



Effective Elements of School-based Provision for the Promotion of Healthy Lifestyles

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Co-funded by the
Erasmus+ Programme
of the European Union



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Technical sheet

Title: Effective Elements of School-Based Provision for the Promotion of Healthy Lifestyles

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Number of pages: 27

Year: 2022

Cite as: Bailey, R., Glibo, I., & Scheuer, C. (2022). Effective Elements of School-Based Provision for the Promotion of Healthy Lifestyles. Luxembourg: University of Luxembourg. DOI: 10.5281/zenodo.5900415

Project: Healthy and Physically Active Schools in Europe

Project Coordinator: Claude Scheuer

Funder: European Commission

Programme: Erasmus+ Key Action 2: Strategic Partnerships for School Education – 2019

Reference: 2019-1-LU01-KA201-050112

Timeline: December 2019 – November 2021

Project Sheet: <https://ec.europa.eu/programmes/erasmus-plus/projects/eplu-project-details/#project/2019-1-LU01-KA201-050112>

For further information on the HEPAS Project please follow the link:

Website: <https://www.movingschoolsaward.com/hepas/>



Project partners:

The authors wish to acknowledge the contribution of the Healthy and Physically Active Schools in Europe (HEPAS) project team for the development of the outputs here referenced for HEPAS (2022).

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Executive Summary

1. This is the first study to gather and integrate experts' views on the most effective school-based strategies for the promotion of healthy lifestyles in a European context.
2. Schools can serve as effective settings to promote the health and well-being of all people involved in school life.
3. For leveraging the promotion of healthy lifestyles in schools, it is necessary to identify elements of an effective school-based health-promotion strategy.
4. The objective of this study was to develop a Europe-based list of the most effective elements of learning and health support systems influencing school students' healthy lifestyles education.
5. A 3-stage consensus study involving a group of 18 Europe-based subject experts was used to gather and analyse expert opinions on the main research question: 'what are the most effective elements of learning and health support systems influencing school students' healthy lifestyles education?' Over three rounds, experts were asked to rate the effectiveness of 25 specific elements.
6. The research process resulted in the following ranked list of elements:
 - 1) Physical Education
 - 2) Staff Professional Development
 - 3) Healthy School Policies
 - 4) Active Recess/Breaks
 - 5) Family & Community Engagement
 - 6) Healthy Eating
 - 7) Physical Activity in Classroom Lessons
 - 8) Active Transport
7. While the present study is a somewhat preliminary step under conceptualising the elements of school-based programmes, its findings offer useful information for evidence-based programmes, as well as future research that explores the necessary components of health promotion in schools.



1. Introduction

The objective of this study was to develop a Europe-based, authoritative list of the most effective components or elements of learning and health support systems influencing school students' healthy lifestyles education. It was a part of the broader project, 'Healthy and Physically Active Schools in Europe' (HEPAS). The basic approach in this study involved the gathering of the opinions of a group of context experts, and then submitting those opinions to structured rounds of analysis and reorganisation. So, the experts were invited to engage with shared statements of the group's decision-making to reach a group consensus.

The research question was:

what are the most effective elements of learning and health support systems influencing school students' healthy lifestyles education?

2. Background

Worsening health behaviours of children pose a significant public health problem (Freeman, King, & Coe, 2015). In the past, youth-based health efforts focused on controlling and preventing infectious diseases, such as smallpox and tuberculosis (Allensworth et al., 1995), but current health challenges relate to non-communicable diseases and associated with behavior and lifestyle choices, including physical inactivity and poor diet (Mikkelsen et al., 2019). Rising levels of obesity and overweight are, perhaps, the most commonly cited evidence of these concerns, with more than 50% of the population of the European Union estimated to be overweight, and nearly 1 in 6 children overweight or obese (Inchley et al., 2016). An array of comorbidities, such as high blood pressure, diabetes, and mental health issues, both during youth and in later life, as well as associated health costs means that declining health adversely impacts individuals and wider communities (GBD 2015 Obesity Collaborators, 2017).

Schools have frequently been suggested as valuable settings to address the problem of worsening health behaviours as they can reach almost all children during critical periods of development.

