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BARRIERS AND DRIVERS BY SUSTAINABILITY SCHOOL COMMUNITY PROJECTS IMPLEMENTATION: WHAT CHANGES APPEARED

Abstract: School-community projects have become essential components of educational systems worldwide, aiming to engage students and local communities in collaborative initiatives. This article explores the implementation of school community projects, focusing on sustainability themes, by addressing two research questions: RQ1 examines the current knowledge about barriers and drivers in school-community projects, and RQ2 investigates how these factors have evolved in response to critical societal changes. Experts' perspectives on open schooling projects conducted in 2022 and 2023 were collected using retrospective think-aloud interviews. The study adhered to ethical principles, ensuring participant anonymity and consent. The findings reaffirm previously identified barriers and drivers, such as the significance of leadership commitment, effective communication, and student engagement. However, our research unveils novel insights, highlighting the challenges posed by declining student well-being, eco-anxiety, and diminished interest in projects, notably among older students. Puberty, environmental grief, and post-pandemic effects are identified as contributing factors. Teachers emphasise the importance of hands-on activities within project curricula to mitigate these challenges, bridging the gap between theory and application. Collaborative decision-making and planning also play a crucial role, with difficulties arising from perceiving sustainability projects as solely science-oriented. Furthermore, our study suggests that while long-term partnerships with external stakeholders are valuable, it is essential to limit the frequency of projects to prevent burnout among participants. In conclusion, our findings underscore the need for a holistic approach to project design, including mental health considerations and interdisciplinary collaboration, to maximise the positive impact of such initiatives in an ever-changing educational landscape.

Keywords: school-community projects, barriers, drivers, sustainability

Introduction

In recent years, school community projects have become an integral part of education systems worldwide, with schools and educators recognising their benefits for students and communities. In these school-community partnerships, schools expand their traditional educational mission to engage families and the broader local community in different projects [1]. By involving local stakeholders, such as government officials, business leaders, or community organisations, students can showcase their work and build partnerships that foster long-term support for science education and increase the science

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literacy of the wider community, see [2, 3]. These projects encompass various initiatives, from sustainability and environmental stewardship to social justice and community development.

European Union recognised school community projects as an essential means of promoting science with and for society because they can help to promote a better understanding of science and its impact on society and so address local challenges and promote sustainable practices to build stronger and more resilient communities that are better equipped to tackle the challenges of the future. For this reason, the EU has initiated a call under the Horizon 2020 projects entitled "Open schooling and collaboration on science education" to contribute to developing a scientifically literate society, which is critical for addressing the challenges of the 21st century [4].

Just as there is support for projects from the international and national levels, there is also ongoing research exploring how to implement school community projects effectively. While these projects have many benefits, they can also present several challenges and barriers that must be addressed to achieve their intended outcomes.

In our research, we applied the retrospective think-aloud interview method to expand the knowledge of barriers and drivers in implementing school community projects focused on sustainability themes. To get this knowledge, we set two research questions:

RQ1: What is the current knowledge about barriers and drivers in school-community projects implementation and

RQ2: How barriers and drivers changed in response to critical ongoing changes in society, like the increased impacts of climate change, the lingering effects of the COVID-19 pandemic, and the uncertainty of the economic crisis.

Given that a search of existing literature was conducted to answer the first research question, we present the information obtained in the search already in the study's theoretical background. This approach allows us to familiarise the reader with the existing theoretical foundations of our study without disproportionately increasing the volume of the text read.

School community projects

The concept of school community projects as a community partnership is familiar and has been around for many decades [5]. There is a vast of scientific literature dealing with different aspects of school community projects, including their impact on student learning outcomes, engagement, and civic responsibility, the factors that influence successful implementation, and the challenges schools face when implementing community projects [1, 6-9]. The literature of the last ten years that focuses on barriers (factors or circumstances that hinder the implementation of such projects) and drivers (factors or circumstances that facilitate their implementation) in the implementation of school projects provides exciting information covering four different areas that affect projects: *curriculum, communication, collaborative decision making and planning and organisational structures*.

