. This main category comprises ownership and commitment as well as intrinsic and extrinsic rewards.

Table 10: Facilitators and barriers concerning motivation

	Facilitator	Barrier
Motivation	**Ownership / commitment** Ownership and commitment need to be ensured. A situation needs to be relevant to commit to an action. This may also include that the personality of participants had to be taken into account. Especially ownership among teachers was reported as facilitator. A further aspect was that involvement of students needs to be meaningful.	**Lack of ownership by adults** A lack of ownership was reported among teachers only and had negative influence on teacher's commitment.
		Frustration with divergent expectations or with decision-making process Tokenism and problems in finding a consensus lead to frustration and disappointment among teachers and students. Other reasons were a lack of information and unclarity when benefits of participation were received.
	Intrinsic reward Intrinsic reward refers to the desire to help others or the need to share experiences.	**Lack of motivation** Limited resources may lead to a lack of motivation among teachers.
		Sustainability of students motivation Ensuring long-term motivation and interest among students seems challenging.
	Use of motivational tools Motivational tools refer to strategies of active doing	**Lack of external rewards** A lack of external rewards for participation was

	Facilitator	Barrier
	(edutainment style), fun and outside activities to support students' engagement. Beside that the development of a welcoming atmosphere as well as acknowledgement and support worked as motivators.	reported as barrier.
	Use of external rewards/incentives (Material) incentives and extrinsic rewards helped to maintain youth's interest and motivation and provided encouragement.	
	Communicate benefits The communication of benefits to a brother community ensures publicness and broadens support.	

Process is here understood as the realisation of the project organisational structure. This main category comprises attitude change, the integration of student participation into regular curriculum, the influence of students and the number of participants.

Table 11: Facilitators and barriers concerning the process

	Facilitator	Barrier
Process	Attitude change Head(master)s recognized the value of outdoor classroom.	Need of attitude/role change This sub-category comprises two aspects. On the one hand (the expectation) to overcome usual roles e.g. students as active decision makers instead of receiver of teachers' orders and on the other side teachers who need to guide students and work with participation instead of just thinking to do so.
	Stepping back among teachers/adults A special form of attitude change is called stepping back meaning that teachers guide and assist students just when necessary instead of leading them.	Finding balance between leading and guiding Difficulty of teachers to find the right balance between leading and guiding.
	Autonomy for students/influence of students Students were given influence through self-determination like managing resources (budget), other choice in project activities and giving all students the chance to voice their opinion.	Tokenism Consultation only for expediency, a gap between saying and acting as well as limited choice, not acting upon student choices or no influence on offers and actions was described as barrier.
	Involving as many students as possible (also disadvantaged and quieter ones) A large number of participants allows sharing tasks and was therefore suggested by teens. An excellent representation of school community was also seen as facilitator. This sub-category also includes the concern that advantaged participants hinder disadvantaged (quieter ones) from talking and that participants who volunteer are the enthusiastic ones that usually volunteer for other events as well. The opportunity of participation depends on skills and	Difficulties with recruitment Recruitment of the "target group" and problems engaging teachers was reported as problematic.
		Involvement of only a fraction of students The small number of students involved in tasked increases the obligations for the few remaining participants. Being a peer-leader might reduce its value when everyone has the chance to become one.

	Facilitator	Barrier
	relationships.	
		Slow progress Students wanted to see progress/action and view cognitive work as slowing down the process. The slow pace of the (development) process led to frustration.

4. Discussion

The aims of the current systematic review were to compile the existing evidence for effects of student participation in designing, planning, implementing and/or evaluating school health promotion, to dissect beneficial and hindering factors for student participation and to find out if there are differences in effects of student participation depending on different stages of a project or intervention in which participation took place. In the following section, we will outline our findings and their possible impact as well as the methodical considerations and limitations of our research.

4.1. Discussion of findings

Effects of participation

It is clear from the literature included in this review that student participation in decision-making about health promotion interventions in schools is promising. The evidence is consistent in demonstrating positive effects of participation of students in health promotion programs at school. Paramount reported effects refer to personal outcomes related to students, primarily in terms of their increased satisfaction, motivation and ownership, which is not surprising. There is also evidence for an increase in skills, competencies and knowledge about health issues among the students. Student participation was also shown to foster personal development of students, especially their self-confidence and self-esteem. Health-related effects have been shown by more than half of the studies. All in all, we found evidence of many effects constituting 'action competence' if taken together. In health promotion and health education literature, action competence is conceptualised as an ability to initiate health-promoting changes in one's individual life, and/or in the living conditions which influence health. The actions can be individual and collective, but should always be result of an intentional decision by the involved participants. The effects of student participation that this review identified can all be seen as critical components of action competence related to health. What is also important for the development of action competence is the specific experience of taking action. In this respect, one can argue that even the negative effects that this review identified, can be used as learning experience towards the development of action competence. This may indicate that participation of students can make a difference to their lives, although finding just a few direct effects with respect to the usefulness of participation for life in general.

Besides positive effects on students, studies often showed effects on the interpersonal relationships and interactions at school and on the school as an organisation. In terms of effects on interactions and relations at school, the effects refer primarily to improvements in peer-relationships and in student-adult relationships in terms of the school as an organisation, improvements were identified in the school atmosphere and culture, the physical environment of the school, in rules or policies or in school engagement. Studies have shown that participation leads to a cultural shift at school that is more conducive to student participation and health promotion. The school ethos or climate is considered as one of the central constituents of the Health Promoting School approach. In this sense, we could argue that participatory health promotion interventions are conducive to the development of the school as a health-promoting setting in general, beyond the specific health topic taken in individual interventions.

Less frequently, positive effects on other stakeholders were reported. Therefore, this review did not identify conclusive evidence of effects of student participation on teachers or other school staff or on the parents (e.g. health-related behaviour and commitment). Similarly, although some studies found positive effects, the review did not identify conclusive evidence demonstrating effects of student participation on the local community or on the intervention (i.e. the project) itself.

A possible reason could be that most studies have focussed on the views of the students and on outcomes directly concerning students or the school in general. Also, due to the qualitative nature of research in most of the studies, and the issues of generalisation related to qualitative research, it is not clear from the evidence whether the effects apply to the majority of the students, or only to the participating students. Furthermore, there is no information on the sustainability of the effects. This points to the need for further research, including follow up and in-depth longitudinal studies.

Although we did not systematically search for studies investigating mediating factors for the effects of student participation, some studies mentioned academic performance, gender, socioeconomic background, age, enthusiasm and involvement in real-life action as factors that influenced the effects of student participation. These issues are

very important to be taken into account when implementing student participation in decision-making about school health promotion and should be studied more in detail in future.

Interestingly, evidence from six studies also points to **negative effects** of participation on students. For example, students felt ignored or not taken seriously or they were sceptical towards their real influence and possibility to bring about change. This is suggestive of the importance to work seriously with higher expectations by the students when working with participatory approaches. On the other hand, it seems that sometimes students felt overwhelmed with the responsibility of participation, which indicates the need for an appropriate balance between student support, guidance and autonomy. On the program level, negative effects were reflected in the limited number of students benefiting from participation, and lack of dissemination. Given the previous discussion and the literature on action competence (Jensen, 2000; Simovska, (forthcoming); Simovska & Carlsson, (in press)), this points to the need to further explore the negative effects of student participation, and the potential of utilising these in pedagogical work with students, as possibility for learning.

We tried to find out why some studies showed negative effects whereas the others did not. Neither the study context (aims of study and intervention, predefined outcomes translated in the meta- and main-categories of the category scheme developed) nor the mode of recruitment led to conclusive links. The latter referred to the thesis that volunteering may less often lead to negative effects (e.g. overwhelming students) than recruitment by adults. As students sometimes participated in different ways in the same study, finding a link between the effects of different modes of recruitment was not possible. Moreover, in a setting like school there are just a few possibilities for students to volunteer in the way that they decide on their own if they want to participate or not without any invitation or recruitment of adults (in the sense of self-organization).

The comparison between intended and unintended effects highlighted another interesting aspect: it showed that health-related effects were most often intended (in the sense stated above) and shown. This might not be surprising given the fact that we only considered projects and/or interventions dealing with health promotion in this review. However, another recent systematic review of evidence about student participation in school decision making showed basically no evidence of effects on health, but rather on school ethos, self-esteem, democratic and life skills, and student-adult relationships (Griebler & Nowak, 2011; Mager & Nowak, 2011). Comparing the latter review with the current one, we can note that the discourse on health promotion and the discourse on school democracy are not carried in a synergistic way, but that these two discourses are parallel, although they have many aspects in common. This points to the need to reconnect these two discourses and to utilise the potential synergies between them. It is actually the issue of student participation that both discourses share as central to both approaches and the synergetic effects could be further developed, both in terms of health and educational (democracy) outcomes.

We also tried to find out why some studies described more effects than others by looking closer at the duration of the intervention. As this information was not available for all studies we did not reach conclusive results. Furthermore, the information on the duration alone, if available, did not provide insights into the intensity of the participation, the sustainability or to whom the effects apply (all students or just the participating students), and there might be also other aspects to consider.

