



Let's Go Out! Popular Outdoor Education - Limiting Factors Versus Positives

Dagmar Vašutová¹, Irena Vrbová²

Department of Biology, Faculty of Education, Palacký University in Olomouc
Czech Republic^{1,2}

Abstract

Outdoor education (OE) has been seen as a powerful teaching strategy in recent years, especially in science education. Numerous types of methods and forms of teaching can be used, and several authors have reviewed their descriptions. Hence, the authors of this article decided to analyse the situation with outdoor science education in Czech schools, where it is not yet mapped in detail. The research was performed by using a questionnaire study, to which several teachers from elementary schools in all regions of the Czech Republic responded. Two hundred and sixty-one questionnaires were received in an online form (by Survio platform) and then they were processed. The authors focused on four main points - namely the location of the school (rural versus urban) and the effect of school location on the frequency of OE. Next, on the barriers and positives of OE. The regular frequency of OE at the shortest evaluated intervals (once a week) was up to 10 times higher in village schools (it was also statistically confirmed by the Chi-square test). The Likert scale was used to discuss the limiting factors of OE. Teachers most often marked the weather as the very inhibiting element (169 respondents). On the other hand, the risk of accident or injury during lessons was cited as the least limiting (16 respondents). The respondents mentioned twenty-eight positive effects of OE. The authors classified these 28 points into three areas: improved learning methods, health benefits, and improved pupils' education. Our respondents chose that the biggest benefit of OE is being in the fresh air (56 % of respondents). The second classification was based on different types of teaching and learning strategies. The authors identified three main types of learning / teaching activities: 1) place-based education, 2) experience-based learning, and 3) real-world learning. From the results, and not only from our research, it is also evident that OE is a form of teaching and learning that has many positive aspects and, although it has its limits, it should be fully powered in schools for all age pupils' categories.

Keywords: science education, outdoor education, frequency of outdoor education, positives, and limits of outdoor education

1. Theoretical background

Science education is an essential part of the curriculum in elementary school education in Czech Republic. Various methods and education forms can facilitate teachers' education processes of science subjects. Outdoor education (OE) is one of them. Through direct experience in the outdoors, people learn about nature, themselves, and their place in their community [1]. It can be realized in various forms by different methods – as an excursion, field education, field trips, being at school gardens or schoolyard, outdoor activities, outdoor working, or by outdoor education programs [1], [2], [3], [4]. Several authors discuss being outdoors during school education in connection with sustainability and environmental education (in connection with environmental education itself [1] or as a “sustainability education” which is obtained from all forms of environmental education, education for sustainable development, and sustainable development education mentioned by Jeronen et al. [5]. Another group of authors highlights the health benefits of outdoor learning (promoting physical activity; promoting healthy youth development; and promoting positive effects on learners' healthy style and food literacy [6], [7], [8], [9], [10]). Another important benefit of OE is providing better learning conditions [6], [11] or it can positively affect science achievement [12]. In summary, OE focuses on the role of nature, risk, adventure, skill development, and social-interpersonal development [13] and outdoor activities include overall interdisciplinary aspects of the world outside the school and support developing a relationship with nature [1].

With OE, we can also cross-refer with innovative learning methods and forms used nowadays during science education – place-based education, real-world learning, experience-based learning, garden-based learning, or problem-based learning, which is part of all discussed forms. Whereas OE leads to



