

Original Article

Outdoor education practices in Belgian preschools and relationships with both environmental and personal factors

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Abstract

Problem Statement: In Belgium preschool education usually takes place in classroom and time spent outdoor is mostly limited to recess. Such approaches reduce physical activity and limits environment discovery. Outdoor education (OE) is a complementary pedagogical approach that is based on direct engagement with the outdoor environment and nature in order to improve knowledge, skills, behaviours and physical activity. However, the OE level of practice and associated factors are unknown in Belgium and should be investigated before any promotion. **Approach:** Preschool teachers from the Province of Liege were invited to complete an online survey on their teaching environment, attitude toward OE and practices. Semi-structured interviews were then conducted and focused on the perceived benefits, obstacles and potential solutions. **Purpose:** The aim of the study was to investigate OE practice in some Belgian preschools and relationships with both environmental factors and teachers' attitudes towards OE. **Results:** Even though the teachers reported a very positive attitude towards OE, our results revealed that OE was a very limited practice. Both environmental and personal factors were related to OE practices. Personal factors related with OE practices were self-confidence and enjoying outdoor activities with children. Environmental factors like well-equipped and stimulating environment and having outdoor adapted clothes were related to the OE practices. Main obstacles to OE were the weather conditions, the lack of suitable equipment, the low rate of supervision, and the teacher's lack of knowledge and training in OE. **Conclusions:** This study identified environmental and personal factors that are related to OE practices in Belgium preschools. Teachers showed a great interest towards OE. However, current conditions lack incentives that would favour OE and a greater personal motivation seems to be essential.

Keywords: outdoor education, teacher, preschool, environment, barrier, benefits

Introduction

Early childhood education researchers are showing a growing interest toward outdoor education (OE) which is considered in many countries as a valuable approach that may improve important areas of child development like cognitive abilities, social skills, motor development and connectedness with nature (Duque, Martins & Clemente 2016; Becker et al., 2017; Largo-Wight et al., 2018 ; Tuuling, Oun & Ugaste, 2019). OE involves going outdoors with children (rather than staying in the classroom) to engage in learning activities including either self-directed or guided play. Experiential learning takes place in the local environment and in the nature. It can be practised everywhere outside, either in urban or rural areas, in the schoolyard or in a wood. During OE, children engage activities that stimulate body movement, manipulation and interaction with environment and peers. OE has been reported to improve confidence, creativity, problem-solving skills, language, cognitive development, empathy towards others and nature, motor skills and physical fitness (Fjørtoft, 2004; Becker et al, 2017; Agostini, Minelli & Mandolesi, 2018; Johnstone et al, 2020).

Changes in society reduce opportunities for children to experience the outdoors at home, magnifying the importance to include outdoor play and education in childcare centre and preschool (Wyver et al., 2010; Kytta et al., 2015; McClintic & Petty, 2015). It is well reported that outdoor activities increase physical activity are an excellent way to fight against sedentary lifestyles and associated diseases in the long term (Wu et al., 2017). Building a sustainable environment, ensuring respect for nature, and combating global warming are major concerns that can only be perceived and prioritised by future generations if children spend time outdoors, are in contact with nature and are informed about it (Ives et al, 2018). The recent COVID19 pandemic give additional good reasons to favour outdoors activities. Indeed, the risk of contamination is increased in confined spaces and outdoor activities have been recommended (Leclerc et al., 2020). Additionally, spending time outdoors reduces vitamin D deficiency, which has been associated with an increased risk of respiratory infection (COVID-19 included) and influenza (Molly and Murphy, 2020). We are currently experiencing important changes in the

society and several systemic crises that justify an increased interest in OE as it can have interesting issues and should be encouraged and developed.