These trends emphasize the need for early intervention, through comprehensive health promotion and primary prevention strategies. Schools have frequently been suggested as valuable settings for interventions to address this situation as they can reach almost all children during critical periods of development. Behaviour patterns are established during childhood that have important implications for short- and long-term health (Aston, 2018). Children spend a significant

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amount of time in school, creating a unique opportunity to reach a wide range of children across the population, regardless of social background (Anderssen, 2013). European engagement with coordinated, school-based health promotion can be traced to the 1980s, when the World Health Organisation (WHO), the European Commission, and Council of Europe developed the concept of the health-promoting school, based on the principles and strategies of the Ottawa Charter for Health Promotion (WHO, 1986). Central to this initiative was the notion that schools can serve as effective settings to promote the health and well-being of all people in the communities associated with school life (Viig & Wold, 2005). This collaboration led to the establishment of the European Network of Health Promoting Schools, partnership that continues to this day (Burgher, Rasmussen, & Rivett, 1999).

While many specialist agencies have called on schools to create cultures of health where youth have opportunities to engage in and learn about healthy lifestyles, implementing this culture in practice has often proved a challenge for various reasons (Centeio et al., 2018). An early systematic review of the effectiveness of health promotion in schools reported that programmes are most likely to be effective when they are informed by whole-school involvement, a supportive psychosocial environment, the development of personal skills, the involvement of families and the wider community, and long-term implementation (Stewart-Brown, 2006). Subsequent research suggests that whole school, multi-component interventions are most effective in school settings, especially when key stakeholders are empowered to commit and make the interventions sustainable (Langford et al., 2015). The US 'Whole School, Whole Community, Whole Child' (WSCC) model of the Association for Supervision and Curriculum Development (ASCD) and the Centers for Disease Control and Prevention (CDC) is, perhaps, the most widely disseminated approach, highlighting the dynamic relationship between intrapersonal, interpersonal, and community levels.

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WSCC highlights the importance of evidence-based school policies and practices, and explicitly identifies 10 components of an effective school-based health-promotion strategy (including Physical education and physical activity, Nutrition environment and services, Social and emotional school climate, and Health Services (Community involvement) CD & CDC, These rate findings

Studies demonstrate the importance of the inclusion of specific activities and practices that can act as focal points for leveraging the promotion of healthy lifestyles in schools.

from other studies demonstrating the importance of the inclusion of specific activities and practices that can act as focal points for leveraging the promotion of healthy lifestyles in schools (Storey et al., 2016).

3. Results

Of the 25 elements listed in the first round, 12 (48%) achieved a weighted mean of 7.00, which was considered a provisional point of consensus for this study. These elements were carried over to the second round, after which the 8 elements (67%) with a weighted mean of 6.00 were carried over to the third, final round. The results from the 3 rounds of the Delphi process are presented (ordered by weighted mean of 9-point Likert) in the following table:



Round 1		Round 2		Round 3	
Physical Education (compulsory school lessons)	8.56	Physical Education	10	Physical Education	7.27
Staff professional development (training for school staff responsible for health and/or teaching)	7.94	Healthy school policies	8.08	Staff professional development	5.27
Family & Community Engagement (links between school and students' families / communities)	7.83	Staff professional development	7.77	Healthy school policies	4.73
Active Recess/Breaks (free time from lessons)	7.72	Family & Community Engagement	7.46	Active Recess/Breaks	4.67
Social & emotional education (mental health, emotional well-being, anti-bullying)	7.56	Active transport	7.23	Family & Community Engagement	3.67
Healthy eating (cooking, diet & nutrition)	7.5	Active Recess/Breaks	7.08	Healthy eating	3.67
Physical activity in classroom lessons (classroom activity breaks and active thinking)	7.44	Healthy eating	6.77	Physical activity in classroom lessons	3.67
Healthy school policies (written statements promoting a healthy school)	7.39	Physical activity in classroom lessons	6.62	Active transport	3.07
Sex education (Relationships, sexual health and parenthood)	7.28	Social & emotional education	5.46		
Active transport (active travel to and from school)	7.22	School sports clubs	4.31		
School sports clubs (before and/or after school)	7.22	Health promotion programmes for staff	4.23		
Health promotion programmes for staff (school employee well-being)	7.11	Sex education	3		
Substance abuse prevention (alcohol, tobacco and drug use)	6.94				
Appropriate use of screen and electronic devices time (use of mobile phones, tablets, etc.)	6.72				
Road safety education (lessons in schools)	6.67				