exploring the world outside the classroom and develops, and deepens the relationship of pupils to the place where they live, it can be possible to link it with place-based education (PBE) [10]. According to Sobel [14] is a place-based education process of using the local community and environment. Smith [15] mentioned that this type of education serves to strengthen children's connection to others and to the region in which they live. Both publications point out that place-based education is closely connected with real-world learning (RWL). Because of obtaining a lot of new knowledge, skills, and experience in real life [15]. Sobel [14] talked about using a local community and an environment with a focus on hands-on learning and just on real-world learning. Morley & Jamil [16] discussed RWL as a long-term, experiential, and applied learning. These authors referred again to the close relationship between this type of learning and sustainability and environmental education. It also exists the "Real-World Learning Network" (RWLn), which developed the "Hand model" to support educators in the development of "Outdoor Learning for Sustainability" (OLfS) and to help prepare a deeper and more meaningful learning experience in outdoor environmental education programs [17], [18], [19]. "The importance of being experienced" is a central part of the ethical philosophy of Aristotle (referenced in Saugstad [20]). Experience plays an important role in how knowledge is learned. Saugstad [20] published a representative motto of experience-based learning (EBL) – "Practise makes perfect!". About same idea also talked Kolb [21] in his book "Experiential Learning: Experience as the Source of Learning and Development". The common usage of the term "experiential learning" defines a particular form of learning from life experience – which often contrasts with classroom learning.

There are several positives of OE cited by the authors mentioned above – positive effect on social and personal competence, positive effect on environmental competence, better memorizing of information, providing of long-term learning, evoking empathy for nature, healthy bodies, and positive lifestyle, giving meaningfulness to the topic, etc. [2], [4], [9], [10]. Waite [9] also reports that his study shows that different types of OE appear to be linked to different positives (visiting national parks or nature reserves promotes care for others and the environment; natural environment play, or outdoor adventure education promotes a healthy and positive lifestyle). On the other hand, there are many barriers to the realization of OE. For example, tradition and stereotypes in schools, poor biology teachers' training, financial possibilities of schools, etc. [4], [9]. Oberle et al. [22] identified from their research major themes regarding barriers and supports for OE - teacher characteristics, systemic factors in the education system, culture, and environment.

Finally, OE and its realization in elementary, secondary, or higher education are mapped in several countries, most often by meta-studies [1], [2], [4], etc. Outdoor education (named in this case as "out-of-school learning") in selected European countries, including Czech Republic, was described in a large study by Bilek et al. [10]. Widely research was conducted by Waite [9] – dozens of respondents from nineteen states evaluated OE.

2. Methodology

Hence, due to the importance of strengthening the position of outdoor learning in Czech schools and adding information about the real implementation of this, the authors of this paper try to map the situation about outdoor education by questionnaire study in elementary schools across the Czech regions. Research on OE was done among biology teachers (respondents) from Czech elementary schools in the form of a questionnaire study. The questionnaire consisted of 26 questions and was self-constructed. In this present study, four selected questions that were part of the questionnaire mentioned above are discussed. The questionnaire was anonymous, for easy distribution was made in the online platform Survio (by email, and through social networks). In this way, 261 questionnaires were returned from addressed respondents and then they were processed. Respondents were from 14 regions; 93 % were female, and 7 % male. The length of teaching practice was from zero to more than 32 years and 89 % of teachers had biology approbation.

Firstly, the location of the elementary school was asked – in the form of a dichotomous question with the choice of "town" or "village" (this question was a part of the questions leading to the characteristics of the study group). The second question evaluated the frequency of OE in elementary schools in Czech Republic depending on the location of the school (rural, urban) (the main research question). The next two questions focused on the limiting factors and positives of outdoor education (other goals of the present research). The authors specified the eight main limiting factors for OE and respondents then rated their importance using a five-point Likert scale. Positives of OE were asked in the form of an open question with a simple cognitive difficulty. Respondents' answers were coded in MS Excel and further sorted by selected characters. The resulting data of all questions were processed in MS Excel and MS Word and were evaluated using the descriptive statistics method [23]. The types of questions, the specific text of the questions, and other questionnaires' points are presented in Table 1. The main objective of the present research was to map the frequency of OE in elementary schools



among biology teachers mostly based on whether the studied school is in a town or a village. The authors worked with the specified hypothesis: “Outdoor education is more often realized in rural elementary schools than in urban schools.” This hypothesis was statistically confirmed (see results). The other research questions were: “What are the most common limiting factors and positives of OE identified by teachers?”.