The scientific literature shows widely varying practices and cultures related to OE. While in some countries an important place is given to OE (Sandseter&Lysklett, 2017 ;Sjöblom&Svens, 2019), in others it seems that pre-school education is mainly carried out in the classroom and that going outdoors is not a priority even if it is considered important for children development (Ernst, 2014 ; McClintic& Petty, 2015; Tuuling et al, 2019). For example, the research of Tuuling et al (2019) showed that teachers do not practice OE very often although they find OE to be important. Ernst (2014) reported similar results. This author underlines how teacher beliefs about how education has to be conducted may influence their practices. For example, it was pointed out that if an early childhood programme focuses on academic preparation, supported by parents and policies, it would make it difficult to introduce OE. The full potential of outdoor environment for children's education is not always well understood by teachers and consequently is not held as a priority. Relationship between beliefs and practice can however be inconsistent and interfered by situational factors like opportunities and barriers. Additionally, a teacher's personal practical experience may have more influence than their knowledge in child development and learning theory on decision and practices (Ernst, 2014). The Social Cognitive Theory (SCT) model (Wood and Bandura, 1989) conceptualise the relationships between personal factor, environment factors and behaviour. This model can be used to investigate how environmental and personal factors may influence OE practices in the preschool education context. Previous researches have reported that environmental factors such as access to outdoor setting (Ernst, 2014), lack of time (Ernst, 2014 ; Tuuling et al, 2019), supervision rate (Tuuling et al, 2019), organisational constraints (McClintic& Petty, 2015; Tuuling et al, 2019) and weather condition (Ernst, 2014 ; McClintic& Petty, 2015; Tuuling et al, 2019) can be considered as barriers to OE. Personal factors like lack of knowledge and experience on OE (Ernst, 2014 ; McClintic& Petty, 2015; Tuuling et al, 2019), lack of motivation (McClintic& Petty, 2015; Tuuling et al, 2019) and personal relationship to nature (Ernst, 2014) were associated with OE practices. While these results are informative on factors that could influence OE practice, they are issued from a limited number of qualitative researches and are very specific their context. Preschool in the French community of Belgium seems to be similar to the one in Estonia described by Tuuling et al (2019). Over 95% of children aged from 3 to 5 years are attending preschool. This education usually take place in a classroom with an important part of schooling time based on a structured organisation and formal instruction. One important aim of this kind of approach is to prepare children for primary school (Ang, 2014). While it has obvious advantages (structured and comfortable place, sheltered from weather variations, standardized equipment for each child, cupboards for storing teaching materials, chair and tables for drawing and writing skills, etc.) it has the disadvantage of limiting opportunities for free play or alternative pedagogical approaches. The decision to include OE is usually the responsibility of the teacher.

In the light of educational contribution OE can bring to schooling and with regard to change in society and crisis mentioned above, we advocate that OE should be considered as an important part of all children education and should be promoted in all countries. We hypothesise that in Belgium this approach would be favourably received by teachers, but that practices are currently very limited because of environmental and personal factors. The aim of the study, based on the SCT model, was to investigate OE practice in Belgian preschools and relationships with both environmental factors and teachers' attitudes toward OE. A second aim of the present study concerned preschool teacher perceptions about benefits, barriers and solutions related to OE implementation.

Materials and Methods

For this research, a randomized stratified sampling of the preschools in the Province of Liège of Belgium was initially planned. Because of the COVID19 pandemic lockdown, it was difficult to get in touch with the teachers of the selected school and an opportunistic approach using social networks was then used to recruit preschool teachers from the same region. They were asked to complete an online survey, based on SCT model and that aimed to describe their OE practices and to get information on environmental and personal factors that could influence OE practices. Semi-structured interviews were then addressed to the participants who accepted to be contacted after the survey for additional information about perceived benefits, barriers, and solutions related to OE.

Online survey

As no validated scientific questionnaire could answer our research questions in a complete and specific way, we created an original online survey that included the following dimensions: teacher information, school and outdoor environment description, attitudes toward the outdoors, attitudes toward OE, outdoor activities description, OE practice and intention of OE practice. The think aloud technique (Charters, 2003) was used to check the relevance and comprehension of the questions and its duration. This procedure was necessary to improve and validate the survey. The questions in the survey and associated answers reported in this article are presented in tables 1 to 4. Statistical analysis and descriptive data were carried out on Excel and Statistica 13.5 software (TIBCO Software Inc, USA). Non-parametric Spearman's Correlation coefficient was used to investigate relationships between variables. Significant threshold was set at $p < 0.01$ level. In order to obtain an overall score representative of OE (OE_{score}) we combined cores from outdoor education inside school (OEIS), outdoor

education outside school (OEOS) and half or full day excursions (EXC). Cronbach coefficient reached 0.77, meaning that OE_{score} was valid and has satisfactory internal coherence.