As seen in Table 1, not all reviewed literature specified barriers to implementing school community projects/partnerships. However, all sources describe the circumstances under which community collaboration works. The studies suggest that the essential prerequisite for successful partnerships is an appropriate organisational structure in the school, where the leadership and teachers are committed to the partnership/ community projects. Furthermore, communication between partners is seen as essential. In particular, it is about finding the appropriate persons for communication and being open in touch,

which, among other things, encompasses the expression of all partners' needs and expectations. The literature also agrees that partnerships should prioritise students who are actively involved in addressing community needs and can solve real-world problems while achieving essential knowledge, skills, and competencies [10]. Some authors also stress the need for joint project planning so that the needs of the school and the community are well met and trust is built between them.

Table 1

Barriers and drivers identified in the literature

DIMENSION OF BARRIER IDENTIFIED	SPECIFICATION OF THE BARRIER	(COMPLEMENTARY) DRIVER IDENTIFIED	STUDY
CURRICULUM	- Not specified	build <i>student-centered partnerships</i> - Partnership activities are aligned with the curriculum being taught in the classroom and support their teaching efforts - Students are actively involved in addressing community needs and solving real-world problems while achieving essential knowledge, skills, and competencies, which is a priority - Community partnerships allow teachers to be creative and think outside of their regular structured curriculum	[11]
	- Curriculum-driven schools and related difficulties by finding the links between the school curriculum and the specific content of the project/partnership to suit all members of the community	- Finding some flexibility on the school/teacher and community side	[12]
COMMUNICATION	- Not specified	- All participants in the relationship understand their role and the goals of any particular project - Expression of all partners' needs and expectations is essential for goal achievement	[11]
	- Unclear communication channels (appropriate persons) and methods of communication	- Identifying the right person in the school and community with whom to communicate, knowing how and when to contact these persons - Establishing effective lines of communication	[12]
	- Not specified	- Open communication	[13]
	- Not specified	- Communicating openly with everyone - communicate with all teachers and relevant community members, explain the project, roles, etc.	[14]

COLLABORATIVE DECISION-MAKING AND PLANNING	- Not specified	- Working together on projects, “contribut[ing] your ideas,” and “bring[ing] something new to the table	[13]
	- Not specified	- Collaborative planning and decision-making - partners needed to plan together and collaborate in making decisions regarding the activities involved in the partnerships; tailored project design to meet the needs and interests of the community	[14]
ORGANISATIONAL STRUCTURES	- Identified leadership as one obstacle to successful partnerships	- Transformational leadership - principal and teacher openness and understanding of the surrounding community - Open door policy - allowing the community to become a vital part of the school culture - Students-centred approach	[11]
	- Considerable degree of organisational inertia that can have the effect of resisting innovation	- Existence of mediators: people on either side of the boundary who understand the purposes and practices of both communities	[12]
	- Superiority and inferiority complexities - the power that exists between different stakeholders due to schools’ hierarchies can negatively influence the project; for example, teachers were of the view that they were not treated as equals to principals	- School culture that supports participative leadership - active school principal; the school principal delegating the task to an appropriate teacher	[14]
	- Not specified	- Strong school leadership - a) capacity of the principal to motivate staff and to engage the community; b) see a vision; c) inviting school culture - „open door policy”; d) teachers’ commitment - willingness to support students	[13]

Other literature provides further perspectives on possible barriers to partnership formation. One is limited stakeholder engagement or participation due to time constraints or negative school experiences [6, 11]. Another obstacle mentioned is the ability to sustain a long-term partnership. It often depends on a few who can burn out from too many duties and work overload [6, 15]. An interesting observation is also made by Hausburg [16], who sees partnership or collaboration as mutual learning. Thus, community members serve as co-generators of knowledge, and the whole collaboration process can be seen as reciprocal learning. The author states that projects are often oriented one-way regarding knowledge flow. Community members are seen as a valuable source of information that students can and should learn from, or community members are positioned as passive benefactors of students’ learning. Finding appropriate ways for reciprocal learning is challenging for school-community partnerships.

From the search of the available literature, there is a reasonably comprehensive idea of what problems can arise in implementing school community projects and a clear picture of how to solve them. However, as society has dramatically changed, other challenges must be addressed. For example, a common theme of school-community projects is climate change [17], which can be considered contravention in some communities [18] and adolescents [19]. Another challenge can be post-COVID effects on schools, particularly educational approaches working with social capital [20, 21] or well-being in post-COVID schools [22].