Table 1. Selected valued questions from the questionnaire focused on OE in elementary schools in Czech Republic

Number of questions	Research Interest	Type of question	The specific formulation of the question	Offered answer
1.	characteristics of the research group	a dichotomous question	Where is the school where you teach?	1) town 2) village
2.	characteristics of the research group; testing the main research question	a closed multiple-choice question	What is the frequency of outdoor education at your school?	1) once a week 2) once a month 3) quarterly 4) once a year 5) different
3.	research questions on the limiting factors of OE	a closed multiple choice question (assessment of opinion using a five-point Likert scale)	What do you think are the limiting factors in the implementation of outdoor education?	1) weather 2) outdoor school facilities 3) attitude and support of school management 4) the lack of time 5) the absence of specific tools 6) the teacher's preparing 7) the risk of accident or injury 8) unsuitable dressed pupils
4.	research questions on the positives of OE	an open question	Which are the three biggest positives of outdoor education in your opinion?	free responses (the authors coded 28 responses from the questionnaire results)

3. Results and discussion

3.1. The frequency of OE influenced by the location of the school – the differences between urban and rural schools

Two hundred and sixty-one questionnaires from biology teachers (respondents) were evaluated in this research. One hundred and seventy-seven respondents were from urban schools (68 %) and eighty-four were from rural schools (32 %). The question examining the frequency of OE at these schools was designed as a closed-multiple choice question. Respondents chose from specified five answers (once a week, once a month, quarterly, once a year, and different answers). The main results are seen in Figure 1. This figure clearly shows that rural schools reached a higher frequency of OE realized once a week than urban schools (20 % versus 2 %). Rural schools generally showed a lower frequency of responses for decreasing the frequency of OE (teachers were most likely to respond that they realized outdoor education once a month (26 %); they marked zero percent for realization of OE once a year). The opposite trend was observed for urban schools, with the highest percentage of teachers in these schools responding that they most frequently realized OE quarterly (38 %). Teachers of both types of schools presented also different answers, for example: “According to weather”; “Only in warm months or days”; “Several times a year”; “Twice a year” or “Twice a month”.

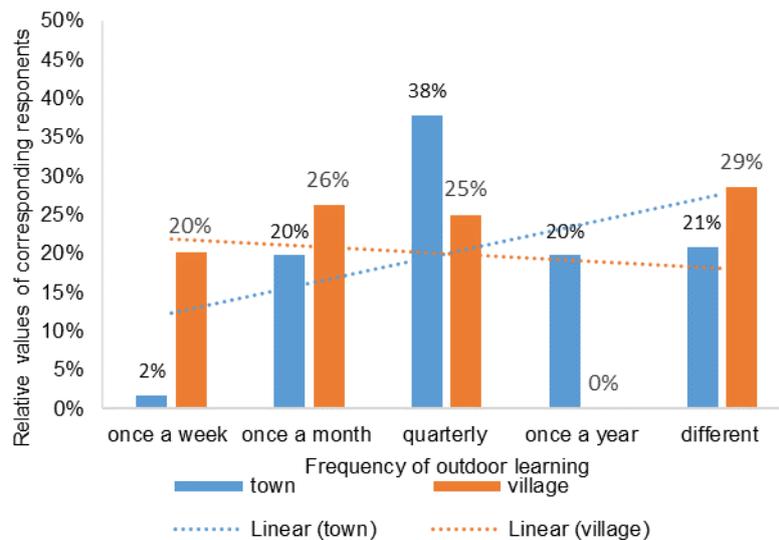


Figure 1. The frequency of realization of OE depends on the location of the studied schools.