Semi-structured interview

Semi-structured interview aimed to obtain qualitative information on the perceived benefits and obstacles related to OE. Teachers were also asked for possible solutions that could help them to further develop OE. The interviews were carried out by videoconference and were completely recorded. After being fully transcribed, interviews were analysed with the help of an Excel spreadsheet where important points that emerged from the interviews were noted and classified. The elements highlighted by the interviews were grouped into categories of ideas according to their correspondence. Frequency of citation of the points were reproduced in the results in order to highlight the most important ideas that emerged from the interviews. Inter-analyst reliability was investigated and reached 81.8%.

Results

47 preschool teachers (age: 42±9yo; experience: 21±9yo) volunteered to complete the online survey. All types of preschool classroom including same age or mixed age children were represented (<3yo=23%; 3yo=15%; 4yo=11%; 5yo=21%; mixed aged including children of all preschool age =30%). The number of children per teacher was in average 20±4. Table 1 to table 4 are reporting for the different parts of the survey, the questions, possible answers and descriptive data with frequency for each response.

Table 1 – Frequency of answers regarding environmental factors

<i>Environmental factors</i>	Strongly disagree	Disagree	Agree	Strongly agree
School outdoor space is big enough	0%	17%	79%	4%
Outdoor facilities are suitable for children	0%	21%	55%	23%
Outdoor space allows stimulating activities for children	0%	36%	49%	15%
Outdoor space is secure enough for children	0%	9%	60%	32%
School environment is globally adapted to OE	9%	33%	38%	20%
<i>Environmental factors</i>	No		Yes	
Is there a storage space for children's outdoor clothes?	21%		79%	
Is there a room where the children can change before going outside?	51%		49%	
Is there any equipment available for going outside (suitable clothing, boots, etc.)?	72%		28%	

Outdoor space was perceived secured by 92% of the teachers. Most of them considered that the space was big enough (93%). However, it was less the case when we asked if the outdoor space allow stimulating activities (64%) and if school environment was globally adapted to OE (58%). It is interesting to notice that if 79% of the teacher declare to have a storage place for children outdoor clothes, 72% don't have any equipment for going outside.

Table 2 – Frequency of answers regarding teacher attitudes toward the outdoors

<i>Attitudes toward the outdoors</i>	Strongly disagree	Disagree	Agree	Strongly agree
I spent a large part of my childhood playing outdoors.	0%	6%	38%	55%
I like to spend time outdoors, even when it's cold or raining a bit.	0%	23%	53%	23%
Children like to spend time outdoors	0%	2%	28%	70%

94% of teachers declared that they spent a large part of their childhood playing outdoor and 98% believed that children like it too. However, 23% declared that the don't like being outdoor when it's cold or raining a bit (Table 2).

Table 3 – Frequency of answers regarding teacher attitudes toward the OE

<i>Attitudes toward outdoor education</i>	Strongly disagree	Disagree	Agree	Strongly agree
OE is an interesting and important approach	0%	0%	50%	50%
The preschool should develop more outdoor pedagogical activities with the children.	0%	0%	49%	51%
I think that a lot of preschool learning can easily be done outdoors	0%	13%	53%	34%
I believe that it is in the classroom and not outside that most preschool learning can be optimally developed.	0%	14%	74%	12%
I have self-confidence when I go outside with the children.	0%	20%	59%	22%
I like to go outside with the children of my class.	0%	4%	55%	40%

Teachers' attitudes toward OE was very positive (Table 3) as they all declared that it is an interesting approach that should be more developed. However, 20% were not self-confident when going outside and 87% of them believe that it is in the classroom and not outside that most preschool learning can be optimally developed.