Vaccinations (school-based programme)	6.67
Hygiene (lessons in keeping oneself and the school clean)	6.56
Counselling, psychological, and social services (support services)	6.39
Personal safety and injury prevention (individual and community safety)	6.39
First Aid (emergency care and assessment)	6.28
Health screening (assessment of health measures)	6.22
Intramural sports (competitions within schools)	5.61
Homework (home study related to healthy lifestyles)	5.61
Extramural sports (competitions with other schools)	5.39
Rest periods (time to rest / sleep at school)	4.61

Table 1. Results from the 3 rounds of the Delphi process

4. Discussion

So, 8 discrete components were rated as the most effective elements of learning and health support systems influencing school students' healthy lifestyles education. In order of consensus, they were:

1. Physical Education
2. Staff Professional Development
3. Healthy School Policies
4. Active Recess/Breaks
5. Family & Community Engagement
6. Healthy Eating
7. Physical Activity in Classroom Lessons
8. Active Transport

The 8 most highly ranked elements were:

1. Physical Education;
2. Staff Professional Development;
3. Healthy School Policies;
4. Active Recess/Breaks;
5. Family & Community Engagement;
6. Healthy Eating;
7. Physical Activity in Classroom Lessons;
8. Active Transport.

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In light of limited time and funding, this list offers some insight into the content of programmes designed to deliver efficacious promotion of students' healthy lifestyles in schools.

Schools have for many years been recognized as important settings for the promotion of healthy lifestyles. Traditionally, this has focused on narrow classroom-based health education lessons and the provision of school health services to help individuals make healthy choices about lifestyle or behaviour. These approaches have largely failed to demonstrate significant reductions in health risk behaviour, and recent years have seen approaches premised on whole school approaches of organisational and systemic change (Macnab, Gagnon, & Stewart, 2014). These approaches might include classroom health education, but are framed within contextual or socio-ecological perspectives that acknowledge the need for the engagement of school stakeholders (such as students, teachers, parents and wider community (Samdal & Rowling, 2011; Storey et al., 2016). The discrete elements of provision and support considered in this study form just a part of the picture. Nevertheless, numerous studies (Fung et al., 2012; Rasberry et al., 2015) and evidence-informed guidance (IUHPE, 2009; WHO, 1986) support the presumption that specific strategies play a key role in the implementation of effective school-based health promotion. From an initial list of potential components developed from the review of literature, 8 were identified as especially effective as strategies for promoting healthy lifestyles in schools.

Curricular Physical Education has long been associated with health outcomes, and continues to be aligned with health education in several countries, such as use of the term 'Health and Physical Education' or similar in Australia, Canada and Wales (Bailey, 2017). There is ample evidence that besides having a key role in disease and obesity prevention, physical activity supports mental health, academic achievement, and a host of other positive outcomes (Bailey et al., 2013; Janssen & LeBlanc, 2010). As the only source of regular, structured physical activity guaranteed to almost every child and young person, physical education classes are well-placed to educate students about the importance of healthy lifestyles, as well as the health risks of obesity and inactivity (Hills, Dengel, & Lubans, 2015). There is no physical education curriculum in Europe at primary or secondary school phases which does not include reference to the promotion of healthy lifestyle, especially the intention of regular physical exercise outside of school. In some countries, such as Finland, Italy, Poland, Norway, Slovenia and Spain, special classroom lessons physical activity / sport and health are also available as an elective course in lower and upper secondary levels (Naul & Scheuer, 2020). These developments reflect an increasing commitment by the

Teachers of physical education might take a wider responsibility for supporting the development of the knowledge, skills, attitudes and values associated with healthy and active lifestyle.



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European Union member states during the last 20 years to promotion of health-related physical activity to play a more central role in facilitating health promotion in schools.