This research question was also statistically significant. The null hypothesis ("The location of the school does not affect the frequency of implementation of OE.") was rejected based on the result of the Chi-square test. There is less than a 1% probability that such frequencies are random. Thus, there is a statistically significant effect of the frequency of OE on whether the school is in an urban or rural area. Selected manuscripts compared the rural versus urban schools within the other education areas – especially the area of physical activity. For example, Tian et al. [24] compared physical fitness, and out-of-school physical activity among pupils in towns and villages. Their findings revealed that the physical activity of urban schools was lower than the fitness of rural children. Differences between the effects on the frequency of children's direct natural experiences of rural or urban school locations were presented in the paper of Mustapa et al. [25]. Rural children have slightly more direct experiences with nature compared to children in urban areas. Nevertheless, this study finally highlighted the importance of reconnecting both urban and rural children with nature.

3.2. The limiting factors and positives of outdoor education

The third question stated selected limiting factors for OE design by authors. Most of them are also often presented in published papers [4], [9], [22]. The list of factors with the statements is available in Table 2. The respondents reacted to the question of what is the most limiting about OE by expressing their level of agreement or disagreement using a five-point Likert scale (very limiting – limiting – neutral – unlimiting – totally limiting). Respondents cited weather as the most limiting factor. The statement "Weather" was marked the most often in the first Likert scale item "very limiting" - 169 times (65%). In this item, the respondents marked as a totally unlimiting statement "The risk of accident or injury" (only 16 respondents / 6 %). On the other hand, as a totally unlimiting factor (the last item according to the Likert scale) teachers indicated the first-place statement "Attitude and support of school management" (119 respondents / 46 %). Various barriers appeared across the nations represented in the survey publication by Waite [9]. The respondents from several countries (Canada, UK, Ireland, Poland, etc.) mentioned lacking confidence in working outside in the first place as the main barriers for OE. As other barriers were mentioned uncertainty about linking to curriculum, the need for volunteer support, and some respondents discussed health and safety concerns. However, this barrier reported only three people from 80 tested respondents (it was less than four percent) - which is a similarly low number as in our research. Surprisingly, there were no references to bad weather conditions. The effect of the environment, in the form of extreme temperatures or extreme weather conditions but mentioned by Oberle et al. [22]. In this paper, there were listed other barriers according to the environment – e.g. no transport to outdoor spaces available. Various meta-studies, for example Činčera & Holec [4] presented general problems of outdoor education as self-efficacy of teachers, financial limits, pupils' safety, and more, and they focused on barriers to massive implementation of fieldwork in education. They recommended erasing boundaries between indoor and outdoor education. The specific values for the external items on the Likert scale are given in Table 2. A detailed view of the responses in the individual Likert scale items to each statement is shown in Figure 2.



Table 2. Respondents' values of external Likert scale items – very limiting and totally unlimiting factors for the realization of OE

The list of limiting factors (ranked by how respondents answered what they found most limiting)	Very limiting		Totally unlimiting	
	Absolute values	Relative values	Absolute values	Relative values
1. Weather	169	65%	2	1%
2. The lack of time	99	38%	27	10%
3. Outdoor school facilities	69	26%	31	12%
4. The teacher's preparing	51	20%	42	16%
5. Attitude and support of school management	45	17%	119	46%
6. The absence of specific tools	42	16%	58	22%
7. Unsuitable dressed pupils	22	8%	51	20%
8. The risk of accident or injury	16	6%	70	2%