Table 4 – Frequency of answers regarding practices and intention of practice

OE Practices	Never	Rarely (<1/month)	Sometime (~1/month)	Often (~1/week)	Usually (~eachday)	
OE practices inside the school (OEIS)	0%	49%	30%	19%	2%	
OE practices outside the school (OEOS)	4%	62%	28%	6%	0%	
		Never	1x/year	2-4x/year	5-8x/year	>8x/year
Whole or half a day excursion outside the school (EXC)		2%	21%	53%	13%	11%
<i>Intention of OE practice</i>		0-30min/day	30-60min/day	1-3H/day	>3H/day	
How many times should last OE inside school ?		34%	60%	6%	0%	
How long should last OE outside school ?		11%	32%	47%	11%	
		No I don't want more OE	I want a bit more OE	I want much more OE		
Would you like more OE with children?		11%	51%	38%		

Teachers' OE practices appear to be low, both inside (OEIS) and outside (OEOS) the school. Whole or half day excursions outside the school are also very limited (Table 4). Most of them (89%) would like more OE with children. However, for most of them (94%) the time spent outdoor inside the school should not exceed 60min. Longer pedagogical activities (>60min) could be considered for a majority (68%) when going outside the school.

Table 5 - Relationships between OE practices and environmental factors (*p<.01)

Environmental factors	O		EX		O	
	EIS	EOS	C	E _{score}		
School outdoor space is big enough	-.30	-.17	.03	-.16		
Outdoor facilities are suitable for children	.46*	.10	.29	.36		
Outdoor space allow stimulating activities for children	.36	.24	.44*	.44*		
Outdoor space is secure enough for children	.36	.01	.20	.26		
Storage space for children's outdoor clothes	.11	.13	-.06	.00		
School environment is globally adapted to OE	.47*	.31	.33	.42*		
Space in the school where the children can change before going out	.14	.19	.24	.20		
Equipment available for going outside	.37*	.41*	.39*	.43*		

Relationships between OE practices and environmental factors are presented in Table 5. Having outdoor facilities suitable for children and a globally adapted outdoor environment was related to superior OEIS. Results also showed that OE increased when outdoor space allowed for stimulating activities; when equipment like clothes or boots was available for going outside and when the school environment was globally perceived as adapted to OE. The table 6 shows that OE practice was not related to teachers' attitudes towards outdoors. Perceiving OE as an interesting approach is only correlated with OEOS. Two personal factors are positively associated with global outdoor education practice: having self-confidence and liking going outside with children.

Table 6 - Relationships between OE practices and attitudes toward outdoors and OL (*p<.01)

Attitudes towards the outdoors	OEIS	OEOS	EXC	OE _{score}
I spent a large part of my childhood playing outdoors.	.08	.16	-.03	.11
I like to spend time outdoors, even if it's cold or raining a bit.	.28	.27	.25	.29
Children like to spend time outdoors	.18	.16	.14	.15
Attitudes towards outdoor education	OEIS	OEOS	EXC	OE _{score}
OE is an interesting and important approach	.17	.45*	.15	.26
The preschool should develop more outdoor pedagogical activities with the children.	.09	.16	.04	.12
I think that a lot of preschool learning can easily be done outdoors	.23	.19	.18	.21
I believe that it is in the classroom and not outside that most preschool learning can be optimally developed.	.20	.20	.16	.24
I have self-confidence when I go outside with the children.	.36	.43*	.25	.43*
I like to go outside with the children of my class.	.47*	.28	.43*	.48*

19 teachers who filled out the online survey accepted to participate to the semi-structured interviews during which they were questioned about perceived benefits, barriers and solution concerning OE. Perceived benefits seemed to be different according to the context. OEIS was mostly associated with low cognitive activities like physical activity (26%), time for letting steam off, getting oxygenated (21%) or for simply enjoying outdoor space (16%). On the other hand, a large majority of teachers associated OE OS with children learning (88%). According to them, going outside allowed children to experience enriching activities in a different way in comparison with classroom. It could also help to improve vocabulary, to stimulate fine motor skills, to favour the discovery of the environment and to bring out more children who do not have the opportunity to do so at home. Many teachers mentioned that going outside was important to promote children's connectedness with nature and to raise their awareness of the environment. A large number (37%) highlighted the benefits of OE OS on children's behaviour. They would be able to concentrate more and more involved. The children would reveal other facets of their personality when outside. Diversifying the learning approaches (21%) and social benefits (21%) (meeting new people, helping each other, etc.) were also discussed by respondents.