Methods

Our study used retrospective think-aloud interviews to collect experts' reports on the open schooling projects implemented at schools in 2022 and 2023. The think-aloud method is commonly used to identify cognitive processes by problem-solving and constitutes a platform for forming knowledge-based systems, even computer-based ones [23]. Experts are usually the primary source of knowledge used to build the program. Let us look at an open schooling project as a system of tasks and problems its promoter must solve. The think-aloud method is an appropriate way to construct a knowledge-based design of open schooling. Participants' verbalisations can reveal areas of confusion, frustration, or difficulties encountered during problem-solving. However, it is also how to identify the methods to overcome these problems.

Survey process and sample

We applied two rounds of the survey. Both rounds of the survey were conducted online using the Google Meet tool. The interviews were recorded with the permission of all participants. Respondents were guaranteed anonymity, but we could present the data in the table below because they do not contravene the principle of anonymity. Thus, all ethical principles - anonymity, confidentiality, and informed consent - were observed in this study.

Table 2

Parameters of the interviewed teachers

Teacher acronym	Period of work experience in education [years]	Field of study taught (field of teacher's expertise)	Experience with the school community projects	Grade in which the project was carried out
T1	5	chemistry, biology	One project	8 th grade
T2	3	geography, biology	One project	6 th grade
T3	20	biology, chemistry, also teaches physics	One project	9 th grade
T4	5	biology	One project	6 th grade
T5	9	chemistry, mathematics	One project	7 th grade
T6	3	chemistry	One project	7 th grade
T7	14	biology	More than five projects	8 th grade
T8	16	chemistry, biology	More than five projects	9 th grade
T9	7	geography, biology	Three projects	8 th and 9 th grades together
T10	10	biology, geography	Five projects	6 th and 7 th grades together
T11	18	biology	More than five projects	7 th grade
T12	12	biology, chemistry	Four projects	6 th and 7 th grades together
T13	22	chemistry, mathematics, also teaches physics	More than five projects	6 th grade

Since there is no strict consensus on the number of persons to be interviewed, we followed the study of Francis et al. [24] dealing with data saturation. Our *a priori* criterion was to interview at least ten teachers, and we did so. In the first round, we conducted a think-aloud interview with six teachers who had implemented school-community projects in their schools for the first time and four who had implemented them several times before the interview. Thus, the six teachers interviewed have experience with school project implementation but have not implemented any school-community project before. In the second round, we interviewed three other teachers. All implemented school-community projects several times before the interview. Each of the teachers represented another school. The parameters of interviewed teachers are gathered in Table 2.

The think-aloud interview was semi-structured and started with a question about the theme of the school community project and its overall run. Next, the teachers were asked about implementation barriers they faced and ways of overcoming them. The approximate duration of the interview was 45 minutes.

Data processing and data saturation

Two researchers coded the transcribed interviews using a “paper and pencil” approach to avoid information bias. In the first step, one researcher created the codebook. In developing the codebook, the researcher proceeded in a deductive way, i.e., she used the findings summarised in Table 1. Additional codes were created inductively, i.e., codes were assigned to those sections of the interviews to which no findings from Table 1 corresponded. In the second step, two researchers coded all interviews independently using the codebook to add the missing codes, subcategories, and categories or to adjust the raw ones if needed. The codes were compared and intensively discussed, so the final version of the codebook originated. Then, all the interviews were re-coded following the final version of the codebook to correctly understand the barriers and drivers related to the school-community project. Then, a summary table was constructed for each code (barrier or driver) that each participant mentioned interviewed. This summary table contained binary (yes/no) data presented sequentially and included idiosyncratic opinions on barriers or drivers (i.e., opinions that at least two participants did not share). This approach enabled us to determine data saturation in two ways. First, the saturation of opinions among the interview participants; second, the saturation of opinions among the interview participants and findings from the previous studies presented in Table 1. We reached data saturation after the data from the 12th interview had been analysed in both ways.

