





Teach, Inspire, Protect Erasmus+ project

TIP Report 1 – 2019 survey: summary report

Description

A preliminary survey was carried out in 2019 on a sample of teachers, selected for their availability to the TIP manager. These were a group of 107 teachers attending a Dinja Waħda Coordinators' training event. Dinja Waħda Is BirdLife Malta's formal education programme (through the school curriculum) and Coordinators are Teachers, Kindergarten Educators (KGEs) or administration staff who coordinate the programme in their school.

The aims of this survey were:

- 1. to test specific questions for their effectiveness in generating data about outdoor teaching among the participants;
- 2. to test specific questions for their effectiveness in generating data about factors affecting the practice of outdoor teaching;
- 3. to indicate weaknesses in the questionnaire design to inform the design of a subsequent survey about outdoor teaching.
- 4. to generate data about popular teacher training approaches among participants;
- to generate data about perceived effectiveness of specific teacher training approaches;

Aims 1, 2 and 3 would be used to inform the design of a national survey in Malta on outdoor teaching in Primary Schools. Aims 3, 4 and 5 would be used to inform the design of a teacher training course as part of TIP intellectual outputs.

The outcomes of the preliminary survey were as follows:

Questions yielding data highest in relevance to aims

- 1. Questions that generated data about outdoor teaching practice (frequency and place).
- 2. Questions that generated data about school grounds and spaces used for outdoor teaching.
- 3. Questions that asked about motivating/demotivating factors for outdoor teaching.
- 4. Questions that asked about desired content for teacher training course.

Key takeaways for subsequent questionnaire

- 1. Outdoor teaching spaces used require better definition.
- 2. Multiple choice questions should include: safety, school grounds, and administration as factors influencing outdoor teaching.*



- 3. The possibility of a link between subjects taught outdoors, the curriculum and outdoors space/s should be explored.*
- 4. Relationship between teacher's own connectedness with nature and teaching outdoors should be explored.*
- 5. Efforts to be made to avoid leading questions .
- 6. The option 'Not applicable' should be included in multiple choice answers.
- 7. The option 'Other' option' should be included in multiple option questions.
- 8. Efforts to be made in achieving clarity in quesiton wording in order to avoid repetition of replies where meaning is unclear.

* Conclusion based on predominance of 'other' in answers to some questions, and the specific answers given to these questions.

The above points were extracted from weaknesses in questionnaire design, which would have been revealed in a pilot study had this been carried out. It is recommended a pilot testing is caried out before the next questionnaire is distributed.

Key findings

 The majority of participants were early years practitioners (K1-Y1), hence the overall picture is determined by the perspective of this cohort (Figure 1). This is perhaps most obvious in the predominance of 'daily' replies (40%) about frequency of outdoor lessons (Figure 2), since early years practitioners are being encouraged by the Directorate of Education to use the outdoors, especially in connection with the emergent curriculum approach.



Fig. 1 Distribution of participants by year group





Fig. 2 Frequency of outdoor teaching

2. The vast majority of respondents use school grounds for their outdoor lessons in preference to other venues (Figure 3).



Fig. 3 Locations where outdoor teaching takes place

3. A majority do have access to green spaces outside school, however the question does not indicate whether 'access' refers to physical proximity or permission to take children out of school (Figure 4).



Fig. 4 Access or no access to green spaces outside school

4. The weather and curriculum time constraints emerged as the main reasons why educators do not take the children outdoors more often (Figure 5).



Fig. 5. Frequency of different reasons for not teaching outdoors

5. Time constraints, the weather and children's behaviour were the three categories of variables that negatively affected educators most during outdoor teaching (Figure 5).





Fig. 5 Factors negatively affecting educators during outdoor teaching

- 6. In the questions that explored what motivates teachers most to do outdoor lessons, teachers' replies (Figure 6) were grouped into four categories:
 - determined by children's enjoyment of and motivation for the lessons
 - determined by child-nature connection
 - determined by educator's enjoyment of changing environment
 - determined by how children behave differently from the classroom

The key reason for educators to do lessons outdoors emerged clearly as being motivated by children's enjoyment of the hands-on lessons. Respondents specified how children cooperate more together, are more engaged with learning and behave in ways that educators do not usually witness in the classroom.



Fig. 6 Different motivating factors during ourdoor teaching

- 7. Two subjects emerged as favourites in subject matter that the majority of participants would like to learn about in TIP training courses. These were:
 - The kinds of activities they can carry out outdoors with their classes.
 - How to link these activities with the curriculum.
- 8. Other areas of interest included learning about nature and how to make children aware of nature or the environment. The two main concerns that emerged from these answers were:
 - A need to know how to effectively manage a large group of children while keeping them engaged.
 - How to address safety issues outdoors.

Conclusions and recommendations

The preliminary survey indicates clearly that outdoor teaching is carried out more in Early Years than in the other primary schooling years. Attitudes to outdoor teaching and educator motivation for this approach to teaching are fairly consistent across respondents, however this could be a result of the homogeneity of the sample. It is therefore important that a second national survey aims to obtain a broader perspective through reaching all primary years educators.