The most frequently reported barriers to OE were the weather conditions (47%) and the lack of supervision, particularly when they go outside the school (68%). Organisational constraints such as timetables, cohabitation with other classes, the sharing of space or equipment, and the management of clothing were reported by 37% of the teachers. Lack of equipment and adapted outdoor space was seen as problematic for 26% of the teachers.

When the teachers were asked about possible solutions to encourage the use of OE, 47% mentioned the importance to develop a friendly OE environment (facilities for changing clothes, outdoors equipment, nearby playgrounds, green spaces in the school, better equipped yard, etc.). Additional supervision seemed necessary for 42% of the teachers. Acquiring equipment for going outside (37%) and benefiting from training and educational documents on OE (32%) were also reported as helpful solutions.

Discussion

In accordance with our initial hypothesis and with what has been observed in previous studies (Ernst, 2014, Tuuling et al., 2019) our results highlighted a contrast between the great interest toward OE shown by teachers in the first hand, and the very limited OE practices in the other hand. These results are the voice of a limited number of preschool teachers from the Province of Liège and can't be generalised to the whole of Belgium. Indeed, our methodology based on a non-probability sample and on an opportunistic basis, may contain biases and caution with interpretation is needed. However, there are only limited differences in preschool practices, curriculum and culture throughout Belgium, especially in the French community and it would be surprising if the results were very different if they were extended to the rest of Belgium. OE is not really in the pedagogical habits and is considered as an interesting but not fundamental option.

The dominant preschool model in Belgium takes place in a classroom and is based on a quite structured organisation and instruction. One important objective in the curriculum is to prepare the child for primary school. Academically directed activities result from pressure to prepare children for primary school (Bodrova, 2008; Miller & Almon, 2009) and reduce opportunities for free plays and OE. The preschool curriculum of the French community of Belgium doesn't explicitly address OE and doesn't provide any guidelines for going outdoors with children. It cannot be considered as incentive for OE. This is in contrast to what is being done in Nordic countries and reflects important cultural differences (Sandseter & Lysklett, 2017). Highly structured school models, prioritising certain school learning at an early age do indeed show short-term effects, which are not confirmed on long-term learning. These highly scholastic approaches, which are envisaged at a very early age may even exacerbate children's problems in social and emotional areas (Marcon 2002; Bodrova 2008). A recent study confirmed that OE is at least as effective as traditional preschool (Agostini et al., 2018). Interestingly, Finland, claimed to be a top country for education (Yeasmin & Uusiautti, 2018), has models that do not aim at early academic learning while it considers OE as fundamental for children's education and has integrated it in their curriculum (Sjöblom & Svens, 2019).

The results of this research show that in the Province of Liège, OE practices are correlated with some environmental and personal factors. Highest level of OE practices are declared when the environment is globally perceived as favourable to OE. The size and security of the outdoor space are perceived as adapted to children but are not related to OE practices. On the other hand, having outdoor facilities suitable for children is associated with greater OEIS. According to our results, it is critical to have equipment for going outside. 72% of teachers declared they have don't any equipment for going outside with the children. This kind of equipment and having a room where the children can change before and after outdoor activities is critical to be able to go outside with the children whatever the weather. Lack of equipment and clothes are in line with the research of McClintic & Petty (2015) but is contrasting with what is observed in Scandinavian countries, which are generally well equipped (Sandseter & Lysklett, 2017). Cultural differences seem to influence both environmental and personal factors. In accordance to other researchers (Ernst, 2014; McClintic & Petty, 2015; Tuuling et al., 2019) poor weather conditions were one of the main barriers to OE reported by our teachers. However, such attitudes towards weather conditions differs from that observed in the Scandinavian countries (Sandseter & Lysklett, 2017).