Effects of student participation depending on participation in different phases of the intervention and on the methodological approach

Of the 24 studies describing effects of student participation in designing, planning, implementing and/or evaluating health promotion measures, five studies were intervention studies using a control group design. Those studies are not directly comparable to others and therefore we analysed them separately. As nearly half of the remaining studies (8) showed a dominance of the chosen study approach against stressing the phases of the project cycle the students participated in, we grouped these studies according to their approach in: 1) studies using a peer approach, 2) studies using a participatory action approach and 3) studies using the IVAC approach. Eleven studies could be grouped with respect to the phases students participated in. These were further divided in four subcategories: 1) all phases of the project cycle, 2) participation of students in selection of topic, planning and implementation, 3) participation of students in planning, implementing and evaluating, and 4) participation of students in planning and implementation. The amount of subgroups and the little number of studies in each of these categories limited the possibility for a meaningful comparison.

With respect to the phases the students participated in, participation was described most often in the planning and implementation stages, but less often in the evaluation phase.

The link between the phase of the involvement and its effects is neither described nor reconstructable from the data. Similarly, the effects of participation cannot be differentiated in terms of the specific intervention methodology

employed in the projects. Therefore, evidence is not sufficient or conclusive on the issue of effects of participation depending on the stage in the project or the methodological approach used.

However, a few similarities appeared when comparing the groups within: All studies in the categories "participation in planning, implementing and evaluating" and "studies using the IVAC approach" showed similar personal effects on students, namely increased skills, competencies and knowledge, increased satisfaction, motivation and ownership. A comparison within the different groups showed that studies using the IVAC approach showed the highest concurrence, namely all showed increased skills and competencies, health-related effects for students (health literacy), increased satisfaction and motivation among students (especially increased motivation and commitment as well as ownership with own work) and a participatory culture at school. Both studies with student participation in planning, implementation and evaluation showed an increase in knowledge among students, satisfaction with the program and effects on the program. The three studies describing student participation in planning and implementation showed two effects in common, namely effects on personal development (increased self-confidence) and influence on student perspective (gaining new insights).

The lack of hints for different effects in terms of student participation in different stages of the project may indicate that regardless of the stage(s) students participated in, it has effects. It mainly affects their lives and the school as an organisation. However, it does point to the need to further differentiate and develop the concept of participation depending on the different stages in the intervention.

Barriers and facilitators of student participation

Facilitators and barriers for student participation were categorized into six groups: 1) project organisational structure, 2) resources, 3) capacity, 4) school climate, 5) motivation and 6) process.

With respect to the organisational structure of the health promotion measures/projects, the studies included demonstrated that the existence of shared goals and aims and/or a common underlying guidance structure (framework, tools) as conducive to student participation. On the opposite, uncertainty and the absence of common goals were confirmed as barriers. Furthermore, while the integration of student participation into the regular curriculum proved to be a facilitating factor by ensuring space for the project, student participation as "add-on" was identified as a challenge.

Going along with the last point, the evidence shows that synergies between participatory structures and the overall intervention/project approach are facilitating factors for student participation. Also the use of networks and good relationships/collaborations of all stakeholders proved to facilitate participatory work. On the other side, not capitalising on synergies can lead to competition and tensions related to other obligations of different projects and school activities.

Unsurprisingly, the availability of any kind of resources (infrastructure, money, time, human resources as well as support and knowledge) was stated as facilitating student participation whereas a lack of resources was described as a barrier.

As the section above shows, one outcome of student participation can be an increase in motivation, satisfaction and ownership among students. But these are not only effects of student participation, student participation was also described as facilitated by ensuring motivation, ownership and commitment among stakeholders (especially among teachers), while a lack of motivation and ownership hinders student participation as some studies showed. Thus, evidence demonstrates the dialectic nature of student participation, which can be treated as both a process leading to certain outcomes as well as an outcome in itself.

As student participation can rather be seen as an exception than the norm in the daily school business and students are used to predetermined learning structures and project structures in school, working things out on their own and having to make decisions and take responsibility may be overwhelming, without appropriate guidance and preparation by adults or other students. Therefore, an attitude and role change of all participants, especially the student and teachers, seems necessary. This attitude change was reported as challenging as well as sometimes the recruitment of students but facilitating when taking place, i.e. recruiting more students or teachers facilitates sharing obligations. For example, it was described that finding the balance between leading and guiding students among teachers was challenging/hindering but stepping back among teachers meaning teachers guiding students instead of leading them fosters student participation. This can be facilitated by a participatory and cooperative school culture as well as enthusiasm of all stakeholders instead of prejudices towards student participation. Alongside with this, mutual respect was also reported as facilitator.

All in all, the facilitators and barriers described in the studies with respect to student participation showed not much new, but nevertheless systematically confirmed what experience has shown previously. It seems obvious that

adequate resources, motivated participants and a project-friendly environment foster projects with a student participation component as any other project. Student participation can be demanding and challenging, even though not much evidence of negative effects was found. There is some evidence that student participation requires changes in attitudes and roles of both students and teachers. Therefore continuous information, support and training for teachers and students from the very beginning of the projects seem very important.

Besides information, one other important issue should not be missed: the motivation of the stakeholders, especially the teachers. Because when dealing with health promotion measures at school, it is mostly up to the teachers interacting with the students, involving them and ensuring their participation in an appropriate manner. Appropriate information and training might be one important facilitator but knowledge might be worthless when actions are missed. Therefore, it seems to be important to find not only evidence why student participation is meaningful (for students) but also evidence for the effects or benefits of student participation for teachers. Making teachers aware of these can ensure their motivation and commitment.

4.2. Limitations

Analysis going beyond description (e.g. identifying underlying causal pathways) and the identified barriers and facilitators are not really feasible, mostly due to problems with respect to the comparability of the studies:

First, there are just a few studies describing student participation in health promotion measures at school. Further dividing these few studies in subgroups results in very small groups of studies and thus reducing the possibility of meaningful comparisons.

Second, details not described in the studies could not be analysed or reconstructed. This is especially true for our third research question: As the primary data did not allow a conclusion of the phase the effect occurred, it was not possible to answer our third research question. A similar problem appears when raising the question on intended and unintended effects of the studies. Just a few studies considered unintended effects or did not state explicitly that they are not considering special kinds of effects. Therefore, we tried to reconstruct the context of the studies to catch an idea of possibly intended effects by being aware that our translation work cannot be more than a try because of potential overestimation of intended effects.

And thirdly, a problem refers to the heterogeneity of the included studies limiting the questions they could be asked in common. The included studies vary in the health promotion measures described, age of students, forms of participation, mode of recruitment as well as different aims of the measure and the study. Therefore, not all studies are describing or exploring the same effects and details, even less often authors reported about the absence of effects (but maybe expected). Although someone could expect that the most important effects and details (in the eyes of the authors) of the study were described in the articles, this might not be true for other effects and details, especially effects paying no attention. If effects were not described in the articles, it was not possible to decide if this is due to not occurring, not paying attention at it during research or due to the restricted space an article provided or any other reason. Similar, when effects were described less often (e.g. effects on local community or usefulness of life in general) it is not clear yet if these effects occur less often because only a few studies focused on these effects.

As a result of a small, heterogeneous sample, the questions asked on all studies included are quite limited and some interesting questions remain open. This is true in respect to negative effects. It is not clear yet why some studies reported negative effects of student participation (for students) whereas others did not. It seems not to make a difference if this kind of effects were explicitly considered or not.

Although we assessed the quality of the studies included in the review, we did not assess the strength of the identified evidence in a systematic way. Thus consistent with the methodological guidance for systematic reviews of evidence, our summary/synthesis of evidence is of narrative nature. Acknowledging the limitations, we believe that the evidence on the positive and negative effects identified with this review might help getting a more precise understanding of student participation and going along with this to more comparable studies on this issue.

4.3. Future research

As we found out that there are a few, heterogeneous studies on the issue we focused on, further and more comparable research for analysis that go beyond a description of effects is needed. This is especially true for getting a more accurate understanding of forms of participation with a view to achieving most positive effects. Also, developing indicators of participation and strategies for measuring these would be an obvious line of further research.

As we did not analyse who reported the effects or to whom effects in terms of student participation refer in detail – especially if they refer to all students at school or just the participating ones, further research should consider this aspect.

As far as our review showed, there have not been many studies now showing effects of student participation for other stakeholders beside students. This points to a gap in research dealing with this important issue. The importance arises especially when thinking of the already existing workload of teachers (without involving students). Giving teachers an answer, why they shall support and foster student participation could support taking action not only for students but also with them.

Questions remaining open after this review refer also to the question why some studies showed negative effects whereas others did not and why some studies described more effects than others. In this respect, the potential of failures and negative experience with participation for learning and gaining "real life" experience, should be researched further.

As we found out that gender might lead to different effects we recommend taking gender issues into account when studying effects of student participation. Other potentially relevant issues should also be researched further, for example socioeconomic status, ethnicity, academic achievement, and similar mediating factors of the effects of participation.

However, the categorisation of possible effects of student participation we developed will help to get a better idea of possible (intended) effects of student participation, their indicators and ways of measurement, leading to more comparable research in future. Future research on the effects in terms of student participation should not only focus on the time aspect as we do when asking for different effects depending on the stages students participated in but also for the level or intensity of involvement.

4.4. Recommendations for practice

As we found evidence of positive effects in terms of student participation, developing a participatory culture at school leading to sustainable student participation seems most promising and is recommended for practice.