The spaces being used for outdoors education are mostly on school grounds and these are mostly concrete or artifically-turfed surfaces. While this indicates a level of educator interest in outdoor teaching, there is no direct link to nature-based learning, as this would require areas with soft landscaping. The major obstacle to teaching outdoors perceived by respondents is the weather, closely followed by lack of time, rather than lack of the right spaces. A second survey could explore this in greater depth by detailing the question to include the quality of school grounds spaces, educator attitudes towards these spaces and links to specific subjects in connection with these spaces. A survey of school footprints detailing outdoor hard surfaces and soft landscaped areas would contribute useful information to the discussion about outdoor teaching.



Teach, Inspire, Protect Erasmus+ project

TIP Report 2 – 2021 survey on outdoor teaching

Introduction

This survey was carried out for the Erasmus+ project, Teach, Inspire, Protect (TIP) by the lead partner, BirdLife Malta. The University of Malta was engaged to independently create the survey, and to gather and analyse its results. The aim was to determine the state of outdoor education in Early Years as part of a larger survey of outdoor education and nature-based learning in primary schools.

In developing the questionnaire, useful information was gathered from the results and recommendations of a prior survey carried out in 2019 on outdoor teaching, also as part of TIP. Given that participation in the 2019 survey was limited to a small, select group of educators, this new survey targeted the entire primary educator population to obtain a more accurate reflection of the current extent and state of outdoor teaching in Malta. Among other variables, it was decided to include respondents' nature connectedness. The Extended Inclusion of Nature in Self (Martin & Czellar, 2017) scale was selected for this purpose, because, with its single item and visual presentation, it takes up little space and requires little response time in a questionnaire. Limiting these two factors was a priority in view of that fact that several other variables were also being tested, and because this survey was being distributed during a period when educators were already facing Covid-19 related disruptions to their routine – factors that potentially reduce disposition to filling in surveys.

The questionnaire was pilot tested on ten respondents from randomly selected educators known to the primary researcher, comprising teachers and Kindergarten educators (KGEs) from State, Church and Independent schools. Participants were asked to give feedback on whether there were questions that were unclear or impossible to answer, on clarity of layout and ease of completion, and on omissions they felt were important to the subject area. Feedback resulted in only one change, which concerned improved presentation of the 'Inclusion of Nature in Self' diagrams. The questionnaire was otherwise clear and easy to answer though it was noted that some questions required thinking time. The survey was distributed in March 2021.

All research was carried out in accordance with research ethics procedures of the University of Malta and the Directorate for Research, Lifelong Learning and Employability (DLAP).



Population

The target population comprised educators in State, Church and Independent Primary Schools in Malta and Gozo (Table 1).

Population of primary school teachers and Kindergarten educators in 2021						
School type	Educators	School type as				
		% of total				
State	1822	59%				
Church	506	25%				
Independent	378	16%				
Total	2706	100				

Table 1. Population of primary school teachers by school type in 2021

 Data source: Directorate, Education Resources

Procedure and data collection

Whole population sampling was used on Primary School educators in Malta and Gozo. Whole population sampling was possible in this case because of the small population size and given the relatively easy access to all members via the DLAP.

An online survey with an invitation to participate was distributed nationally through an electronic circular (Appendix 1) by the Directorate for Learning and Assessment Programmes (DLAP). Approval for the distribution of the circular was automatically granted since the DLAP is one of the Eramus+ project partners and this research is one of the intellectual outputs of this project. The invitation to participate was issued in both Maltese and English versions. The Maltese circular was re-issued after two days due to a typo in the link in the first circular.

The survey (Appendix 2) was made available online via the survey software Question Pro. The survey consisted of ten multiple choice questions related to teaching and attitudes towards nature and outdoor learning, and five questions targeting respondent profile data. The period allowed for replies was three months (27 April – 31 July 2021). By the end of this period, 340 respondents had answered the questionnaire (with 214 complete responses), constituting a response rate of approximately 13% and a completion rate of 67%. The average response time was of 13 minutes.

Data analysis

Quantitative data was analysed using IBM SPSS Statistics version 27. The two qualitative questions were analysed manually by the primary researcher.



Biases and correction measures

The main bias of this study lies in the likelihood that educators who responded to the survey are predisposed to have an interest in the subject matter. This created a bias in the number of educators who practice outdoor teaching. This bias is reflected in the fact that schools that had high participation in BirdLife Malta's voluntary outdoor education programme had a higher number of respondents than other schools. As a correction measure, schools noted to have a low or no response were contacted individually by BirdLife Malta, through reminder emails.

This bias is further reflected in the high number of responses among KGEs in comparison to the rest of the year groups: as evidenced by survey reponses, this cohort's relatively higher participation in outdoor teaching implies a more positive attitude towards the teaching approach. Higher uptake among KGEs was noticed from the responses obtained on the first day, and efforts were made to correct it through encouraging participation in year groups where existing data indicated a low prevalence of outdoor teaching (such as Year 6 and Year 2). A BirdLife Malta peripatetic teacher¹ was engaged to encourage responses from these other year groups through face to face contact with school administration. Additionally BirdLife Malta field teachers² encouraged teachers attending their lessons to fill in the survey. This generated a swing away from Kindergarten (K) classes towards Years 3 – 5. These year groups represent the most booked online lessons with Birdlife Malta during the second and third semesters (the questionnaire period). Although this was a correction measure that enabled a wider spread of replies representing more year groups, it may also have introduced an element of bias by encouraging responses from those involved in BirdLife Malta activities.