The extent to which schools successfully utilise physical education in this way is difficult to judge, due to the inherent difficulties of international comparisons, as well as the contested nature of the subject's aims and content (Bailey, 2017). However, empirical research suggests that many lessons involve relatively low levels of physical activity, and health behaviours do not consistently track to other aspects of children's lives, or later life (Hollis et al., 2016; Hollis et al., 2017). This situation has led some of leaders in the field to argue for a clear and consistent alignment of the goal of physical education with public health agendas (McKenzie et al., 2016). In this context, teachers of physical education might take a wider responsibility for supporting the development of the knowledge, skills, attitudes and values associated with healthy and active lifestyles ((Hills, Dengel, & Lubans, 2015).

Effective **professional development** is essential to the implementation of school-based health promotion (Storey et al., 2016). Empirical research and reviews among European countries have identified the knowledge and engagement of school staff, especially teachers, as necessary conditions for the realisation of health-related changes in schools (Capacci et al., 2012; Van Ansem et al., 2013). Yet, as teacher education in most European countries does not include this content (Bailey, 2017), development opportunities are even more important to foster the conditions of healthy lifestyles in schools (Langford et al., 2015). The movement from traditional, classroom-based health education to whole-school approaches requires, as a minimum, coordinated efforts in terms of school policies, physical environment, social environment, community links and health-sector partnerships (St Leger, 2000), so the promotion of healthy lifestyles in school places high demands for change to teachers, as well as other stakeholders (Viig, Tjomsland, & Wold, 2010).

The relationship between **policy** and practice is a perennial one in health research (Jansen et al., 2010). The trajectory from policy formulation to implementation, whether at macro, meso or micro levels, is often complex, and mediated by numerous actors and mediating factors, such as funding, time, resources, programming and administrative support, staff and parent understanding (Hager et al., 2016). Yet policy has been identified as a key determinant of developments in school-based health provision in Europe (Capacci et al., 2012). Effective school-level policies have been associated with a range of changes

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to practice, including enhanced school nutrition environment, by reducing access to sugary drinks and unhealthy food (Coleman et al., 2012), combatting student obesity (Narayanan et al., 2019), increasing physical education time and children's participation in physical activity (Lounsbery, McKenzie, & Smith, 2019), and supporting social-emotional learning (Jones & Bouffard, 2012).

All schools in the European Union include **recess** or breaktimes as part of their standard timetable, at both Primary and Secondary phases (European Commission & WHO Regional Office for Europe, 2018), and they have been identified as a potentially valuable setting for the promotion of healthy behaviours, especially physical activity (Hyndman, 2017). Systematic reviews have suggested that recess could make a meaningful contribution to the health of children and young people by facilitating the accumulation of moderate to vigorous physical activity every school day (D'Haese et al., 2015; Reilly et al., 2016), with the potential to contribute up to 40% towards daily physical activity recommendations (Ridgers, Stratton, & Fairclough, 2006). Evidence also suggests that active recess periods can contribute to improved fundamental movement skills, weight status, and cognitive performance (Pesce et al., 2016).

Recess is a potentially valuable setting for the promotion of healthy behaviours, especially physical activity.

The importance of **families and the communities** in which children and young people live for educational development is well-established (Epstein et al., 2018), with 6 types of involvement identified as especially relevant: parenting, communicating, volunteering, learning at home, decision making, and collaborating with the community. Their roles in the specific context of the nurturing of healthy lifestyles has received much less attention from researchers, although available evidence supports the claim that family and the community involvement are necessary conditions of sustainable health-based strategies (Cipriani, Richardson, & Roberts, 2012). Empirical studies have reported encouraging findings from community-based interventions focusing on healthy eating (Sirasa et al., 2019), and physical activity promotion (Cipriani, Richardson, & Roberts, 2012). By observing the behaviours and lifestyles of those in their families and communities, children and young people can begin to familiarize themselves with and develop healthy habits, although the efficacy of this process is dependent on the extent to which health messages are shared between the triad of school-family-community (Epstein et al., 2018).

6 types of family and the community involvement are especially relevant: parenting, communicating, volunteering, learning at home, decision making, and collaborating with the community.