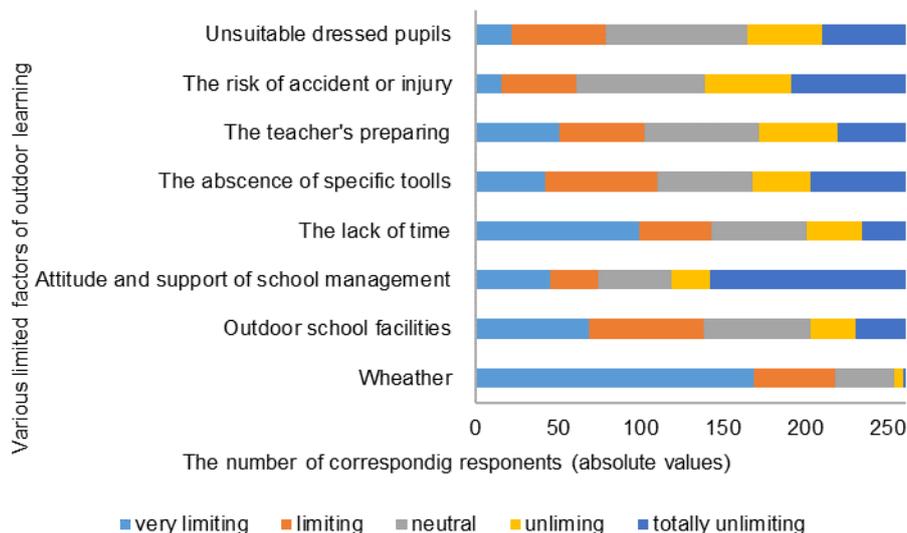


Figure 2. The view of all respondents' attitudes to selected limiting factors for the realization of outdoor education.

The last evaluated question was asked as an open question. The respondents answered the question "Which are the three biggest positives of outdoor education in your opinion?". In total 780 responses were obtained from 261 teachers. The authors coded 28 items. They are summarized in Table 3. Learning in the fresh air was listed in the first place (147 respondents / 56 %). Other positives that were mentioned within the first three positions are demonstrative learning (111 respondents / 43 %) and learning in nature (88 respondents / 34 %). On the other side, the lowest number of teachers mentioned "the benefits of solar radiation" as a positive effect of OE (4 respondents / 2 %). Interestingly, the last places are also occupied by opinions such as "exploring the surroundings" and "relaxed pupils" or "getting out of the comfort zone" (which lists only the units of teachers). According to references, the positives outweigh the barriers of OE. The large-scale survey [9] discussed various forms of outdoor education (forest school, field studies, school gardening, etc.) with the context of various positive effects on pupils (healthy bodies, connected people, creative learners, care about the environment, etc.). The highest number of statements were obtained for the statement "Healthy bodies and positive lifestyle" (90 % of respondents connected this statement with early years outdoor activities, which fits in part with our most valued "learning in fresh air"). The second statement with the highest number was "Care for others and the environment" (92 % of respondents connected this statement with visits to national parks, which corresponds with our value of "learning in nature"). In addition, large meta-studies, e.g. Činčera & Holec [4] reported a positive effect on students' knowledge, memorization, attitudes, skills, and behavior. They reported a more positive effect on social and personal, and environmental competencies. Like Rickinson et al. [2], they pointed out that careful planning and adequate content are especially important for high-quality outdoor education.



Subsequently, in the second step of the evaluation of this question, the authors decided to categorize the coded positives according to two criteria. The first criterion was based on which target group was most affected by the activities that had positive effects mentioned by the teachers. The authors determined three groups – 1) activities, that improved learning methods (meaning activities that provide better learning conditions for students); 2) health benefit activities (for both – students and teachers); 3) activities, that improved pupils' education (meaning activities that provide better teaching conditions). The most presented positives, according to the authors of this article, are related to improving learning methods. In summaries of all the positives of outdoor education, several authors list the strengthening of teaching strategies at the top of their lists [1], [10], [11].

The second criterion was inspired by selected points mentioned by teachers, which directly (or indirectly) corresponded to specific teaching strategies described in the literature. For example, exploring the surroundings (place-based education (PBE); e.g. [15]), getting out of the comfort zone (specific characterization of experience-based learning (EBL), e.g. [20]), and points corresponding with real-world learning (RWL) (for example outdoor working, learning in nature, multidisciplinary, etc, e.g. [17]). Both criteria are summarized in Table 3.

Table 3. The list of coded items that were characterized by teachers as the most positive factors affecting outdoor education (the table also contains a classification of the items into different groups according to the target of action and according to the different teaching methods by authors).