Results

1. Respondents

Respondents came from 93 schools, distributed as shown in Figure 1. While State Schools are largely equally represented in all geographical regions, the same is not true of Church and particularly of Independent Schools. With regards school type compared to national distribution, State Schools are all represented in the survey responses, while roughly half Church and Independent Schools participated in this survey (Table 2).

¹ A teacher who visits all schools to support the implementation of the Dinja Waħda programme.

² Teachers working with BirdLife engaged to lead fieldwork sessions. During the year of the survey, field visits were on hold due to Covid measures and the field teachers were giving lessons online to all primary school classes in the three sectors.





Fig. 1. Number of respondents by geographical region and school type

	Number of	National	Primary	Survey
	primary	percentage	schools	percentage
	schools	of schools	participating	of schools
		compared	in survey	compared to
		to whole		whole
		population		population
State	69	60.5%	69	60.5%
Church	35	30.7%	18	15.78%
Independent	10	8.7%	6	5.26%
Total	114	100%	93	81.54%

Table 2. Representation of school types in survey compared tonational representationData extracted from App. 3 List of schools

The total list of schools where survey participants are teaching is presented in Appendix 3.

The majority of respondents were female (Fig. 2), reflecting the national balance of genders among state primary school teachers, where only 6.9% of educators are male (Table 3).



	Educator gender	Educator gender
	distribution in state	distribution in
	primary	survey percentages
	schools*percentages	
Female teachers	93%	91.9%
(Primary & Kindergarten)		
Male teachers	6.9%	7.1%
(Primary & Kindergarten)		

Table 3. Gender distribution comparison between national population in state primary
schools and survey population
Data source: Directorate, Education Resources

The majority of respondents were Kindergarten Educators (KGE)s, followed by Year 3 teachers (Figure 3). The lowest number of participants was from Year 1. Only 28 Nurture Classes³ exist in State Schools (Table 3), hence the low number of participants in this group is to be expected.



Fig. 2. Number respondents from K1 to year 6 and Nurture Class

³ Nurture classes constitute part-time classes in State schools, embedded in the mainstream curriculum for individual students with specific behavioural problems.



2. Outdoor teaching habits

In this section educators were asked about their frequency of teaching outdoors and where they carried out the teaching. Additionally respondents were asked about their use of school grounds for outdoor teaching, specifically which subjects they taught and which elements of the school grounds they were using.

Year groups were clustered as follows for analysis of results:

- Kindergarten 1 and 2
- Year 1 and 2
- Year 3 and 4
- Year 5 and 6

Of the 273 teachers who answered questions about frequency of outdoor teaching, 98% engaged in some degree of outdoor teaching, with only 6 teachers indicating that they never engage in outdoor teaching. The frequency of outdoor teaching varied across the sample, with the majority (56%) engaging in some form of outdoor teaching at least once a week. Percentages for response categories (i) 1-3 times per month, (ii) 1-8 times per year, and (iii) 1-2 times a year were 19%, 15%, and 8%, respectively.

School grounds are the most popular venue for outdoor teaching across year groups, being the only venue to be extensively employed on a weekly or monthly basis. As can be noted in Figures 4 - 12, most other venues are used predominantly once or twice a year. Overall, outdoor teaching was most extensively employed by Kindergarten 1 and 2 teachers (Table 4).

When comparing year groups, it can be noted that outdoor teaching in school grounds is used significantly more often by Kindergarten educators than by Year 1 to Year 6 teachers (Fig. 4) (p = < 0.001 at a 95% confidence level). Farms are also used significantly more with Kindergarten and Year 1 to Year 2 classes than with Year 3 to Year 6 classes (Fig. 5) (p = <0.001); however overall frequency of use for this venue is low. Outdoor teaching in parks is used significantly more often with Kindergarten and Year 1 to Year 4 school children than with Year 5 to Year 6 students (Fig. 6) (p = 0.003), though only once or twice a year. Outdoor teaching in nature places (e.g., woodland, valley, field) is used marginally more often with Kindergarten than Year 1 to Year 6 students; however, percentage differences are not significant (Fig. 7) and frequency of use is not high for this venue. Outdoor teaching in nature reserves is carried out significantly more often with Year 3 to Year 6 students than with Kindergarten or Year 1 to Year 2 children (Fig. 8) (p = < 0.001), but frequency is limited to once or twice a year. Outdoor teaching near the seashore is rarely or never used with primary school children and percentage differences between year groups are not significant (Fig. 9). Outdoor teaching in adventure places is used significantly more with Year 1 to Year 2 school children followed by Kindergarten classes than Year 3 to Year 6 students (Fig. 10) (p= 0.002) though also at a low frequency of once or twice a year. Outdoor teaching in



historical sites is used significantly more with Year 3 to Year 6 students than with Kindergarten and Year 1 to Year 2 school children once or twice a year (Fig. 11) (p= < 0.001). Most educators do not use other venues for outdoor teaching and percentage differences between year groups for these are not significant (Fig 12).