Results

Overall, investigating the barriers and drivers to school community project implementation can provide valuable insights into promoting successful implementation and improving the impact of these projects on student learning and engagement. Not surprisingly, results similar to those of the existing literature appeared in our interviews. So, we just justified the earlier phenomena identified by other researchers. Therefore, we will focus here only on those phenomena that differ from the authors’ findings, summarised in Table 1, and amend the existing knowledge.

The first important discovery in our study was that, in current times, it is finding appropriate ways to create well-being in the learning environment. It turns out that due to various current events, students’ psychological well-being decreases. Both teachers

observed the change in psychological well-being with many years of experience and teachers working in schools for a shorter time. The impact of puberty on project implementation was also mentioned several times, and here, the well-being in the learning environment was also mentioned. So, a new dimension of *well-being in the learning environment* was added to the existing four dimensions (Fig. 1).

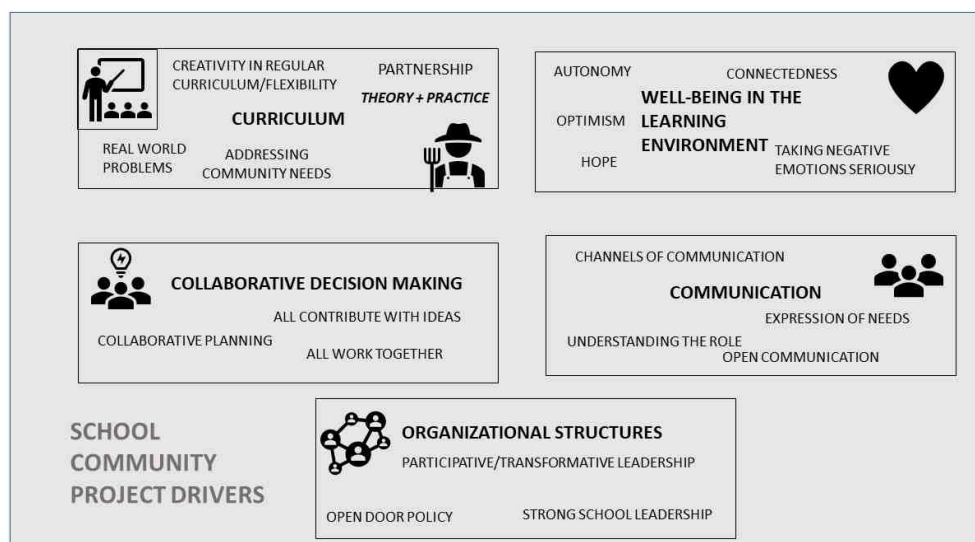


Fig. 1. Unveiled school-community project drivers

Four teachers in our survey recognised that some students are overwhelmed with “depressive” sustainability themes, which lead to feelings of resignation and even eco-anxiety. These three statements can demonstrate it. T3: *“Some of my 9th-grade students no longer want to work on the project because they think it will not change anything. Although they tried to solve sustainability-oriented projects, they have resigned.”* T5 pointed out: *“I am already cautious in conveying important sustainability topics to students. I see anxiety in some when I talk about climate change and its effects. I think everything affects them more intensely because of the COVID pandemic.”*

Teachers try to overcome such barriers by giving examples of the positive impacts of open-schooling activities on the environment. However, they feel they need more information about how to cope with such obstacles. T3: *“Academics may be talking about environmental grief. However, no one tells us practitioners how to work with it. I feel lost.”* T5 feels frustrated: *“I hear about the alarming mental health of youth. We have to be careful and patient, but nobody gives us clear guidance on dealing with students. Furthermore, giving positive information about climate change? I do not know where to find successful measures/positive news when the media only present alarming news.”*

Three other teachers (T1, T6, T12) also mentioned a need for more interest in older students in school-community projects. However, they see another problem, not the anxiety nor the eco-resignation: puberty and a general lack of interest in any school program. An exciting point summarising what the other teachers recognised as a barrier made T6: *“Around the seventh grade (13-14 years), the willingness to tackle projects decreases*

dramatically. They become more interested in themselves (their well-being) than their surroundings. They do not want to solve theoretical problems or do practical activities. Only a few students came if we had a weekend volunteer program connected to the school-community project.”