The list of positive factors (ranked from most frequently cited to least frequently cited)	Absolute values	Relative values	Target group criterion*	Education forms**
1. Learning in fresh air	147	56 %	HB	RWL, EBL, PBE
2. Demonstrative learning	111	43 %	LMI	EBL, PBE,
3. Learning in nature	88	34 %	LMI, HB	RWL, EBL, PBE
4. Modification of learning	76	29 %	LMI	RWL, EBL, PBE
5. Practical application	39	15 %	LMI, PEI	RWL, EBL, PBE
6. The opportunity to move	30	11 %	HB	RWL, EBL, PBE
7. Using the living exhibits	30	11 %	LMI, PEI	RWL, EBL, PBE
8. The relationship to nature	26	10 %	PEI, LMI	RWL, EBL, PBE
9. Connecting theory with practice	23	9 %	LMI, PEI	RWL, EBL, PBE
10. Learning with humour	20	8 %	LMI	RWL, EBL, PBE
11. Better memorizing	19	7 %	LMI, PEI	RWL, EBL, PBE
12. Availability of nature tools	19	7 %	LMI	RWL, EBL, PBE
13. Interest for learning	18	7 %	LMI	RWL, EBL, PBE
14. Active pupils	15	6 %	PEI	RWL, EBL, PBE
15. Interdisciplinarity	15	6 %	LMI	RWL, EBL, PBE
16. Outdoor working	13	5 %	HB, LMI	RWL, EBL, PBE
17. Pupils' experiments	12	5 %	PEI	RWL
18. Pupils enjoy it more	11	4 %	PEI	RWL, EBL, PBE
19. Freedom	11	4 %	PEI, LMI, HB	RWL, EBL, PBE
20. The opportunity to explore	11	4 %	LMI	PBE, RWL
21. Pupils' attention	7	3 %	PEI, LMI	EBL, RWL, PBE
22. Pupils' relaxation	7	3 %	PEI, HB	RWL, EBL, PBE
23. Pupils' cooperation	6	2 %	LMI, PEI	RWL, EBL, PBE
24. Meaningfulness	6	2 %	PEI, LMI	RWL, EBL, PBE
25. Getting out of the comfort zone	6	2 %	LMI	EBL, RWL
26. Relaxed pupils	5	2 %	PEI, HB	RWL
27. Exploring the surroundings	5	2 %	LMI	PBE, RLW, EBL
28. The benefits of solar radiation	4	2 %	HB	PBE, RLW, EBL



Explanatory notes:

*Various types of target groups: HB (health benefits); LMI (learning methods improving); PEI (pupils' education improving).

**Various types of education forms: PBE (place-based education); EBL (experience-based learning); RWL (real-world learning).

4. Conclusion

The data obtained from research on outdoor education in several Czech regions is very valuable and can be used to conclude some important aspects of outdoor learning practiced in our education process. In this paper, we evaluated the frequency of OE in rural and urban schools. It was statistically confirmed that outdoor education is more often implemented in schools in villages. In other steps, we discussed the limiting barriers and positives of OE. It is highly questionable, that respondents mention being outdoors / being in fresh air as the biggest positive of outdoor learning, and at the same time, they speak about weather as the most limiting factor for them. It is therefore evident that the Czech teachers' view of outdoor education can be very controversial. Furthermore, the authors were able to show that OE is more often realized in rural schools. This may be caused by the fact that rural schools are much smaller than urban schools and have the possibility of closer contact with nature. Perhaps, teachers in rural schools are more used to spending time outdoors and the weather is not as limiting for them. The authors of the article also processed the coded positives mentioned by the respondents and classified them into several groups. The results show that most positives fall into the potential of outdoor learning to strengthen teaching strategies and to implement real-world learning and other modern strategies through it. Either way, outdoor learning is an important teaching strategy for science education and will be given more and more emphasis in the future, regardless of the limiting factors of the outdoor environment.

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