Fig. 4 Frequency of outdoor teaching in school grounds





Fig. 5 Use of farms as a venue for outdoor teaching



Fig. 6 Use of parks as a venue for outdoor teaching





Fig. 7 Use of nature places as a venue for outdoor teaching



Fig. 8 Use of nature reserves as venues for outdoor teaching





Fig. 9 Use of the seashore as a venue for outdoor teaching



Fig. 10 Use of adventure places as venues for outdoor teaching





Fig. 11 Use of historical sites as venues for outdoor teaching



Fig. 12 Use of other venues for outdoor teaching

3. Subjects taught outdoors

Of the 343 participating teachers, several reported teaching specific subjects outdoors. In order of decreasing frequency, educators reported teaching the following subjects outdoors: Science (152 teachers), Mathematics (149), English (139), Maltese (126), and



Emergent Curriculum (125), with lower numbers for Art (89), Social Studies (82), Religion (74), Drama (52), Music (43), PCSD (16), and ICT (16). The extent to which teachers engaged with natural or artificial elements also varied by subject. In the case of the Emergent Curriculum, most educators appear to engage with natural and artificial elements almost equally (Fig. 13). However, for many other subject areas, the natural setting is used primarily as a backdrop (e.g., English, Maltese, Social Studies, ICT, Religion, PSCD, Music, Art), with active use mostly of inanimate objects (e.g., Mathematics) and/or the school building (e.g. Maltese, Mathematics, Religion, PSCD) in some cases. In some subject areas (e.g., Music, Drama) outdoor spaces were also used to engage with objects brought from the classroom. Conversely, Science teaching on school grounds appears to engage with nature and natural physical elements more than with artificial elements (Fig. 16). Teaching of Art outdoors also appeared to make use of plants.



Fig. 13 Use of elements on school grounds for emergent curriculum





Fig. 14 Use of elements on school grounds for English teaching



Fig. 15 Use of elements on school grounds for Maltese teaching





Fig. 15 Use of elements on school grounds for Mathematics teaching



Fig. 16 Use of elements on school grounds for Science teaching





Fig. 17 Use of elements on school grounds for Social Studies



Fig. 18 Use of elements on school grounds for Art teaching





Fig. 19 Use of elements on school grounds for Music teaching



Fig. 20 Use of elements on school grounds for Drama teaching





Fig. 21 Use of elements on school grounds for PSCD teaching



Fig. 22 Use of elements on school grounds for ICT teaching





Fig. 23 Use of elements on school grounds for Religion/Ethics teaching

4. School grounds

This section of the survey looked at school grounds as venues for outdoor teaching, the specific characteristics of these spaces, and teachers' perceptions of these spaces.

The most common school grounds surface used during outdoor teaching is rubber matting / turf (66.2%). This is followed by concrete ground (54.8%), landscaped ground⁴ (32.0%), non-landscaped areas⁵ (23.7%) and soil borders along perimeters adjacent to roads (21.0%). The total percentage exceeds 100% because respondents could select more than one option (Fig. 24).

⁴ Planted gardens, possibly with footpaths and other features

⁵ Areas with soil not planted or maintained as gardens



Fig. 24 Percentage use of different types of school grounds spaces among teachers who use school grounds for outdoor teaching

Only marginal differences (p = 0.720) were found in the type of school grounds spaces used by the different year groups (Fig. 25), with turf or rubber matting and concrete being the most common surfaces for outdoor teaching across year groups.



Fig. 25 Type of space used for outdoor teaching by different year groups

The open-ended question that asked respondents to describe their ideal school grounds space for outdoor teaching was answered by 171 respondents (Fig. 26). Responses were



analysed by manually extracting a list of phrases from all responses and noting the frequency of each phrase. The four most common responses describe school grounds that have trees (n = 57), areas that provide shade (n = 44) and seating (n = 40), and are large enough to accommodate classes without impinging on other classes' use of the grounds (n = 33).





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Fig. 26 Ideal school grounds features
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The question that asked whether there were any elements that discourage or encourage outdoor teaching not already mentioned in the survey was answered by 91 respondents (Fig. 27). A list of phrases was manually extracted from reading through responses and noting the frequency of each phrase. The most frequently-mentioned aspects of school grounds that discourage outdoor teaching is exposure to the elements (n = 29), followed by lack of space (n = 14).



Fig. 27 Factors that hinder outdoor teaching

The only aspects of outdoor teaching that were mentioned as motivators were children's interest (n = 4) (already mentioned in other sections of the questionnaire), support from administration (n = 2), and nature (n = 2) (Fig. 28).

5. Attitudes to outdoor teaching

In this section educators were given a list of statements to explore their perceptions of children's learning, attitudes and level of comfort during outdoor teaching; their attitude to outdoor teaching vis-a-vis their educational repsonsibility; and their attitude towards outdoor spaces. Teachers scored their level of agreement with each statement on a 5-point



Likert scale, with 5 representing strongest agreement and 1 representing strongest disagreement.

Results (Fig. 28), show that all the mean rating scores exceed 3 (middling rating score) indicating that teachers agree, rather than disagree, with all the statements, suggesting an overall positive attitude to outdoor teaching. However, teachers agree with some statements (those with larger mean rating scores) significantly more than with other statements (those with smaller mean rating scores), notably that teaching adds value to learning outcomes (p = 0.001).



Fig. 28 Factors that hinder outdoor teaching

When asked to reflect on statements related to perceptions of children during outdoor learning, once again, almost all mean rating scores exceed 3, indicating that teachers agree, rather than disagree, with most statements (Fig. 29). These results clearly show that educators believe that outdoor teaching is not only better for children's learning but also for their health. However, respondents do not feel as strongly that children are comfortable during outdoor learning, or that they are able to concentrate while outdoors, although they still agree rather than disagree with these statements.