Schools are among the most influential places for the encouragement of **healthy eating** for children and young people, and many European Union member states have developed policies, guidance, and initiatives to improve the diets of children and young people (Capacci et al., 2012). In addition to the substantial



amount of time spent at school, children often consume food and drinks during school time (Story, Kaphingst, & French, 2006), and teacher and other school staff can reach both children and parents to stimulate healthy eating habits (Van Ansem et al., 2013). Healthy eating programmes can also have an impact through engaged students acting as change agents by spreading the messages to large segments of the school population, families and communities (Wang & Stewart, 2013). Two systematic reviews of European school-based interventions concluded that multi-component interventions can combine easier access to fruit and vegetables with classroom lessons (as well as some parental involvement), can improve students' diets, and reduce obesity (De Bourdeaudhuij et al., 2011; Van Cauwenberghe et al., 2010).

Schools are among the most influential places for the encouragement of healthy eating for children and young people.

Classroom lessons are the most sedentary and least active parts of a young person's day in European schools (McLellan et al., 2020). As such, they present an ideal opportunity for increasing health-enhancing physical activity levels. Two main strategies have been proposed for increasing activity into classrooms: classroom movement breaks, which involves short bursts of either aerobic (e.g., marching with arm movements, jumping and hopping) or anaerobic activities (e.g., strength and coordination exercises) between periods of academic instruction (Bailey, 2018); and physically active learning, which teaches content through active games or purposeful movements (Norris et al., 2015). Movement breaks have been found to offer a time- and cost-efficient way of increasing students' daily physical activity that are popular with both teachers and students. These breaks do not interfere with the achievement of lesson objectives, and are associated with improvements in students' selective attention, memory, and on-task behaviour (Schmidt, Benzing, & Kamer, 2016). Research with active learning has been less extensive than for movements breaks, but findings have been generally positive. Studies have focused on a diverse range of school subjects, primarily literacy and mathematics (Beck et al., 2016; Kibbe et al., 2011), as well as cross-curricular themes within physical education lessons, such as thinking and social skills, and personal responsibility (Pill & SueSee, 2017).

Classroom lessons are the most sedentary and least active parts of a young person's day in European schools.

Active transport is another potentially valuable source of physical activity for children and young people, involving physically active commuting to and from school (walking or by bicycle), in opposition to passive commuting (such as by car or bus) (Pang, Kubacki, & Rundle-Thiele, 2017). Compared with other forms of physical activity, active transport has the additional advantage of being relatively convenient and free. A recent survey found that active transport to school was a common strategy in European cities, especially

during the Primary age-phase (Bailey, 2018). Evidence suggests that it provides several benefits, such as reduction in children's energy intake (Rosenberg et al., 2006) and Body Mass Index (Masoumi et al., 2017),

Active transport provides several benefits, such as reduction in children's energy intake and BMI, improvement in academic achievement, as well as contributing to healthier local environments.

both associated with the reduction of overweight and obesity, in the long-term, and improvement in academic achievement. Schools and districts with active transport policies have also been found that have reduced use of car use and less congestion (Moodie et al., 2011), contributing to healthier local environments. Despite these benefits, actual transport to and from school has significantly declined in most developed countries over the last 30 years (Shaw et al., 2015), influenced by increasing car use, change in social norms, and parental anxieties about safety (Santos et al., 2013). These factors highlight the importance of school-wide strategies for successful and sustainable healthy active transport practices.

By examining the components of effective school-based healthy lifestyles promotion, the present study builds on the WSCC programme (ASCD & CDC, 2014), and it is important to acknowledge that these components represent only the most explicit features of effective provision. The WSCC model also emphasises the importance of a supportive psycho-social and educational climate, and a holistic approach that is designed to emphasize the whole to support the development of each child and youth most effectively (Rooney, Videto, & Birch, 2015). The importance of a whole-school approach is a recurring theme from the wider empirical literature, including evaluation studies (De Bourdeaudhuij et al., 2011; Samdal & Rowling, 2011). Nevertheless, in light of evidence that most schools in Europe are currently a long way from a whole-school approach to the promotion of healthy lifestyles, it is worthwhile to consider not just the content, but also the relative efficacy of discrete elements of provision.

The importance of a whole-school approach is a recurring theme from the wider empirical literature.