Two possible approaches (apart from comparative studies) were identified to introduce student participation: One refers to the use of a methodological approach and the other refers to the involvement of students in different phases of the project. As participation can have many faces and we did not find the one most promising mode of participation, we cannot suggest the one ideal approach. Depending on the issue (e.g. healthy eating vers. sexual education) one approach might be more promising than another one.

However, a clear recommendation can be drawn based on the evidence identified in this review - it is important to select, design, and adopt a comprehensive model of participation, which structures the ways in which students are involved, and supports the teachers in guiding the students.

The evidence also suggests that any promising approach regarded as a participation tool needs to ensure an appropriate balance between structuring the implementation and being flexible enough to be adapted to the particular situation.

For implementation of student participation in different stages of one project, we recommend to provide all participants – and not only the students but also the teachers – with continuous assistance (information, support, training where necessary) in finding their own way of bearing in their new roles until they internalize them.

5. Conclusions

Participation of students "needs to be examined critically if young people's participation is to become more than mere rhetoric". With this systematic review we contributed to a more detailed understanding of (possible) effects in terms of student participation and getting closer to an answer to the following question:

Which and how many effects could be expected when student participated in designing, planning, implementing and/or evaluating health promotion measures at school? We developed a category schema summarising the effects shown in 19 studies.

Our review is, as far as we know, the first with respect to the effects of student participation in health promotion measures at school. We identified mostly positive effects mainly for the students and the school as an organisation itself. But also less frequently reported effects like effects on the local community and the program could be regarded as indicators for possible effects that are not often considered so far and could inspire further research. This is especially true for effects useful for lives of students in general. Taking together the evidence found with respect to acquisition of skills, competencies and knowledge, and the personal development as well as health-related effects there is promising evidence that participation of students is useful for their lives in general.

A few negative effects found in the studies gave some evidence that participation besides all promising positive effects is challenging (for both students and teachers) as well. Continuous information, training and support for both teachers and students seem to facilitate the cultural and attitudinal shift necessary for successful student participation and its promising effects.

Further, more comparable research is needed to answer the question raised by this review in more detail. However, given that student participation has more been discussed as a value of health promotion in schools and that there are not many systematic reviews on its outcomes, these findings are very important.

6. References

Atkins, S., Lewin, S., Smith, H., Engel, M., Fretheim, A., & Volmink, J. (2008). Conducting a meta-ethnography of qualitative literature: Lessons learnt. *BMC Medical Research Methodology, 8*(21).

Baskin, M. L., Zunker, C., Worley, C. B., Dial, B., & Kimbrough, L. (2009). Design and implementation of a pilot obesity prevention program in a low-resource school: Lessons learned and research recommendations. *Health Education, 109*(1), 66-85.

Birnbaum, A. S., Lytle, L. A., Story, M., Perry, C. L., & Murray, D. M. (2002). Are differences in exposure to a multicomponent school-based intervention associated with varying dietary outcomes in adolescents? *Health Education and Behavior, 29*(4), 427-443.

Bonell, C., Sorhaindo, A., Strange, V., Wiggins, M., Allen, E., Fletcher, A., Oakley, A., Bond, L., Flay, B., Patton, G., & Rhodes, T. (2010a). A pilot whole-school intervention to improve school ethos and reduce substance use. *Health Education, 110*(4), 252-272.

Bonell, C. P., Sorhaindo, A. M., Allen, E. E., Strange, V. J., Wiggins, M., Fletcher, A., Oakley, A. R. A., Bond, L. M., Flay, B. R., Patton, G. C., & Rhodes, T. (2010b). Pilot Multimethod Trial of a School-Ethos Intervention to Reduce Substance Use: Building Hypotheses About Upstream Pathways to Prevention. *Journal of Adolescent Health,*(47), 555-563.

Brooks, F. & Magnusson, J. (2006). Taking part counts: adolescents' experiences of the transition from inactivity to active participation in school-based physical education. *Health Education Research, 21*(6), 872-883.

Buijs, G. J. (2009). Better Schools through Health: networking for health promoting schools in Europe. *European Journal of Education, 44*(4), 507-520.

Carroll, G. B., Hébert, D. M. C., & Roy, J. M. (1999). Youth action strategies in violence prevention. *Journal of Adolescent Health, 25*(1), 7-13.

Carruth, A. K., Pryor, S., Cormier, C., Bateman, A., Matzke, B., & Gilmore, K. (2010). Evaluation of a School-Based Train-the-Trainer Intervention Program to Teach First Aid and Risk Reduction Among High School Students. *Journal of School Health, 80*(9), 453-460.

Cesario, S., Morin, K., & Santa-Donato, A. (2002). Evaluating the level of evidence in qualitative research. *Journal of Obstetric, Gynecologic, and Neonatal Nursing, 31*(6), 531-537.

Chapman, A. L., Morgan, L. C., & Gartlehner, G. (2010). Semi-automating the manual literature search for systematic reviews increases efficiency. *Health Information & Libraries Journal, 27*(1), 22-27.

Clift, S. & Jensen, B. B. (2005). *The Health Promoting School: International Advances in Theory, Evaluation and Practice*. Copenhagen: Danish University of Education Press.

Critical Appraisal Skills Programme (CASP) (2006). *Making sense of evidence. 10 questions to help you make sense of qualitative research*. Public Health Resource Unit, NHS England.

Dewey, J. (1916). *Democracy and Education: An Introduction to the Philosophy of Education*. The Macmillan Company.

Dixon-Woods, M., Shaw, R. L., Agarwal, S., & Smith, J. A. (2004). The problem of appraising qualitative research. *Quality and Safety in Health Care, 13*(3), 223-225.

DuRant, R. H. (1994). Checklist for the evaluation of research articles. *Journal of Adolescent Health, 15*(1), 4-8.

Gadin, K. G., Weiner, G., & Ahlgren, C. (2009). Young students as participants in school health promotion: an intervention study in a Swedish elementary school. *Int.J Circumpolar Health, 68*(5), 498-507.

Goenka, S., Tewari, A., Arora, M., Stigler, M. H., Perry, C. L., Arnold, J. P. S., Kulathinal, S., & Reddy, K. S. (2010). Process evaluation of a tobacco prevention program in Indian schools-methods, results and lessons learnt. *Health Education Research, 25*(6), 917-935.

Griebler, U. & Nowak, P. (2011). Student councils: a tool for health promoting schools? Characteristics and effects. *Health Education, 112*(2), (early cite).

Hamdan, S., Story, M., French, S. A., Fulkerson, J. A., & Nelson, H. (2005). Perceptions of adolescents involved in promoting lower-fat foods in schools: Associations with level of involvement. *Journal of the American Dietetic Association, 105*(2), 247-251.

Holdsworth, R. (2000). Schools that create real roles of value for young people. *Prospects, 30*(3), 349-362.

Hong, J., Fongkaew, W., Senaratana, W., & Tonmukayakul, O. (2010). Development of a theory-based sexual and reproductive health promotion and HIV prevention program for Chinese early adolescents. *Nursing and Health Sciences, 12*(3), 360-368.

Jensen, B. B. (2000). Health knowledge and health education in the democratic health-promoting school. *Health Education, 100*(4), 146-154.

Lakin, L. & Littledyke, M. (2008). Health promoting schools: Integrated practices to develop critical thinking and healthy lifestyles through farming, growing and healthy eating. *International Journal of Consumer Studies, 32*(3), 253-259.

Lind, C. (2007). The power of adolescent voices: co-researchers in mental health promotion. *Educational Action Research, 15*(3), 371-383.

Lodge, C. (2005). From hearing voices to engaging in dialogue: Problematising student participation in school improvement. *Journal of Educational Change, 6*(2), 125-146.

Long, A. & Godfrey, M. (2004). An evaluation tool to assess the quality of qualitative research studies. *International Journal of Social Research Methodology, 7*(2), 181-196.

Mager, U. & Nowak, P. (2011). Effects of student participation in decision making at school. A systematic review and synthesis of empirical research. *Educational Research Review*. doi:10.1016/j.edurev.2011.11.001

Malterud, K. (2001). Qualitative research: standards, challenges, and guidelines. *The Lancet, 358*(9280), 483-488.

Mandel, L. A. & Qazilbash, J. (2005). Youth voices as change agents: Moving beyond the medical model in school-based health center practice. *Journal of School Health, 75*(7), 239-242.

Mayring, P. (2000). Qualitative content analysis. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research, 1*(2).

Mellanby, A. R., Newcombe, R. G., Rees, J., & Tripp, J. H. (2001). A comparative study of peer-led and adult-led school sex education. *Health Education Research, 16*(4), 481-492.

Naylor, P. & Cowie, H. (1999). The effectiveness of peer support systems in challenging school bullying: The perspectives and experiences of teachers and pupils. *Journal of Adolescence, 22*(4), 467-479.

Noyes, J., Popay, J., Pearson, A., Hannes, K., & Booth, A. (2008). Chapter 20: Qualitative research and Cochrane reviews. In J.P.T.Higgins & S. Green (Eds.), *Cochrane Handbook for Systematic Reviews of Interventions* (Handbook Version 5.0.1 ed., pp. 571-592). Chichester: John Wiley & Sons Ltd; The Cochrane Collaboration.

Potvin, L. (2007). Managing Uncertainty through Participation. In D.V.McQueen & I. S. Kickbusch (Eds.), *Health and Modernity: The Role of Theory in Health Promotion* (pp. 103-128). New York: Springer.