Overcoming the barrier of puberty is assessed by teachers as difficult. A particular benefit may be the significant autonomy in choosing the project topic and how to solve it. However, this is not always easy concerning the possibilities of cooperation with an external partner or financial resources. T1: *“Sometimes they come up with something unrealistic like setting up a shop in the municipality selling goods without packaging, which is now the trend in big cities. Finally, the students surveyed residents to find out how interested they would be in such a store. It was a kind of sociological research training.”*

The other challenge of the school community project can be added to the curriculum dimension. Almost all interviewed teachers (11 out of 13) mentioned the need to implement practical activities in the project. Otherwise, the students see the projects as unimportant for the community and the environment. T4: *“After several lessons, when we solved the theme of climate change and its impacts on the local environment (mostly theoretical/scientific tasks), students started to ask for what they call “real action.” For example, when we plant trees or clean up the school surroundings.”* In addition to the opinion above of Teacher 4, the following observation captures well the general opinion of the interviewed teacher T2: *“You know, there is much discussion about the development of science and environmental literacy, but many people are more practically oriented; they do not enjoy solving theoretical problems, they prefer to do something with their hands, they feel needed. In the practical-oriented process, they also become aware of some environmental problems we face. However, is it science or environmental literacy development?”*

The teachers agreed on the advantage of the connection between theoretical and practical tasks in the open schooling projects. Students can demonstrate different types of skills, with everyone finding their place. T6: *“We agreed with the city management that in the future, the students will always work on the practical output of the project. The city will try to support the project financially. The certain activities of the students (planted trees, pond restoration, etc.) are well understood by the municipality’s children and inhabitants.”* So, in the curriculum, practical/manual activities should be considered.

Another point mentioned by the teachers was often connected to barriers within the dimension of collaborative decision-making and planning. Science teachers providing open-schooling projects feel that sustainability themes are perceived as purely science-oriented, and finding a school partner with a social sciences background is time and time again complicated. T2: *“When I present a project to my colleagues at a meeting and ask who would like to collaborate, I often hear that it is a science-oriented project, so they cannot help me. Or maybe they can, but only with supervision during outdoor events.”* T4 made a similar point: *“Luckily, we are here three science teachers ensuring the sustainability projects. We can help each other, and we do so. Sometimes, they support us as art teachers, which is fine. Colleagues in the social sciences argue that they have other projects, such as projects concerning financial literacy and multiculturalism. In that, we do not participate as well. Sustainability is still perceived as “something” connected to the natural environment.”* T11 pointed out: *“I am here the only teacher doing open schooling projects. However, I have the support of the school principal and some municipal council members. I use the materials provided by the NGO and can discuss problems with NGO staff if necessary. One of my colleagues is willing to supervise during outdoor events.”*

Sometimes help parents". An interesting observation made by T12: "My experience is that a principal who teaches science is more supportive of sustainability projects than one who teaches other disciplines. It is quite important because some money must be allocated to buy some materials needed for the project."

Most of the teachers did not perceive this as a significant obstacle to implementing the school-community project; instead, they felt that the full potential of the project theme was not being used. The social or economic aspects of the topic could have been developed more in-depth. Others sometimes gained some colleagues teaching arts or IT. For those teachers, the project's content represents actual content that students process into graphical and IT forms. T7: *"I have a long cooperation with our IT teacher. He sees students are motivated to work on something where they see real impact and appreciation from the community (municipal representatives, parents, citizens). He helps them cope with all they need to make a good project presentation."*

The last barrier mentioned just two teachers (T8 and T12), both with a long experience with the school-community projects. Although they appreciate long-term cooperation with stakeholders outside the school, they argue that the number of school-community projects needs to be limited; otherwise, everyone is overwhelmed with this. T12: *"It is impossible to do the project each year. First, there needs to be something practical the students can do. They cannot plant the trees or create a pond each year. There is no place for it. Second, the municipal representatives have priorities that must be addressed first. These are not always something the students can solve or do. Finally, the students can also be overwhelmed because they need time to look forward to another challenge. My experience is it takes a year."*

Teacher 8 made a very similar point. However, to show the willingness of the school to participate in what is happening in the municipality, she participates with her students in the national event "Let us clean up the Czechia!". During this event, volunteers from all over the Czech Republic clean up their municipalities and cities'/villages' surroundings. T8: *"When you want to develop relationships in the community, you have to show that you care. Otherwise, it is hard to do school community projects repeatedly. That is why we regularly help out with the children in "Let us clean up the Czechia," and the community appreciates it. To the surprise of some parents, the pupils are happy to take part, even if it is at the weekend."* This approach can be seen as a school-community project sustainability driver.