5. Conclusion

This is the first study to gather and integrate experts' views on the most effective school-based strategies for the promotion of healthy lifestyles in a European context. Using an iterative process of consensus-building, it sought to identify the key elements within such provision and provide some sense of the relative efficacy of different practices. Cognisant of the inherent limitations of any exploratory study, which are likely to be magnified during the unprecedented

circumstances in which it took place, the authors are cautious of overly generalising from the data presented here. Nevertheless, the data do provide some insight in informing effective provision for promoting healthy lifestyles in schools. Unlike most regions of the world, Europe benefits from the support and guidance of a network of agencies with an expressed interest in health and education, including the European Union, European Commission, and World Health Organization Regional Office for Europe, and the development of policy and guidance tends to be relatively coordinated, compared to other regions (Simovska, Dadaczynski, & Woynarowska, 2012).

School, national and regional contexts vary, but there are also substantial similarities in the intended outcomes of health-promotion, namely encouraging healthy behaviours during childhood and youth, and laying the foundation of healthy lifestyles throughout life. While the present study is a somewhat preliminary step under conceptualising the elements of school-based programmes, its findings offer useful information for evidence-based programmes, as well as future research that explores the necessary components of health promotion in schools.

This is the first study to gather and integrate experts' views on the most effective school-based strategies for the promotion of healthy lifestyles in a European context.



Acknowledgements

The report authors gratefully acknowledge the contribution of the experts who took part in the research study: Adrian Bethune (Teachappy, UK), anonymous (Italy), Catherine Carty (Institute of Technology Tralee, Ireland), Anna Chalkley (Loughborough University, UK), Tara Coppinger (Cork Institute of Technology, Ireland), Peter Elsborg (Steno Diabetes Center, Denmark), Kristy Howells (Canterbury Christ Church University, UK), Aleksandar Ignjatovic (University of Kragujevac, Serbia), Viktória Anna Kovacs (Hungarian School Sport Federation, Hungary), Merike Kull (University of Tartu, Estonia), Sergio Lerma Lara (CSEU La Salle, Spain), Begoña Merino Merino (Medical Doctor, Spain), Roland Naul (Willibald Gebhardt Institute, Germany), Peter Paulus (Leuphana University, Germany), Uwe Pühse (University of Basel, Switzerland), Arja Sääkslahti (University of Jyväskylä, Finland), Jesper von Seelen (University College South Denmark, Denmark), Amika Singh (Mulier Institute, Netherlands), Jaroslav Vrbas (Masaryk University, Czech Republic).



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Appendix: Methods

Procedure

The research process took between December 2019 and April 2020, with the data-gathering and analysis occurring between February and April 2020. As such, it overlapped with the COVID outbreak. Following discussions with participants, it was decided to continue with the study.

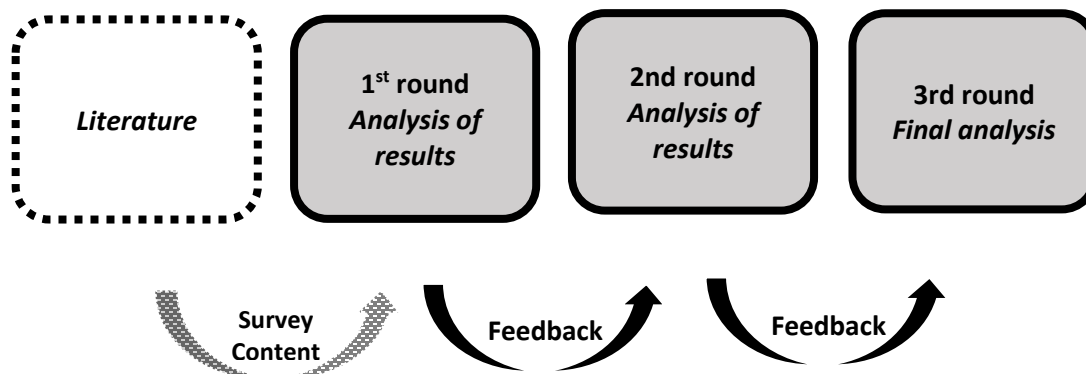
The approach chosen for eliciting an expert community's view was a 3-stage Delphi study, a method of gathering and refining group judgement based on the idea that a group of experts is better than one expert when exact knowledge is not available. This approach has been widely used in research where the aim is to gain expert consensus. Anonymity throughout the process, and multiple rounds of data collection, data analysis and controlled feedback helped to limit the influence of comments from peers. The Delphi method was chosen for this particular study as it offered a mechanism for exploring ideas and the formation of an informed group judgement, especially as empirical evidence was limited.