Reid, A., Jensen, B. B., Nikel, J., & Simovska, V. (Eds.) (2008). *Participation and Learning: Perspectives on Education and the Environment, Health and Sustainability*. New York: Springer.

Rowan, M. & Huston, P. (1997). Qualitative research articles: information for authors and peer reviewers. *Canadian Medical Association Journal, 157*(10), 1442-1446.

Rowe, F., Stewart, D., & Somerset, S. (2010). Nutrition education: Towards a whole-school approach. *Health Education, 110*(3), 197-208.

Rudduck, J. & Fielding, M. (2006). Student voice and the perils of popularity. *Educational Review, 58*(2), 219-231.

Salmon, D., Orme, J., Kimberlee, R., Jones, M., & Murphy, S. (2005). Implementing the Rock Challenge: Young people's perspectives on a drug-prevention and performing arts programme. *Journal of Research in Nursing, 10*(3), 339-353.

Simovska, V. (2008). *Participation, action and school-community collaboration: Case study of school-based health promotion to influence determinants of childhood obesity - Maastricht*. Copenhagen, Denmark: Danish School of Education.

Simovska, V. & Jensen, B. B. (2009). *A school-community approach to influencing the determinants of childhood overweight and obesity. Lessons Learnt* p.a.u. education.

Simovska, V. ((forthcoming)). Case Study of a Participatory Health Promotion Intervention in School. *Democracy & Education*.

Simovska, V. (2007). The changing meanings of participation in school-based health education and health promotion: the participants' voices. *Health Education Research, 22*(6), 864-878.

Simovska, V. & Carlsson, M. ((in press)). Health-Promoting Changes with Children as Agents: Findings from a Multiple Case Study Research. *Health Education*.

Simovska, V. & Jensen, B. B. (2008). On-line learning environments and participatory health education: teachers' reflections. *Journal of Curriculum Studies, 40*(5), 651-669.

Simovska, V., Jensen, B. B., Carlsson, M., & Albeck, C. (2006). *Shape Up Europe. Towards a healthy and balanced growing up. Children and adults taking action together!* P.A.U. Education.

Spencer, L., Ritchie, J., Lewis, J., & Dillon, L. (2003). *Quality in Qualitative Evaluation: A framework for assessing research evidence.* London: Government Chief Social Researcher's Office, Cabinet Office.

Strange, V., Forrest, S., & Oakley, A. (2002). Peer-led sex education - Characteristics of peer educators and their perceptions of the impact on them of participation in a peer education programme. *Health Education Research, 17*(3), 327-337.

Streng, N. J. (2007). A Follow-up Study of Former Student Health Advocates. *The Journal of School Nursing, 23*(6), 353-358.

Valaitis, R. & O´Mara, L. (2005). Enabling youth participation in school-based computer-supported community development in Canada. *Health Promotion International, 20*(3), 260-268.

von Elm, E., Altman, D. G., Egger, M., Pocock, S. J., Gøtzsche, P. C., & Vandenbroucke, J. P. (2007). The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: guidelines for reporting observational studies. *Bulletin of the World Health Organization, 85*(11), 867-872.

WHO (1986). *Ottawa Charter for Health Promotion*. Geneva: WHO.

WHO (1998). Health promotion glossary. *Health Promotion International, 13*(4), 349-364.

Wilhelmsen, B. U., Laberg, J. C., & Klepp, K. I. (1994). Evaluation of two student and teacher involved alcohol prevention programmes. *Addiction, 89*(9), 1157-1165.

7. Appendix

7.1. Identifying research evidence

7.1.1. Searching electronic databases

The original database searches were carried out in May 2009. An update of this search was carried out on 28/September/2010 for the period 2009 to 2011. All abstracts retrieved from the update search were imported into the existing database and duplicates were deleted. All abstracts that were excluded in the abstract review of the first systematic review (Mager & Nowak, 2011) were not checked again and also excluded for this systematic review. Also the 32 publications included in the first systematic review were excluded for this review (because they did not meet the eligibility criteria and were double checked before).

Procedure:

- importing citations from update search into existing RefMan database
- deleting duplicates
- all citations that were excluded in abstract review for review 1 were deleted
- all citations that were excluded for review 1 because they were not available, books or in another language than English, German or Danish were deleted
- all citations that were included in review 1 from screening reference lists, author handsearch, and contact with experts were deleted
- all citations of publications that were included in review 1 (32 citations) were deleted

Detailed search strategies

EMBASE was searched on 18/May/2009 for the period 1992 to 18/May/2009. The search was performed in abstract and title, 1992 to 2009 (see Table 12).

Table 12: Search strategy for EMBASE

		Search 05/2009	Search 09/2010
#1	student*:ab,ti OR adolescent*:ab,ti OR child*:ab,ti AND [1992-2009]/py	630,724	-
#2	participation*:ab,ti OR involvement*:ab,ti AND [1992-2009]/py	235,263	-
#3	school:ab,ti AND [1992-2009]/py	79,912	-
#4	'health promotion':ab,ti OR 'health promoting':ab,ti AND [1992-2009]/py	13,525	-
#5	democracy:ab,ti OR governance:ab,ti OR 'decision making':ab,ti OR 'decision-making':ab,ti AND [1992-2009]/py	41,865	-
#6	#4 OR #5	55,150	-
#7	#1 AND #2 AND #3 AND #6	172	-

ASSIA, Social Services Abstracts, Sociological Abstracts, and ERIC were searched via the CSA interface on 22/May/2009 for the period 1992 to 2009. The search was performed in abstract and title, publication year: 1992-2009 and journal articles only. The update search was carried out on 28/September/2010. The search was performed in abstract, title or keywords, publication year: 2009-2011. See Table 13 for details.

Table 13: Search strategy for CSA

		Search 05/2009	Search 09/2010
#1	TI=student* OR AB=student* OR KW=student*	211,342	34,307
#2	TI=adolescent* OR AB=adolescent* OR KW=adolescent*	56,641	9,439
#3	TI=child* OR AB=child* OR KW=child*	176,169	27,347
#4	TI=participation OR AB=participation OR KW=participation	46,403	8,130
#5	TI=involvement OR AB=involvement OR KW=involvement	27,146	4,121
#6	TI=school OR AB=school OR KW=school	138,085	23,239
#7	TI="health promotion" OR AB="health promotion" OR KW="health promotion"	7,145	1,366
#8	TI="health promoting" OR AB="health promoting" OR KW="health promoting"	532	164
#9	TI="decision making" OR AB="decision making" OR KW="decision making"	24,551	4,147
#10	TI=democracy OR AB=democracy OR KW=democracy	16,076	2,034
#11	TI=governance OR AB=governance OR KW=governance	8,655	1,904
#12	#1 OR #2 OR #3	378,570	59,515
#13	#4 OR #5	66,490	11,147
#14	#7 OR #8 OR #9 OR #10 OR #11	54,484	9,071
#15	#6 AND #12 AND #13 AND #14	803	181

Syntax for CSA:

(TI=school OR AB=school OR KW=school) and((TI=student* OR AB=student* OR KW=student*) or(TI=adolescent* OR AB=adolescent* OR KW=adolescent*) or(TI=child* OR AB=child* OR KW=child*)) and((TI=participation OR AB=participation OR KW=participation) or(TI=involvement OR AB=involvement OR KW=involvement)) and((TI="health promotion" OR AB="health promotion" OR KW="health promotion") or(TI="health promoting" OR AB="health promoting" OR KW="health promoting") or(TI="decision making" OR AB="decision making" OR KW="decision making") or(TI=democracy OR AB=democracy OR KW=democracy) or(TI=governance OR AB=governance OR KW=governance))

PsycINFO, PSYNDEXplus, Education Full Text, Social Sciences Full Text and Cross-Cultural database were searched via the WebSpirs interface on 22/May/2009 from 1992 to 22/May/2009. Following limits were applied: language: German and English; publication year: 1992-2009. PsycINFO, PSYNDEXplus, Education Full Text, and Social Sciences Full Text were searched via OvidSP for the update search. The keywords were searched in abstract, title, key concept, or subject. Following limits were applied: publication year: 2009-2011. See Table 14 for details.