Fig. 29 Perceptions of children during outdoor learning

In the section testing educator perceptions of outdoor learning spaces, most teachers disagreed, rather than agreed, with the statements, with most mean rating scores < 3. However, teachers agreed with statements that their school grounds are safe and that they motivate them to teach outdoors. This is however contradicted by the statement with the lowest mean rating about exposure of their school grounds to the weather.



Fig. 30 Perceptions of outdoor learning spaces



In order to gain nore insight into the results obtained in this section, mean rating scores across the four year clusters were compared. The results of comparisons of ratings of teachers' attitudes towards children's learning outdoors (Fig. 31) show the following:

- Teachers perceive Kindergarten and Year 1 to Year 2 school children to be significantly less distracted when learning outside the classroom (p = 0.000) than students in Year 3 to Year 6.
- Teachers perceive Kindergarten children to be more physically comfortable during outdoor lessons (p = 0.007) than primary school children.
- For the remaining attitudinal statements, there are no statistically significant differences between the year groups.



Fig. 31 Comparison of attitudes across year clusters

A second comparison was made to gain insight into possible differences among attitudes to outdoor teaching among year clusters. Results (Fig. 32) show that:

- Kindergarten and Year 1 to Year 2 teachers think they have significantly more nature knowledge to use in their teaching (p = 0.000) than Year 3 to Year 6 teachers.
- Kindergarten and Year 1 to Year 2 teachers are significantly more convinced that they will finish the syllabus (p = 0.000) than Year 3 to Year 6 teachers.
- Kindergarten and Year 1 to Year 2 teachers find it significantly easier to prepare for outdoor lessons (p = 0.000) than Year 3 to Year 6 teachers.
- Parents of kindergarten and Year 1 to Year 2 school children appreciate significantly more outdoor teaching (p = 0.000) than parents of Year 3 to Year 6 students.
- For the remaining attitudinal statements, there are no significant differences between the year groups.



Fig. 32 Comparison of attitudes across year clusters

A third comparison test was run to gain insight into possible differences anong attitudes towards school grounds spaces. Results (Fig. 33) show that:

- Kindergarten teachers find school grounds significantly easier for outdoor teaching, compared to out-of-school venues (p = 0.023) than Year 1 to Year 6 teachers.
- Kindergarten and Year 1 to Year 2 teachers are significantly more inspired by their school grounds to teach outdoors (p = 0.007) than Year 3 to Year 6 teachers.
- For the remaining attitudinal statements, there are no significant differences between the year groups.



Fig. 33 Comparison of attitudes across year clusters



Further analyses were carried out using the Spearman Rank correlation test to investigate the relationship between attitudes towards outdoor teaching, children's learning, and outdoor spaces and frequency of outdoor teaching. The Spearman correlation coefficient ranges from -1 to 1, where a positive correlation coefficient indicate a positive relationship between the two variables and a negative correlation coefficient indicate a negative relationship. P-values less than the 0.05 level of significance indicate significant relationships.

Results show that:

- when educator attitude towards outdoor learning is positive, frequency of outdoor teaching increases.
- when educator attitude towards children's learning and their comfort during outdoor learning are positive, frequency of outdoor teaching increases.
- when attitude towards outdoor spaces is positive, the frequency of outdoor teaching tends to increase.

Attitudes of children towards outdoor learning	Spearman correlation	P-value
Children are more motivated to learn during outdoors lessons.	0.180	0.009
I am comfortable when children get dirty while learning outdoors.	0.043	0.537
It is healthier for the children if I include outdoor teaching.	0.199	0.004
Children learn more during outdoors teaching.	0.168	0.014
Children are less distracted learning outside the classroom.	0.175	0.012
Children are physically comfortable during outdoors lessons.	0.192	0.006

Table 4. Spearman Rank correlation test for teacher perceptions of children during outdoorteaching and frequency of outdoor teaching

Attitudes of teachers towards outdoor teaching	Spearman correlation	P-value
Teaching outside the classroom adds value to learning outcomes.	0.186	0.007
I have enough nature knowledge to use it in my teaching.	0.301	0.000
If I include teaching outdoors, I will still finish the syllabus.	0.186	0.007
I find it quite easy to prepare for lessons outdoors.	0.243	0.000
Parents appreciate that I include outdoor teaching.	0.239	0.001
I am physically comfortable teaching outdoors.	0.249	0.000

Table 5. Spearman correlation test for teacher attitudes to outdoor teaching and frequencyof outdoor teaching



Attitudes towards outdoor spaces	Spearman correlation	P-value
The outdoors spaces in my school grounds are not too exposed to the weather.	0.148	0.034
My school grounds are easier for outdoor teaching than out-of-school venues	0.105	0.134
Health and Safety issues do not deter me from outdoor teaching.	0.115	0.100
My school grounds inspire me to teach outdoors.	0.363	0.000
There are not too many classes sharing the same outdoors spaces in my school.	0.190	0.006
It doesn't take too long/is not too expensive to go to out-of-school venues.	0.110	0.119

Table 6. Spearman correlation test for teacher attitudes to outdoor teaching venues and frequency of outdoor teaching

6. Respondents' connectedness to nature

This section aimed to gain insight into educators' nature connectedness profile by using the Extended Inclusion of Nature in Self (EINS) test where respondents were asked to choose one diagram from each of four sets of images representing how close they feel to nature.