Discussion

Our findings approve the existing theory about the barriers and drivers defined in the literature [11-14]. However, our research provides new insights that further develop the existing phenomena related to the knowledge of school-community projects. We identified that students are less willing to commit fully to school-community projects at older ages. Teachers perceive the seventh grade as the "turning point," i.e., the age between 13-14 years. Teachers have different views on the cause of this. Some attribute the reduced interest in the projects, as well as the school program as a whole, to puberty. Others attribute the lack of interest in school-community projects to the development of environmental grief or resignation on "everything at school" after the COVID-19 pandemic. Some mentioned impaired mental wealth.

It is already known that adolescence is a period of significant neuroendocrine, physical, cognitive, and social-emotional changes. These changes can be demonstrated differently: some negotiate the passages easily, whereas others develop severe behavioural and even psychological problems [25, 26]. This explains why teachers observed resignation, ecological grief, or eco-anxiety/climate anxiety in some students and not in others. While puberty is something that teachers deal with regularly and know well, eco-grief, eco-anxiety, or climate grief are entirely new psychological concepts. Although research on the cumulative effects of environmental change on the emotional well-being of young people is limited, some studies show that young people more commonly become angry and demand moral clarity regarding environmental and climate change in contrast to adults [27]. Consulo et al. [28] cite in their study data from a survey of the British Broadcasting Corporation showing that 73 % of surveyed youth worry about the state of the planet, and 41 % do not trust adults to tackle the challenges presented by climate change. This is alarming. Since people demonstrate eco-grief or eco-anxiety in different ways: grief associated with physical (environmental) losses, anxiety associated with losing environmental knowledge, or grief associated with expected future losses [29], appropriate psychological approaches must be found to overcome these anxieties. Moreover, current and future teachers need to have information about how to communicate such themes effectively. How seriously the teachers take students' negative emotions concerning environmental or societal problems seems very important. It is essential for teachers to be aware of how they react to negative emotions in the classroom and to think about whether they might be treating different groups, such as boys and girls, differently when taking negative emotions seriously [30]. Based on the literature [31, 32], participatory and democratic approaches in education, i.e., selection of the project topic, the way of its solution mentioned by some of the interviewed teachers, and concerning the students' fears and emotions can be an appropriate way to overcome some obstacles by project implementation. The help of a school psychologist can also be used.

The pandemic of COVID-19 also influenced the mental health of adolescents. Particularly during the lockdown, the adolescents' ability to socialise with peers, which is very important, was disrupted. The studies show that adolescents aged 13-15 displayed more depressive symptoms than younger adolescents during the lockdown [33, 34]; for some adolescents, these problems persist even after returning to their routine [35]. This is consistent with what the teachers observed. Since mental health needs to be adequately addressed, the literature recommends involving mental health practitioners, such as school psychologists. However, many studies describe hope, optimism, and connectedness as essential foundations for recovery [36]. A well-designed school-community project could be a means of meeting these needs. Inspiration could come from the approach described in overcoming eco-grief and students' freedom, as evaluated positively by students in STEM education [37].

Another point mentioned as crucial during the interviews was the necessity of connecting theory with practice within the school-community project. It was not about having science labs or other hands-on activities related to scientific or environmental literacy, rather than working on something practical and, in the view of students (and community), also useful (planting trees, sewing shopping bags, building birdhouses, cleaning surroundings, etc.). The meaning of manual work is well defined by Dumont [38] as work that teaches people how to use their senses, improves their physical skills, and provides opportunities for the practical application of abstract knowledge, thus making it