Table 14: Search strategy for WebSpirs and OvidSP

	Search 05/2009	Search 09/2010	Search 05/2009	Search 09/2010
#1	student*	student*.ab. or student*.ti. or student*.kp,id. or student*.su.	426,996	39,935
#2	adolescent*	adolescent*.ab. or adolescent*.ti. or adolescent*.kp,id. or adolescent*.su.	132,632	14,705
#3	child*	child*.ab. or child*.ti. or child*.kp,id. or child*.su.	436,751	43,608
#4	participation	participation.ab. or participation.ti. or participation.kp,id. or participation.su.	60,053	7,504

#5	involvement	involvement.ab. or involvement.ti. or involvement.kp,id. or involvement.su.	53,384	7,552
#6	school	school.ab. or school.ti. or school.kp,id. or school.su.	523,989	25,771
#7	"health promotion"	"health promotion".ab. or "health promotion".ti. or "health promotion".kp,id. or "health promotion".su.	17,519	1,654
#8	"health promoting"	"health promoting".ab. or "health promoting".ti. or "health promoting".kp,id. or "health promoting".su.	1,587	200
#9	"decision making"	"decision making".ab. or "decision making".ti. or "decision making".kp,id. or "decision making".su.	54,132	7,011
#10	democracy	democracy.ab. or democracy.ti. or democracy.kp,id. or democracy.su.	18,725	1,669
#11	governance	governance.ab. or governance.ti. or governance.kp,id. or governance.su.	8,815	1,605
#12	#1 OR #2 OR #3	#1 OR #2 OR #3	829,629	84,967
#13	#4 OR #5	#4 OR #5	107,127	14,347
#14	#7 OR #8 OR #9 OR #10 OR #11	#7 OR #8 OR #9 OR #10 OR #11	97,391	11,770
#15	#6 AND #12 AND #13 AND #14	#6 AND #12 AND #13 AND #14	1,182	97

Social Sciences Citation Index, Science Citation Index Expanded, Conference Proceedings Citation Index- Social Science & Humanities (CPCI-SSH), and Conference Proceedings Citation Index- Science (CPCI-S) were searched using the Web of Science interface on 22/May/2009. Following limits were applied: languages: English and German; Document Type: Article OR Review; Time span 1992-2009. The search was conducted in "topic" (TS), where in title, abstract, author keyword and keywords plus will be searched within a record. The update search was performed on 28/September/2010 with the limits: Time span 2009-2010, languages: English, German and Danish. See Table 15 for details.

Table 15: Search strategy for Web of Science

		Search 05/2009	Search 09/2010
#1	TS=student*	>100,000	37,268
#2	TS=adolescent*	89,957	25,637
#3	TS=child*	>100,000	>100,000
#4	TS=participation	63,223	15,922
#5	TS=involvement	>100,000	31,496
#6	TS=school	87,929	23,383
#7	TS="health promotion"	8,019	2,081
#8	TS="health promoting"	1,498	568
#9	TS="decision making"	>100,00	47,141
#10	TS=democracy	10,114	3,449
#11	TS=governance	13,077	6,754
#12	#1 OR #2 OR #3	>100,000	>100,000

#13	#4 OR #5	>100,000	46,149
#14	#7 OR #8 OR #9 OR #10 OR #11	>100,000	58,632
#15	#6 AND #12 AND #13 AND #14	358	92

The search in Scopus was performed on 22/May/2009. Following limits were applied: search in title, abstract or keywords; publication year after 1991. The update search was performed on 28/September/2010. Following limits were applied: search in title, abstract or keywords; publication year after 2008. See Table 16 for details.

Table 16: Search strategy for Scopus

		Search 05/2009	Search 09/2010
#1	student*	249,588	52,381
#2	adolescent*	795,765	101,015
#3	child*	990,475	138,677
#4	Participation	117,157	21,538
#5	Involvement	225,947	33,646
#6	School	284,897	62,123
#7	"health promotion"	53,419	7,615
#8	"health promoting"	2,533	679
#9	"decision making"	242,188	42,262
#10	Democracy	17,123	3,667
#11	Governance	23,131	7,520
#12	#1 OR #2 OR #3	1,586,930	232,373
#13	#4 OR #5	334,599	53,700
#14	#7 OR #8 OR #9 OR #10 OR #11	330,351	60,064
#15	#6 AND #12 AND #13 AND #14	981	226

The search in PubMed was performed on May/22/2009. Following limits were applied: publication date: 1992-2009; languages: German and English. The update search was performed on 28/May/2010 with following limits: languages: German, English and Danish and published in the last 2 years. See Table 17 for details.

Table 17: Search strategy for Pubmed

		Search 05/2009	Search 09/2010
#1	"students"[Mesh] OR student*	87,322	18,902
#2	"adolescent"[Mesh] OR adolescent*	596,601	94,529
#3	"child"[Mesh] OR child*	692,682	113,808
#4	"consumer participation" [Mesh] OR participation	57,005	10,865
#5	Involvement	164,630	28,762
#6	"schools"[Mesh] OR school	1,241,093	228,651
#7	"health promotion"[Mesh] OR "health promotion"	35,574	6,904
#8	"health promoting"	1,640	496
#9	("decision making"[Mesh] OR "decision making, organizational"[Mesh]) OR	89,580	17,519

	"decision making"		
#10	"democracy"[Mesh] OR democracy	970	159
#11	Governance	3,047	866
#12	#1 OR #2 OR #3	1,054,669	176,207
#13	#4 OR #5	217,280	38,782
#14	#7 OR #8 OR #9 OR #10 OR #11	128,056	25,409
#15	#6 AND #12 AND #13 AND #14	1,011	251

Additionally special registers (Cochrane library, Campbell collaboration, EPPI-Centre database of education research) were searched using appropriate free-text terms relating to student participation.

7.1.2. Journal hand search

Table 18: Overview of journal hand search

Journal	Issues	Supplements
Health Education Research (HER)	2011 Vol 26 Issue 1	2006 Suppl 1
	2010 Vol 25 Issues 1-6	
	2009 Vol 24 Issue 6	
Health Promotion International (HPI)	2010 Vol 25 Issues 1-4	2009 Suppl 1
	2009 Vol 24 Issue 4	2006 Suppl 1
Journal of Adolescent Health (JAH)	2011 Vol 48 Issues 1-2	2011 Vol 48 Issue 2 Suppl 1
	2010 Vol 47 Issues 1-6	2010 Vol 46 Issue 4 Suppl
	2010 Vol 46 Issues 1-6	2010 Vol 46 Issue i3 Suppl
	2009 Vol 45 Issue 6	2010 Vol 46 Issue 2 Suppl 2
		2009 Vol 45 Issue 3Suppl
		2008 Vol 43 Issue 4 Suppl
		2007 Vol 41 Issue 6 Suppl
		2005 Vol 37 Issue 6SUPPL
		2005 Vol 37 Issue 3Suppl
		2003 Vol 33 Issue 2Suppl
		2003 Vol 32 Issue 6Suppl
		2002 Vol 31 Issue 6Suppl
		2002 Vol 30 Issue 6Suppl
		2002 Vol 30 Issue 4 Suppl1
		2001 Vol 29 Issue 3Suppl1
		2000 Vol 27 Issue 2Suppl1
		1998 Vol 23 Issue 6Suppl1
		1998 Vol 23 Issue 2Suppl1
		1993 Vol 14 Issue 5Suppl

Global Health Promotion (former Promotion & Education) (GHP)	2010 Vol 17 Issues 1-3	2010 Vol 17 1Suppl
	2009 Vol 16 Issue 4	2010 Vol 17 2Suppl
		2009 Vol 16 2Suppl
		2009 Vol 16 1Suppl
		2008 Vol 15 1Suppl
		2007 Vol 14 2Suppl
		2007 Vol 14 1Suppl
		2005 Vol 12 4Suppl
		2005 Vol 12 3Suppl
		2005 Vol12 2Suppl
		2005 Vol 12 1Suppl
		2004 Vol 11 Supp1
The American Journal of Health Promotion (AJHP)	2011 Vol 25 Issue 3	
	2010 Vol 25 Issues 1-2	
	2010 Vol 24 Issues 3-6	
	2009 Vol 24 Issue 2	
Health Education and Behavior (HEB)	2011 Vol 38 Issue 1	2009 Vol36 Issue 5 Suppl
	2010 Vol 37 Issues 1-6	2004 Vol 31 Issue 4 Suppl
	2009 Vol 36 Issue 6	
Journal of School Health (JSH)	2011 Vol 81 Issue 1-2	
	2010 Vol 80 Issue 1-12	
	2009 Vol 79 Issue 12	
Health Education (HE)	2011 Vol 111 Issue 1	2008 Vol 108 Special 1, 3, 5
	2010 Vol 110 Issues 1-6	2007 Vol 107 Issue 6
	2009 Vol 109 Issues 4-6	
Critical Public Health (CPH)	2010 Vol 20 Issues 1-4	2005 Vol 15 i4 special
	2009 Vol 19 Issues 3&4 special	2004 Vol 14 4 special
		2004 Vol 14 1 Spezial
Children, Youth and Environments (CYE)	2010 Vol 20 i1	
	2009 Vol 19 i2	

7.1.3. Contacting experts

We contact experts in the field of school HP to identify unpublished large international or national school health promotion projects. Following experts were contacted to provide additional studies to be included in the review:

- Roger Hart
- Goof Buijs
- Silvia De Ruiter
- Anne Lee
- Lawrence St Leger
- Saoirse Nic Gabhainn
- Katherine Weare
- Venka Simovska
- Susan Rifkin

7.2.   Study selection

7.2.1. Abstract Review Form

Ref ID: _____

Initials of **1st reviewer**: _____

	Yes	No	Cannot determine
Is this study **original empirical research**? (no editorials, reviews, letters to the editor, commentaries)			
Does the research describe a **health promotion activity/measure/initiative/programme/project**? (health promotion including primary prevention, no sec. or tert. prevention)?			
Is the study about health promotion **at school**? (not community health promotion, etc.)			
Is the target group **school children**? (students from 5 to 19 years; no university students, kindergarten children, teachers, parents, community etc.)			
Did **students participate** either in **designing**, **planning** or **implementing** the school health promotion measure?			
Are **effects and/or the process of student participation** either in designing, planning or implementing the school health promotion measure described?			
Should this abstract be included? (*if any of the questions above were answered with NO, the abstract should be excluded!*)	Yes	No	

Should this article be included as background literature?	Yes

Initials of **2nd reviewer**: _____

Should this abstract be included?	Yes	No

7.2.2. Fulltext Review Form

Ref ID:

Reviewer:

Should the article be excluded for any of the following reasons?