The mean scores for teachers' closeness with the natural environment range from 1 to 7, where 1 corresponds to 'not close at all' and 7 corresponds to 'extremely close' (Table 7). The larger the mean rating score, the closer is the teacher with the natural environment. When using image series 1, teachers tended to provide lower mean rating scores for measuring their relationship with the natural environment. Image series 2, 3 and 4 seemed to generate similar results. All mean rating scores exceed 4 (middle rating score) indicating that, on average, teachers have a positive relationship with the natural environment.

Image chosen from	Mean score
your relationship with the natural environment (Image series 1)	4.27
your relationship with the natural environment (Image series 2)	5.28
your relationship with the natural environment (Image series 3)	5.22
your relationship with the natural environment (Image series 4)	5.15

Table 7. Mean scores of EINS tests

Mean ratings among year group clusters were then compared to examine whether there were differences among them. All four-image series show that the closeness of teachers with the natural environment varies only marginally between teachers of the four year groups (Fig. 34).







A final test was used to investigate the relationship between frequency of outdoor teaching and closeness with the natural environment. While results were not significant, they do indicate that when the closeness of teachers with the natural environment is high, frequency of outdoor teaching tends to increase slightly.

Discussion

From the results, it is evident that outdoor teaching is practised to some degree by many teachers, with school grounds being the predominant venue of choice. However, it is carried out much more frequently in Kindergarten than in higher primary years, consistent with findings in other countries (Marchant et al., 2019). In Malta, this could be the result of different factors, one of which may be the recent introduction of the Emergent Curriculum approach to teaching in the Early Years, which has encouraged KGEs to use less structured approaches to teaching, including free play and the use of outdoor spaces. The TIP partnership that includes the Early Years Unit within the DLAP has also served to encourage Early Years Education Officers and Early Years Educators to use nature and the school grounds as a suitable third teacher for the Emergent Curriculum (Giandini, 2011). In fact most of the venues asked about in this study were used significantly more in Kindergarten classes than in any other year group.

The results obtained in this survey appear to indicate that, as the curriculum becomes more content-heavy, typically with older primary years, using the outdoors may be perceived as a less desirable or less feasible teaching approach. This is consistent with the findings of other



researchers, who identified curriculum constraints as a major barrier to outdoor teaching in general (Dyment, 2005; Rickinson et al., 2004). It would therefore appear that the syllabus is an important influence on frequency of outoor learning, particularly given that the respondents represented in this study did not otherwise appear to exhibit significant differences in their nature connectedness and in their attitude to the benefits of outdoor learning. In fact, it is the early years educators (K – Year 2) who feel most confident that outdoor learning does not interfere with syllabus completion, presumably because the Emergent Curriculum and unstructured learning are the dominant teaching approaches in these year groups.

This survey also reveals that children in Kindergarten are the ones who are actively engaging most with nature (plants, animals, soil, water), through Emergent Curriculum learning on school grounds. Throughout the other primary years, frequency of connecting with nature during curriculum time is greatly reduced and restricted to passive experience of nature as a lesson setting, despite growing evidence of a wealth of benefits of outdoor teaching and nature-based learning outside academic achievement (Alcock et al., 2020; Bohnert et al., 2021; Miller et al., 2021). In the context of subject learning, the fact that only Science lessons actively engage with nature on school grounds could be due to the fact that in many schools, Science are carried out by specialist or peripatetic teachers⁶. The lack of active engagement with nature by the class teacher for other subjects could be a reflection of a lack of training in nature-based teaching. This result is consistent with other studies that show that teacher training is an important component in teacher confidence and take-up of nature-based learning (Stan, 2009), and with recommendations for teacher preparation programmes to include opportunities for observing children as they engage in structured and unstructured learning experiences in natural environments (Torquati & Ernst, 2013). These findings are also corroborated by this study, which shows that KGEs are the most confident group in the sufficiency of their nature knowledge for teaching purposes, the assumption being that older year groups might require more content knowledge to match children's learning outcomes.

A second factor that could be influencing educators' active engagement with nature on school grounds is likely to be related to the school grounds themselves. The results of this survey show that outdoor lessons are mostly happening on concrete ground and turf/rubber matting. Teachers' ideal school grounds for outdoor teaching would, however, have trees and shade, with their topmost demotivating factor being exposure to the elements. It is also relevant to note that when educator attitude towards children's learning and their comfort during outdoor learning are positive, frequency of outdoor teaching increases. Although this varies with year group, Kindergarten children are perceived as being most comfortable with their outdoor learning spaces, perhaps due to the smaller space needed for younger children to focus. The implication is that a lack of nature and naturescapes containing trees are important factors contrbuting to the lack of nature-based learning in Maltese primary schools, particularly for older children (beyond early years).

A survey of primary school grounds carried out as part of TIP, in parallel with this survey of outdoor teaching, reveals that an overall figure of 88% of school footprints are hardscapes

⁶ A teacher assigned to a cluster of schools to carry out specialised subject learning, such as Science.