The Delphi process was used to collate expert opinions on the main research question:

what are the most effective elements of learning and health support systems influencing school students' healthy lifestyles education?

The basic approach in this study involved the gathering of the opinions of a group of Europe-based subject experts, and then submitting those opinions to structured rounds of analysis and reorganisation. So, the experts were invited to engage with increasingly aggregated iterations of the group's decision-making.

The basic Delphi process used in this study is summarised here:



The Delphi process, study aim and research question were explained, and participants were informed that their engagement with this project was entirely voluntary, that all responses would be anonymised, and

that they could withdraw at any point without explanation. Response rates for the different stages of the study were as follows:

Round 1 – 18 responses

Round 2 – 16 responses

Round 3 – 16 responses

This represents a 89% completion rate.

A review of the literature in English, French and German identified 52 discrete ‘elements’, or school-based activities/practices associated with the promotion of healthy lifestyles¹. After eliminating redundancies, and trialling of terms among a diverse linguistic community, 25 elements formed the content of the first round. The list of elements was refined and shortened with successive rounds. All rounds of the Delphi were administered electronically, using an online software program (www.surveymonkey.com), via a link embedded in an email message.

This was the first study of expert perceptions of the elements influencing school students’ healthy lifestyles education in Europe, and as such, it can be understood as a scoping study. The lack of previous research in this area suggests that a qualitative investigation might usefully act as a preliminary launchpad for subsequent research.

Participants

The experts who participated in the Delphi procedure were identified by a 4-step procedure. Firstly, partner organisations within the HEPAS Project (Healthy and Physically Active Schools in Europe), in which this study is a constituent part, suggested individuals with expertise and experience in the area of school-based health promotion. Secondly, the study investigators independently sought known researchers and practitioners for the study from across the Europe region. Thirdly, a provisional cohort was drafted that balanced subject expertise and geographical coverage. Finally, following email communication with the identified experts, the process of selection was repeated to add new experts to the study. The resulting group of experts came from 13 European countries, and included school teachers, university professors, and non-government organisation specialists. In accordance with published guidance, recruitment aimed for a pool of between 15 and 35 experts. 18 people consented to create the non-probabilistic, purposive sample which was judged necessary for a scoping study like this. Each participant was sent information about the study via

¹ Sources used in the compilation of elements for the initial list included: ASCD & CDC, 2014; IUHPE, 2009; Lee, et al, 2019; Marks, 2010; Ministère de l'éducation nationale de la jeunesse; 2020; Warwick, et al, 2009; WHO Regional Office for Europe, 2005).

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email, and a direct link to the online questionnaire. The questionnaire landing page reiterated information about the project, and informed participants of the anonymity and confidentiality of individual responses, as well as their right to informed, voluntary consent.

Gender	Female	9
	Male	9
Profession	University lecturer / professors	12
	University researcher	2
	School teacher	1
	Non-government organisation staff	2
	Medical / Public health doctor	1
Country of work	Czech Republic	1
	Denmark	1
	Estonia	1
	Finland	1
	Germany	2
	Hungary	1
	Ireland	2
	Italy	1
	Netherlands	1
	Serbia	1
	Spain	2
	Switzerland	1
	UK	3

Data Analysis

In the first round, experts were asked to rate the effectiveness of 25 specific elements of learning and health support systems influencing school students' healthy lifestyles education, using a 9-point Likert scale. Weighted means of the total scores for each element were calculated ($(x_1w_1 + x_2w_2 + x_3w_3 \dots x_nw_n) / \text{total}$; where w = weight of answer choice, and x = response count for answer choice); the element choice with the largest mean ranking was judged to be the most preferred choice overall. The 12 elements with the largest overall rank ($(x_1w_1 + x_2w_2 + x_3w_3 \dots x_nw_n) / \text{total response count}$) then formed the basis of the second round, when experts ranked responses according to their judgements of effectiveness; this was

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followed by the identification of 8 elements in the third round of the process. The result was a ranked list of elements.