☐ Full text is not available

☐ Other language than English, German or Danish

☐ Background article

☐ Not original empirical research or wrong publication type (editorial, review, letters to the editor, commentary, book or book chapter)

☐ Low quality=fatally flawed:
a) research questions/objectives and
b) empirical research approach/study design are not identifiable

☐ Not health promotion at school

☐ Wrong population (participation of university or college students, kindergarten children, teachers, parents, community etc.)

☐ Individual decision-making of students (e.g. choosing sports lessons, etc.)

☐ School students not involved in planning, designing, implementing or evaluating health promotion

☐ No effect of student participation in planning, designing, implementing or evaluating health promotion measured (either qualitatively or quantitatively)

☐ Other reasons for exclusion? Please explain:

☐ None of the above – should be included!

7.3. List of studies excluded during fulltext review

Adams, J., Zaskand, A., & Dietrich, U. (2009). Tooty Fruity Vegie in Preschools: An obesity prevention intervention in preschools targeting children's movement skills and eating behaviours. Health Promotion Journal of Australia, 20(2), 112-119.

Affonso, D. D., Mayberry, L., Shibuya, J. Y., Archambeau, O. G., Correa, M., Deliramich, A. N., & Frueh, B. C. (2010). Cultural context of school communities in rural hawaii to inform youth violence prevention. Journal of School Health, 80(3), 146-152.

ALAlami, U. & Cooper, R. G. (2008). Workshops on healthy lifestyle to adolescents. Afr.Health Sci., 8(4), 261.

Allensworth, D. (1997). Improving the health of youth through a coordinated school health programme. Promotion & Education, 4(4), 42-47.

American School Health Association (2010): Implementing and Evaluating a School-Based Program to Improve Childhood Vision. Journal of School Health, 80 (7), 368-370.

Ballard, C., Tong, C., & Usher, L. (1998). Hands in the Dirt and Hearts in the Community: Developing Successful Partnerships for Urban Environmental Education. Clearing Magazine,(101), 18-19.

Benjamins, M. R. & Whitman, S. (2010). A Culturally Appropriate School Wellness Initiative: Results of a 2-Year Pilot Intervention in 2 Jewish Schools. Journal of School Health, 80(8), 378-386.

Bergmark, U. & Kostenius, C. (2009). "Listen to Me when I Have Something to Say": Students' Participation in Research for Sustainable School Improvement. Improving Schools, 12(3), 249-260.

Bonhauser, M., Fernandez, G., Puschel, K., Yanez, F., Montero, J., Thompson, B., & Coronado, G. (2005). Improving physical fitness and emotional well-being in adolescents of low socioeconomic status in Chile: results of a school-based controlled trial. Health Promotion International, 20(2), 113-122.

Bosma, L. M., Sieving, R. E., Ericson, A., Russ, P., Cavender, L., & Bonine, M. (2010). Elements for Successful Collaboration Between K-8 School, Community Agency, and University Partners: The Lead Peace Partnership. Journal of School Health, 80(10), 501-507.

Brown, K. S., Cameron, R., Madill, C., Payne, M. E., Filsinger, S., Manske, S. R., & Best, J. A. (2002). Outcome Evaluation of a High School Smoking Reduction Intervention Based on Extracurricular Activities. Preventive Medicine, 35(5), 506-510.

Buddeberg-Fischer, B., Klaghofer, R., Reed, V., & Buddeberg, C. (2000a). Health promotion in schools - Results from a controlled intervention study in two senior high schools. Sozial- und Praventivmedizin, 45(5), 191-202.

Buddeberg-Fischer, B., Klaghofer, R., Reed, V., & Buddeberg, C. (2000b). School-based health promotion for adolescents: Impact of a psychosocial intervention in two high schools. Gesundheitswesen, 62(10), 499-504.

Caria, M. P., Faggiano, F., Bellocco, R., & Galanti, M. R. (2011). Effects of a School-Based Prevention Program on European Adolescents' Patterns of Alcohol Use. The Journal of adolescent health, 48(2), 182-188.

Chatzisarantis, N. L. D. & Hagger, M. S. (2009). Effects of an intervention based on self-determination theory on self-reported leisure-time physical activity participation. Psychology and Health, 24(1), 29-48.

Collard, D. C. M., Verhagen, E. A. L. M., Chinapaw, M. J. M., Knol, D. L., & Van Mechelen, W. (2010). Effectiveness of a school-based physical activity injury prevention program: A cluster randomized controlled trial. Archives of Pediatrics and Adolescent Medicine, 164(2), 145-150.

Comber, B., Nixon, H., Ashmore, L., Loo, S., & Cook, J. (2006). Urban Renewal from the inside out: Spatial and Critical Literacies in a Low Socioeconomic School Community. Mind, Culture, and Activity, 13(3), 228-246.

Cook, V., Blanchet-Cohen, N., & Hart, St. (2004). Children As Partners: Child Participation Promoting Social Chance International Institute for Child Rights and Developement.

Della Torre Swiss, S. B., Akre, C., & Suris, J. C. (2010). Obesity prevention opinions of school stakeholders: a qualitative study. J Sch Health, 80(5), 233-239.

Dino, G. A., Horn, K. A., Goldcamp, J., Kemp-Rye, L., Westrate, S., & Monaco, K. A. (2001). Teen smoking cessation: making it work through school and community partnership. J Pub Health Manag Pract, 7(2), 71-80.

Dunn, C. L. & Pirie, P. L. (2005). Empowering Youth for Tobacco Control. American Journal of Health Promotion, 21(1), 7-10.

Dyment, J. E. (2004). "At That Age, You Just Accept What You Have. You Never Question Things": Student Participation in School Ground Greening. Children, 14(1), 2004.

Dzewaltowski, D. A., Estabrooks, P. A., & Johnston, J. A. (2002). Healthy youth places promoting nutrition and physical activity. Health Education Research, 17(5), 541-551.

Dzewaltowski, D. A., Estabrooks, P. A., Welk, G., Hill, J., Milliken, G., Karteroliotis, K., & Johnston, J. A. (2009). Healthy Youth Places: A Randomized Controlled Trial to Determine the Effectiveness of Facilitating Adult and Youth Leaders to Promote Physical Activity and Fruit and Vegetable Consumption in Middle Schools. Health Education & Behavior, 36(3), 583-600.

Edwards, C. C., Elder, J. P., De Moor, C., Wildey, M. B., Mayer, J. A., & Senn, K. L. (1992). Predictors of participation in a school-based anti-tobacco activism program. Journal of Community Health, 17(5), 283-290.

Eichhorn, C. & Nagel, E. (2009). Photovoice. A participatory instrument for analysing and evaluating settings. Pravention und Gesundheitsforderung, 4(3), 207-216.

Fagan, A. A., Brooke-Weiss, B., Cady, R., & Hawkins, J. D. (2009). If at First You Don't Succeed ... Keep Trying: Strategies to Enhance Coalition/School Partnerships to Implement School-Based Prevention Programming. Australian and New Zealand Journal of Criminology, 42(3), 387-405.

Forneris, T., Fries, E., Meyer, A., Buzzard, M., Uguy, S., Ramakrishnan, R., Lewis, C., & Danish, S. (2010). Results of a Rural School-Based Peer-Led Intervention for Youth: Goals for Health. Journal of School Health, 80(2), 57-65.

Franks, A. L., Kelder, S. H., Dino, G. A., Horn, K. A., Gortmaker, S. L., Wiecha, J. L., & Simoes, E. J. (2007). School-based Programs: Lessons Learned from CATCH, Planet Health, and Not-On-Tobacco. Preventing Chronic Disease: Public Health Research, Practice and Policy, 4(2), 1-9.

Franze, M. & Paulus, P. (2009). MindMatters - A programme for the promotion of mental health in primary and secondary schools: Results of an evaluation of the German language adaptation. Health Education, 109(4), 369-379.

Gabhainn, S. N., O'Higgins, S., & Barry, M. (2010). The implementation of social, personal and health education in Irish schools. Health Education, 110(6), 452-470.

Gilliam, G. A., Eke, A., Aymer, F., & O'Neil, C. (2001). Developing a Theory-Based, Culturally Sensitive Intervention for Adolescents: The Antigua School Project. Journal of HIV/AIDS Prevention and Education for Adolescents and Children, 4(2-3), 105-126.Giuliano, J. D. (1994). A peer education program to promote the use of conflict resolution skills among at-risk school age males. Public Health Reports, 109(2), 158-161.

Glanz, K., Lunde, K. B., Leakey, T., Maddock, J., Koga, K., Yamauchi, J., Maskarinec, G., & Shigaki, D. (2007). Activating Multi-Ethnic Youth for Smoking Prevention: Design, Baseline Findings, and Implementation of Project SPLASH. Journal of Cancer Education, 22(1), 56-61.

Kell, B. (1-2-2011). 106. Effective and Ineffective Aspects of Harm Reduction School-Based Substance Misuse Programmes for Children and Young People. The Journal of adolescent health 48(2), S72-S73.