(built up and outdoor hard landscape) while only 12% are natural landscapes. Evidence from the school grounds survey supports the results of this survey, which demonstrate that teachers are demotivated by nature spaces that are so small they are forced to share time and space with other classes, and by the degree of school grounds' exposure to the elements, perceived by the majority of teachers as a negative factor of outdoor spaces in schools. The lack of naturescapes could be directly contributing to this, since incorporating nature in urban landscapes is associated with temperature and noise mitigation as well as provision of barriers to elements and pollution (Fortes et al., 2021). At the same time it is evident that use of venues other than school grounds poses constraints. For example, while health and safety issues may be the reason why seashore venues are not popular outdoor teaching places for younger children, visits to nature reserves and historical sites are not conducive to the Emergent Curriculum approach of early years since they provide structured visits rather than spaces for free play and learning. This makes them more popular venues with older year groups, who visit them typically once to twice annually (these sites are booked by school groups and would not be booked more than once annually by the same class).

A third influential factor may be institutional. While the majority of multiple response replies indicate that in general educators perceive outdoor teaching as beneficial to children's health and learning, the open-ended questions allow better insight into the uptake of outdoor learning. An additional barrier that emerges from these insights is the influence of the school environment, which includes the opennness of school administration to embracing novel teaching methods, institutional support provided to teachers (including training), and perceived receptiveness of both parents and students to outdoor teaching approaches. While no further details were given in these question responses, other studies that focus on barriers to ourdoor teaching can shed light on the issue of institutional support. For instance, a study that investigated the barriers to elementary teachers' outdoor teaching posed by systemic factors (Oberle et al., 2021) found, among others, that lack of endorsement by administration was a concern because teachers felt that they were not supported with the community, especially with regards to risk factors outdoors, and in connection to the educational value of their teaching approach. Such lack of support also manifested itself in restricted scheduling of time tables and space, which did not allow for the flexibility required by outdoor teaching. The implication of this particular barrier is that the effectiveness of teacher training is limited if not accompanied by efforts to show the value of nature-based learning to school administrators.

Limitations

The sample provides a reasonable representation of the true population and the research presents a general picture of the state of outdoor teaching in Malta. It does not examine differences in outdoor teaching practices among schools. With State Schools being most represented in this study, it is as yet unclear whether school type constitutes a signifcant variable in outdoor teaching practice. A more in-depth study could focus on possible differences between outdoor teaching in the three sectors (State, Church, Independent) and possible links between school type, school ethos and curriculum, and outdoor teaching. A further limitation of this study is that it is subject to self-selection bias, which may distort



results. Future work could focus on seeking the opinions of those who would not normally engage with this approach to teaching and learning.

Conclusion and recommendations

The is the first national study, to the authors' knowledge, that determines the state of outdoor education in primary schools in Malta. The overall findings indicate a positive attitude to outdoor teaching among educators, and a prevalence of outdoor teaching among early years, especially in Kindergarten. Additionally, this research shows that the school grounds are the venue where outdoor teaching occurs most frequently and that the Emergent Curriculum and the Science curriculum are the two most popular subject areas for outdoor teaching. With regards to barriers to outdoor teaching, school grounds' exposure to the elements, the lack of adequate space, and syllabus constraints are the topmost concerns that hinder outdoor teaching. While most outdoor teaching occurs on concrete or rubber/turfed ground, teachers' ideal school grounds for outdoor learning include, above all, trees.

Outdoor teaching is stil in its infancy in Maltese schools, however there is a growing interest in the teaching approach. It is therefore important to address the issues raised by this study. While this survey identifies barriers to outdoor teaching, it is a priority to identify factors that could support outdoor learning. The following recommendations are therefore being made:

- 1. <u>Systemic support for outdoor education</u>. This includes educator training, both in-service and pre-service teaching staff, in going beyond the traditional approach to teaching and learning towards outdoor teaching and nature-based learning as valid pedagogies; it also includes training of administration staff, in the value of outdoor teaching throughout the primary years, and in supporting teachers to carry out the approach, in particular beyond early years.
- <u>A new ethos in school planning policy</u>. This takes an integrated view of the whole school footprint and sees the school grounds as a platform for structured and unstructured learning, Such an ethos addresses the imbalance of hardscapes versus naturescapes and includes natural landscapes in their capacity for enhancing the schools' educational potential, as well as with regards nature's role in health, wellbeing and mitigation of elements.
- 3. <u>Further and continued study</u>. More studies are required to gain deeper insight into how outdoor teaching can be supported across the year groups. This would involve, among others, the suitability of different subjects to outdoor teaching, barriers and solutions to nature-based learning in hardscapes-dominated schools, teacher perceptions of outdoor teaching in middle and oler primary years, and administration perceptions of outdoor teaching; long term studies, such as case studies that could shed light on successful outdoor teaching in schools in Malta, or quantitative studies that could support the value of outdoor teaching, or qualitative studies that could explore changing teacher perceptions among schools that take up outdoor teaching as part of the school ethos.



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GOVERNMENT OF MALTA MINISTRY FOR EDUCATION DIRECTORATE FOR LEARNING AND ASSESSMENT PROGRAMMES

LETTER CIRCULAR

Date: 27th April 2021

Ref: DLAP 121/2021

To: All Heads of College Network and Heads of Primary Schools (State and Non-State)

From: Tania Mangion - Education Officer, Early Years

Subject: Use of Outdoor Spaces as a Learning Environment

Heads of Schools are kindly requested to encourage all Primary School teachers and Kindergarten educators to participate in an Erasmus + project survey entitled *Teach, Inspire, Protect (TIP)*. The aim of this research is to gather data about Outdoor Teaching in Kinder and Primary Schools in Malta. In this survey, Outdoor Teaching is defined as any teaching conducted outside the classroom as part of the curriculum. For purposes of this survey, this does not include P.E.