easier to understand. This has led, among other things, to several papers emphasising the importance of hands-on activities in science education [39, 40]. The question is whether manual work at the lower secondary level should be part of the curriculum and, therefore, school-community projects. Remember that manual work is now placed nearly on an equal footing with intellectual work; at least some professionals in manual work (so-called “blue collars”) are in high demand in the labor market and well paid (e.g., electricians, plumbers, gas installers, landscapers, etc.) (see, e.g. [41]). It can also be assumed that with the further decline of needed professions that cannot be replaced for the time being, these professions would be held in higher esteem and acquire a new dignity. From our point of view, it is beneficial for students to try manual activities and find that they would enjoy and be good at such work. Since primary school is meant to help students recognise their talents, including manual/practical activities in the curriculum and project makes sense. Moreover, an all-around man uses all senses simultaneously, fully allowing them to develop and understand the World better [38], which is also vital in addressing different sustainability issues.

Further, some teachers talked about the untapped potential of sustainability themes presented in the school community projects because of the involvement of mainly science teachers. Social or economic aspects of sustainability are omitted or solved in other school projects. Sustainability at schools in the Czech Republic is mainly perceived as what we can call “environmental sustainability” [42]. The reason is a long tradition of environmental education (the environment is understood as nature, as a resource, as the biosphere, and as a problem) that started in the 80th of the 20th century and continues to date. Although teachers do not see it as a severe obstacle, they talk about the untapped potential in deepening the understanding of sustainability by students and the community. This is something that needs to be addressed in the future. The way to do this can be through the support of schools through complex sustainability projects (on the municipal or national levels).

Finally, the studies describe difficulties in sustaining a long-term partnership between schools and the community [6]. Teachers do not deny this fact but point out that such collaboration cannot only be school-community projects. As topics, community, and student interest are gradually depleting, more ways must be sought. This finding is important for both schools and potential project donors to consider.

Conclusion

As Kreczkowska and Slabon [43] point out, the sustainability concept is becoming increasingly important, so it is crucial to engage the public in this dialogue of scientific issues. Proper school education determines how citizens will be in this dialogue. Based on our research, open schooling projects can be a good example of how to naturally develop scientific knowledge within the community in which students live because a multilateral dialogue is conducted between the various stakeholders during the open schooling projects.

Our paper pointed out possible barriers to implementing such projects and also drivers that help teachers carry out such projects. Our research shows that teachers can innovate and adapt their courses when given the right tools and support. Researchers can play a pivotal role in helping teachers access the right ready-to-use tools and support to implement sustainability-focused open schooling projects by fostering collaboration, creating accessible resources, and actively bridging the gap between research and practice.

Limits of the study

Several limits of study need to be considered. First, there are concerns about the validity of self-reports of thinking [44, 45]. As with any other qualitative method, it is necessary to consider the subjective bias of the respondent. Therefore, within the framework of qualitative methods, we also consider this method legitimate and refer to the fact that it is used in many research studies in education, medicine, sports, etc. [e.g. 46] However, since we applied qualitative methods in our research, the reader should know that respondents do not necessarily represent the entire population, and results cannot be generalised.

The second limitation that should be discussed is the sample selection and its bias. One selection criterion was whether the interviewees were interested and willing to think about the school-community project. The second criterion was that the teachers had implemented at least one school community project focused on sustainability. As sustainability in Czechia is mainly linked to environmental topics, all the teachers we interviewed teach science, although we tried to reach out to any teacher. Volunteering is always hard to avoid in all sociological research, including psychological, pedagogical, or health research. However, considering such a complex topic requires respondents to meet specific demands (at least essential experience with projects) and their willingness to address such a complicated topic.

Another bias is that we interviewed teachers from Czechia, which limits the results to the Czech context. Here, we argue that similar barriers and drivers in different states were discussed during the Horizon MOST meetings (see acknowledgment). So, we can expect similar results also in other countries.

The last limit that needs to be considered relates to the fact that teachers interpret students' perceptions, such as the lack of interest in older students in school-community projects due to puberty or their tendencies toward environmental grief. The reason for rejecting projects may differ from the teacher's interpretation because teachers must conduct in-depth psychological student surveys. Here, we argue that Czechia teachers take psychology courses during their studies. Moreover, teachers must deal with educational situations that entirely depend on their perceptions. So, their opinions are relevant to this study, although they have not been accurate. Finally, other studies refer to these psychological problems of youth.

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