Kia-Keating, M., Brown, S. A., Schulte, M. T., & Monreal, T. K. (2009). Adolescent satisfaction with brief motivational enhancement for alcohol abuse. Journal of Behavioral Health Services and Research, 36(3), 385-395.

Kong, A. S. (1-2-2011). 71. Using a Community-Based Participatory Process in Creating a School-Based Health Center Obesity Intervention for Multi-Ethnic Teens. The Journal of adolescent health 48(2), S54.

Lind, C. (2005). The power of adolescent voices: Interpretations of adolescent participation as co-researchers in mental health promotion Faculty of Nursing, Calgary, Alberta.

Lorente, E. & Joven, A. (2009). Self-management in Physical Education: An ethnographic research study. Cultura y Educacion, 21(1), 67-79.

Martins, S., Palmeira, A., Minderico, C., & Sardinha, L. (1-2-2011). 119. Longitudinal Outcomes of a School-Based Lifestyle Promotion Program: Preliminary Results. The Journal of adolescent health. 48(2), S79.

Mathieson, A. & Koller, T. (2006). Addressing the socioeconomic determinants of healthy eating habits and physical activity levels among adolescents. Copenhagen: WHO Regional Office for Europe.

Meaney, K. S., Hart, M. A., & Griffin, L. K. (2009). Fun & Fit, Phase I: A Program for Overweight African American and Hispanic American Children from Low-Income Families. Journal of Physical Education, 80(6), 35-39.

Meininger, J. C., Reyes, L. R., Selwyn, B. J., Upchurch, S. L., Brosnan, C. A., Taylor, W. C., Villagomez, E., Quintana, V., Pullis, B., Caudill, D., Sterchy, S., & Phillips, M. (2010). A structured, interactive method for youth participation in a school district-university partnership to prevent obesity. Journal of School Health, 80(10), 493-500.

Munoz-Baell, I. M., Alvarez-Dardet, C., Ruiz, M. T., Ferreiro-Lago, E., & Aroca-Fernandez, E. (2008). Setting the stage for school health-promoting programmes for Deaf children in Spain. Health Promotion International, 23(4), 311-327.

Newton, R. L., Han, H., Anton, S. D., Martin, C. K., Stewart, T. M., Lewis, L., Champagne, C. M., Sothern, M., Ryan, D., & Williamson, D. A. (2010). An Environmental Intervention to Prevent Excess Weight Gain in African-American Students: A Pilot Study. American Journal of Health Promotion, 24(5), 340-343.

7.4. List of included studies

Table 19: RefIDs of the included studies without a control group with the corresponding citation

RefID(s)	Citation(s)
608	Valaitis and O'Mara, 2005
664+676	Bonell et al., 2010b; Bonell et al., 2010a
111	Carroll et al., 1999
212	Gadin et al., 2009
369	Mandel and Qazilbash, 2005
689	Rowe et al., 2010
675	Baskin et al., 2009
273	Hong et. al., 2010
087	Brooks and Magnusson, 2006
327	Lakin and Littledyke, 2008
503	Salmon et al., 2005
682	Goenka et al., 2010
696	Naylor and Cowie, 1999
695	Strange et al., 2002
562	Streng, 2007
350	Lind, 2007
539+540	Simovska, 2007; Simovska and Jensen, 2008
702	Simovska, 2008
701	Simovska and Jensen, 2009

7.5. Data extraction

7.5.1. Data extraction sheet

Reviewer / Date

RefID:

Reference

Aims of the study / Research questions

Location

Description of setting

Type of trial

Theory (ideas on how the intervention is supposed to work)

Description of intervention (general and in terms of student participation)

Description of Comparison (general and in terms of student participation)

Description of participants

Sampling

Method of data collection

Outcomes

Data analysis

Data on implementation (add appropriate heading: location of implementation in the report [e.g. discussion]; type and nature of data [e.g. focus group interviews, observations by author])

Results (in terms of student participation)

7.5.2. Quality rating forms

7.5.2.1. Quality appraisal checklist for qualitative studies

Every question on the quality appraisal checklist should be answered with no (0), somewhat (1), yes (2), or not applicable (NA) and the associated score will be assigned by two reviewers separately. The score for the main categories (in the greyed out lines) is a summary of the sub-categories (if there are some). The second reviewer compares the two quality ratings; conflicts will be resolved by discussion and consensus. A maximum of 26 points can be reached; the studies are rated as good, fair or poor according to their score:

Poor: 0-13 points (until 50%)
Fair: 14-19 points (over 50% until 75%)
Good: 20-26 points (over 75% until 100%)

If the rating in both of the first two main categories (Research question/aims of the study and empirical research approach) is 0, the study will be excluded as having fatally flawed quality.

Ref ID:

	Category	Rating 1	Rating 2
1	Research question/aims of the study		
	Are the specific research questions clearly stated?		
2	Empirical research approach		
	Is the empirical research approach clearly identified and justified?		
	Is the used approach appropriate for the research question/aims of the study?		
3	Introduction/Theoretical framework		
	Is the literature on the topic appropriately reviewed?		
	Is the theoretical framework clearly described?		
4	Sampling – description		
	Is the sampling method clearly described? • Did the researcher explain how the participants were selected? • Is a rationale presented for the sampling method? (Did the researchers explain why the participants they selected were the most appropriate to provide access to the type of knowledge sought by the study?) • Is there a discussion about recruitment (e.g. reasons for non-participation among sample approached, non-inclusion of selected cases/documents, etc.) • Are the characteristics of the sample presented in enough depth to understand the study site and context?		
5	Sampling – appropriateness		
	Is the sampling strategy appropriate for the research question/the aims of the study?		
6	Data collection – description		
	Is the method of data collection clearly described? (e.g. focus groups, semi-structured interview etc.) • Is the process of fieldwork/data collection adequately described? (e.g. discussion of who collected data, were audio or video recordings made, type and range of questions, interview guide, length and timing of observation work, note taking) • Is saturation of data discussed?		

	Category	Rating 1	Rating 2
	• Is there a discussion about credibility of findings (e.g. triangulation, respondent validation, more than one analyst)?		
7	Data collection – appropriateness		
	Is the data collection method appropriate to the research question?		
8	Data analysis – description		
	Is the method of data analysis clearly described?		
9	Data analysis – appropriateness		
	Is the analysis appropriate for the research question?		
10	Findings		
	Are the claims made supported by sufficient evidence (data)? Is the interpretation sufficiently supported by the data? • Are quotes used adequately to support and enrich the researcher's synopsis of the patterns identified by systematic analysis? (Are original/raw data extracts used?)		
	Do the findings/conclusions make sense, have a coherent logic? • Do the findings answer the research question?/ Are the findings relevant with respect to the aim of the study? • Are the links between data, interpretation and conclusions clear? • Are the implications and alternative interpretations of the results discussed?		
	Have the findings been compared with appropriate theoretical and empirical references?		
	Are the shortcomings accounted for and discussed?		
11	Value of the research		
	Does the research add to the knowledge or increases the confidence with which existing knowledge is regarded? • Are a few clear consequences of the study proposed?		
	Are new areas identified where research is necessary?		
	Are questions about external validity (to what other settings or populations the findings or notions can be applied) addressed?		
12	Reflexivity (potential researcher bias)		
	Are questions about reflexivity (the effects of the researcher on processes, interpretations, findings, and conclusions) addressed?		
	Did the researcher critically examine their own role and influence during formulation of research questions and data collection (including sample recruitment and choice of location)?		
	Is it clearly described how the researcher responded to events during the study and whether they considered the implications of any changes in the research design?		
13	Ethical Issues		
	Is ethical approval for the study documented?		
	Was informed consent obtained from participants of the study?		
	Did researcher discuss issues raised by the study (e.g. issues around confidentiality or how they		

	Category	Rating 1	Rating 2
	have handled the effects of the study on the participant during and after the study)?		
	SUM		

7.5.2.2. Quality appraisal checklist for quantitative studies

Every question on the quality appraisal checklist should be answered with no (0), somewhat (1), yes (2), or not applicable (NA) and the associated score will be assigned by two reviewers separately. The score for the main categories (in the greyed out lines) is a summary of the sub-categories (if there are some). The second reviewer compares the two quality ratings; conflicts will be resolved by discussion and consensus. A maximum of 26 points can be reached; the studies are rated as good, fair or poor according to their score:

Poor: 0-13 points (until 50%)
Fair: 14-19 points (over 50% until 75%)
Good: 20-26 points (over 75% until 100%)

If the rating in both of the first two main categories (Research question/aims of the study and empirical research approach) is 0, the study will be excluded as having fatally flawed quality.

Ref ID:

	Category	Rating 1	Rating 2
1	Research question/aims of the study		
	Are the specific research questions or objectives clearly stated?		
	Are the questions focused?		
2	Empirical research approach/study design		
	Is the study design clearly identified and justified?		
	Is the used study design appropriate for the research questions/objectives?		
3	Introduction/Background		
	Is the review of the scientific background/previous research appropriate and sufficient?		
	Is a rationale/justification for the investigation presented?		
	Is the theoretical framework clearly described?		
4	Methods/sampling – description		
	Is the sampling method clearly described? • Are criteria for inclusion of participants described (eligibility criteria)? • Are sources and methods of selection of participants described?		
	Is the study sample clearly described? (sample size, demographics – age, race, gender, location, SES, etc.) Is the study setting clearly described?		
5	Methods/sampling – appropriateness		
	Is the sampling strategy appropriate for the research question of the study?		