A very large majority (86%) of teachers who responded to this survey consider that it is in the classroom and not outside that most preschool learning can be optimally developed. This result clearly shows that OE is still considered as an interesting alternative but not as an optimal approach to be used for preschool educational achievements in Belgium. Like in the paper of McClintic & Petty (2015), teachers viewed the indoor classroom as the learning place and the outdoor environment (OEIS) as a place to let steam off and a good way to change one's ideas. The pedagogical benefits of outdoor activities are more perceived when teachers leave the school (OEOS) for activities that are usually longer. In that context they consider that going outside allows children to experience enriching activities in a different way in comparison with classroom. Outdoors is an opportunity to improve vocabulary, to stimulate fine motor skills, to favour the discovery of the environment. For many teachers, going outside is important to promote children's connectedness with nature and to raise their awareness of the environment. A large number (37%) agreed that OE has benefits on children's behaviour. They would be more concentrated and more involved. They would also reveal other faces of their personality when outside. Despite being aware of these various benefits, activities outside schools remain very marginalised, in most cases less than once a month.

Teachers in the French community in Belgium have been trained to deal with the contents of the preschool curriculum in the classroom and do not necessarily know how to deal with these subjects outside. Similar finding has been reported (Tuuling et al, 2019). OE is not really developed during initial teacher training, and if we want to develop OE, it is important to convince those responsible for educational policy that OE is not just an interesting alternative but a relevant method that offers many advantages with regards to children's lifespan development and long term environmental, health and social issues. Going outside with children can't be improvised as it is accompanied by constraints that may discourage some teachers. Time constraints, cohabitation with other classes, the sharing of space or equipment, and the management of clothing are organisational barriers that could impact OE (Ernst, 2014; McClintic & Petty, 2015; Tuuling et al., 2019). Good organisation and high intrinsic motivation seem to be important (Yilmaz, 2016) and it is not surprising if the two personal factors correlated with OE practices are confidence and liking to go outside with children. The teacher/children ratio of 1/20.4 is close to Belgian norms of 1/19 and may also explain why teachers don't go outside with children much in Belgium. In countries where OE is more developed, the pupil-teacher ratio is much lower. For example, in Finland, they have a teacher/children ratio of 1/7 (Kamerma, 2000). However, the majority of the teachers surveyed indicated that they would like more OE. Four main solutions are put forward by teachers: to develop a friendlier OE environment; to find solutions for "additional supervision", especially when leaving the school; to acquire equipment for going outside; and to benefit from a specific OE training and from educational documents. Working on the representations of teachers, but also of parents and putting in place incentives such as the integration of OE in the curriculum seems important.

Conclusions

In conclusion, the results of this study provide a better understanding of the factors and barriers that influence OE in the Province of Liege in Belgium. Contradiction between a positive attitude and very weak practice, reflect a strong cultural influence of an educational model that considers OE as an option and not as an important part of the educational approach to children. Our study shows that a friendly OE environment (including facilities, adapted outdoor environment and equipment for going outside) seems helpful to favour OE practices as well as personal factors such as being confident with OE and liking to go outside with children. However, current conditions are facing barriers (classroom size, organisational constraints, perceived bad weather conditions) and a lack of incentives that are detrimental to OE implementation and a great personal motivation appears to be essential. Teachers have been trained to deal with subjects mostly in the classroom and do not necessarily know how to include them in OE. The present study confirmed that the full potential of OE is still underestimated. Given the importance of this approach, with regards to changes in the society and crises that we are facing, it seems critical to identify relevant strategies that would help to consider OE not as an option but as an important part in the preschool education model. According to the results of this study, favouring the development of more OE friendly environment, mentioning OE in the curriculum and including OE in the initial and continuous training of preschool teachers should be considered as concrete actions that could reduce the gap between declared interest and OE practices.

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