	Category	Rating 1	Rating 2
6	Methods/Data collection – description		
	Are the measurements of outcome, independent and control variables clearly described?		
	Were validated outcome measures used? (note: previous use of the measure is not the same as appropriate validation, some sort of reference to previous validation should be made in the article)		
7	Methods/Data collection – appropriateness		
	Are the variables measured with appropriate methods?		
	Do the operational definitions match the theoretical variables?		
8	Methods/Data analysis – description		
	Are the statistical tests used to analyse the data clearly described?		
9	Methods/Data analysis – appropriateness		
	Are the statistical tests chosen to analyse the data appropriate in terms of • adequately testing the hypotheses? • matching the study or research design? • meeting the statistical assumptions of the distribution of data and the types of scales that were used to measure outcome, independent and control variables? • sample size?		
	Are multivariate statistical tests used to test the hypotheses? (e.g. multiple regression analysis, multivariate analysis of variance, discriminative function analysis, logistic regression analysis, factor analysis etc.) Were the multivariate tests used appropriately?		
10	Results		
	Are the findings presented clearly, objectively, and in sufficient detail to enable the reader to judge the results by himself/herself?		
	Are the findings internally consistent? (i.e. do numbers add up correctly, etc.)		
	Are unadjusted und adjusted estimates presented?		
	Was the sample size appropriate? (i.e. large enough to avoid concluding that no relationship exists when in fact a significant relationship may have existed; or not too large that practically insignificant results were declared statistically significant)		
11	Discussion – findings substantiated and compared to literature		
	Are the key results with reference to the study objectives presented?		
	Are the conclusions supported/ substantiated by data presented in the results section?		
	Do the investigators consider all kinds of possible logical interpretations of their results?		
	Are the results adequately compared to previous studies in this area?		
12	Discussion – limitations, external validity, areas for new research		
	Are limitations of the study discussed? Are sources of potential bias or imprecision discussed?		

	Category	Rating 1	Rating 2
	Are questions about external validity/generalisability (to what other settings or populations the findings or notions can be applied) addressed?		
	Are new areas identified where research is necessary? Are recommendations for next steps in the research given?		
13	Ethical Issues		
	Is ethical approval for the study documented?		
	Was informed consent obtained from participants of the study?		
	SUM		

7.5.3. summary table of quality ratings

Table 20: Summary table of quality ratings

Type of study/ reference	Ref ID	Reviewer 1	Reviewer 2	Rating
Intervention studies with control group				
Birnbaum et al., 2002	698	26	26	good
Carruth et al., 2010	679	14	14	fair
Hamdan et al., 2005	245	16	16	fair
Mellanby et al., 2001	693	21	21	good
Wilhelmsen et al., 1994	642	24	24	good
All				
Valaitis and O'Mara, 2005	608	23	23	good
SI				
Bonell et al., 2010b	664	24	24	good
Bonell et al., 2010b	676	25	25	good
Carroll et al., 1999	111	20	20	good
Gadin et al., 2009	212	17	17	fair
Mandel and Qazilbash, 2005	369	3	3	poor
Rowe et al., 2010	689	18	18	fair
PE				
Baskin et al., 2009	675	21	21	good
Hong et al., 2010	273	22	22	good
PI				
Brooks and Magnusson, 2006	87	19	19	fair
Lakin and Littledyke, 2008	327	14	14	fair
Salmon et al., 2005	503	23	23	good
Peer				
Goenka et al., 2010	682	18	18	fair
Naylor and Cowie, 1999	696	15	15	fair
Strange et al., 2002	695	21	21	good
Streng, 2007	562	20	20	good
PAR				
Lind, 2007	350	19	19	fair
IVAC				
Simovska, 2007	539	20	20	good
Simovska and Jensen, 2008	540	15	15	fair
Simovska, 2008	702	17	17	fair
Simovska and Jensen, 2009	701	15	15	fair

7.6. Data analysis and synthesis

Table 21 shows a summary of effects and in which studies the effect was occurring. The table does not provide information about the quantity of evidence found in each category but shows in which categories effects occurred. This table was used as basis for the description of effects in the results section.

Table 21: Summary of effects, by study and study approach

	All	SI					PIE		PI			PEER				PAR	IVAC			
	608	664+676	111	212	369	689	675	273	87	327	503	682	696	695	562	350	539+540	702	701	sum
Personal effects on students	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18
Skills competencies and knowledge		1	1			1	1	1			1		1	1	1		1	1	1	12
Increased communication skills		1												1	1			1		4
Improved collaboration skills																	1	1		2
Improved decision-making skills																		1		1
Increased problem-solving skills														1				1		2
Increased organisational skills											1							1	1	3
Increased learning capacity																			1	1
Applied knowledge						1		1										1	1	4
Increased action competence																		1	1	2
Developing skills and competencies (not specified)													1		1		1	1		4
Increased knowledge (not specified)		1					1	1							1			1	1	6
Opportunities to acquire knowledge and experience			1																	1
Learning research skills																			1	1
Health-related effects for students							1		1	1		1		1	1	1	1	1	1	10
Improved health behaviour							1			1		1		1				1	1	6
Health literacy										1				1	1		1	1	1	6
Increased mental health									1							1				2

Evidence for effects of student participation in designing, planning, implementing and evaluating school health promotion

	All	SI					PIE		PI			PEER				PAR	IVAC			
	608	664+676	111	212	369	689	675	273	87	327	503	682	696	695	562	350	539+540	702	701	sum
Increased physical abilities									1											1
Personal development	**1**	**1**							**1**	**1**	**1**		**1**	**1**	**1**	**1**	**1**	**1**		**11**
Influence on personality		1												1	1					3
Developing social responsibility										1					1			1		3
Increased self-confidence and self-esteem		1							1	1	1			1	1	1	1	1		9
Increasing self-efficacy/gaining sense of achievement	1									1		1				1		1		5
Learning persistence																		1		1
Satisfaction, motivation and ownership	1	1				1	1	1	1	1	1		1	1	1	1	1	1	1	15
Increased student motivation and commitment																1	1	1	1	4
Positive experience															1	1	1	1		4
Increased learning engagement		1			1									1			1			4
Satisfaction with participatory process		1						1	1		1	1		1			1	1		8
Satisfaction with program							1	1												2
Satisfaction with changed infrastructure										1										1
Gaining ownership over project																1				1
Ownership with own product/work	1									1							1	1	1	5
Influence on student perspective		**1**			**1**				**1**	**1**	**1**			**1**		**1**	**1**	**1**		**9**
Gaining new insights									1	1	1			1		1		1		6
Shift of focus										1							1	1		3
Developing a sense for reality																1		1		2
Increased awareness of project/infrastructure		1			1															2
Better understanding of school-decision making		1																		1
Usefulness for life in general														1						1
Effects on interaction and relation	1	1							1		1		1	1	1	1			1	9

	All	SI					PIE		PI			PEER				PAR	IVAC			
	608	664+676	111	212	369	689	675	273	87	327	503	682	696	695	562	350	539+540	702	701	sum
Better student-adult relationship		1									1			1			1			4
Improved peer relationship		1							1		1			1	1	1				6
Improved peer cooperation									1										1	2
Student recognition	1														1					2
Effects on other stakeholder		**1**						**1**				**1**	**1**					**1**	**1**	**6**
Dissemination of information (effects on other stakeholders)								1											1	2
Satisfaction of other stakeholder (beside students) with participatory process		1						1												2
Work relief for teachers												1	1							2
Influence on parents behaviour and commitment																		1		1
Effects on school as an organisation	**1**	**1**		**1**	**1**			**1**	**1**				**1**			**1**	**1**	**1**	**1**	**11**
Better acceptance of and compliance with rules		1																		1
Improved school engagement		1															1			2
Change in or new class content																			1	1
Changes in or new policy/rules		1																1	1	3
Changes in or new infrastructure	1									1								1	1	4
Participatory culture		1		1					1							1	1	1	1	7
Better school climate		1											1							2
Organizing events																			1	1
Identification of service gaps/suggestions for improvement				1	1															2
Effects on the local community (infrastructure)																			**1**	**1**
Effects on program/project							**1**	**1**										**1**	**1**	**4**
Need-oriented and relevant lessons/ program content							1	1												2
Successful participation																		1	1	2

Evidence for effects of student participation in designing, planning, implementing and evaluating school health promotion

	All	SI					PIE		PI			PEER				PAR	IVAC			
	608	664+676	111	212	369	689	675	273	87	327	503	682	696	695	562	350	539+540	702	701	sum
Negative effects		1									1	1	1			1		1		6
Factors that mediate effects				1					1			1	1	1				1		5
Sum	4	17	1	3	2	2	4	7	9	10	7	3	7	13	11	11	13	29	19	171

all, studies with respect to students involvement in all phases of the project cycle

SI, studies in which students were involved in selection of a topic, planning and implementation of a health promotion intervention

PIE, studies with respect to students' involvement in planning, implementation and evaluation

PI, studies with respect to students' involvement in planning and implementation of a health promotion measure

Peer, studies using a peer approach e.g. peer education, peer support-system

PAR, studies using participatory action research

IVAC, studies using the investigation-vision-action-change approach