Your participation in this study would help contribute to a better understanding of how, where, and whether learning is presently conducted outside the classroom, and what motivates or hinders teachers and educators in this regard. Any data collected from this research will be used solely for purposes of this study.

Participation is entirely voluntary and anonymous. It entails filling in a questionnaire which will take approximately 6–8 minutes to complete. Kindly follow the link: <u>https://jmu.questionpro.com/t/ASSgRZlay</u>

The questionnaire can also be completed on a mobile device. Submission of the completed questionnaire is considered as consent to participate in this study.

Should you have any questions or concerns, please contact Ms Desiree Falzon at desiree.falzon@ilearn.edu.mt.

Thank you for your cooperation.

Sandra Ebejer Director, Directorate for Learning and Assessment Programmes

APPENDIX 1. THE 2021 SURVEY



Section A: Educator Profile

Please write the name of the school where you are currently teaching:

Please tick the year group that you are currently teaching.

0	К1
0	K2
0	Year 1
0	Year 2
0	Year 3
0	Year 4
0	Year 5
0	Year 6

O Nurture Class

Please write the number of years you have taught each year group. You may fill more than one box.

	К1	K2	Y1	¥2	Y3	¥4	Y5	Y6	Nur.
Number of years									

For each of the subjects below, please indicate your level of comfort with teaching that subject on a scale of 1 to 5 by dragging the slider (where 1 = least comfortable and 5 = most comfortable).

Maths	©
Science	0
Geography	0
History	0
Social studies	0
English	0
Maltese	0
Art	0
Religion/Ethics	0

Section B: Outdoor teaching

Please indicate how often you normally use any of the following venues for outdoor teaching. Answers should reflect normal practice, not current practice if affected by Covid precautions.

	Every week	1-3 times per month	1-8 times per term	1-2 times a year	Never
School grounds	0	0	0	0	0
Farm	0	0	0	0	0
Park	0	0	0	0	0
Nature places (e.g woodland, valley, field)	0	0	0	0	0
Nature reserve	0	0	0	0	0
Seashore	0	0	0	0	0
Outdoors adventure place	0	0	0	0	0
Outdoors historical site	0	0	0	0	0
Other (please specify)	0	0	0	0	0

Which of the following subjects do you teach in the school grounds and what features do you use? Tick as many as apply. (Please skip any that do not apply).

	Small animals e.g. snails	Soil	Small plants, and trees	Natural setting as lesson background	Water	Parts of school building	Boxes with toys/other objects	Exercise equipment	Playground furniture, benches, etc.	Other
Emergent curriculum										
English										
Malti										
Maths										
Science										
Religion/Ethics										
Social Studies										
Art										
Music										
Drama										
PSCD										
ICT										

Section C: Attitudes to outdoor teaching

Please indicate how you feel about the following statements:

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
Children are more motivated to learn during outdoors lessons.	0	0	0	0	0
I am uncomfortable when children get dirty while learning outdoors.	0	0	0	0	0
It is healthier for the children if I include outdoor teaching.	0	0	0	0	0
Children learn more during outdoors teaching.	0	0	0	0	0
Children are more distracted learning outside the classroom.	0	0	0	0	0
Children are physically uncomfortable during outdoors lessons.	0	0	0	0	0
Please indicate how you feel about the following sta	itements:				
Teaching outside the classroom adds value to learning	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
outcomes.	0	0	0	0	0
I don't have enough nature knowledge to use it in my teaching.	0	0	0	0	0
If I include teaching outdoors, I won't finish the syllabus.	0	0	0	0	0
find it quite easy to prepare for lessons outdoors.	0	0	0	0	0
Parents appreciate that I include outdoor teaching.	0	0	0	0	0
I am physically uncomfortable teaching outdoors.	0	0	0	0	0
Please indicate how you feel about the following sta	itements:				
	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
The outdoors spaces in my school grounds are too exposed to the weather.	0	0	0	0	0
Dut-of-school venues are easier for outdoor teaching than my school grounds.	0	0	0	0	0
Health and Safety issues do not deter me from outdoor teaching.	0	0	0	0	0
My school grounds inspire me to teach outdoors.	0	0	0	0	0
There are too many classes sharing the same outdoors spaces in my school.	0	0	0	0	0
it takes too long/is too expensive to go to out-of- school venues.	0	0	0	0	0

Please describe your ideal school grounds teaching space.

6

4

Are there any elements that motivate or discourage you to teach outdoors not mentioned above? (If there are none, please skip this question).

Sector II: Connectedness to indice Sector Process free pictures and back back back pice installanding with the indiced antimicronicet, Placeas areaser agentizenessity with end sizers to your need that.
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Nuture Curree
Naur Cette

Section E: Demographics

Please select:						
0	Male					
0	Female					
0	Non-binary / third gender					
0	Prefer not to say					
Plea	se select:					
0	18-24					
0	25-34					
0	35-44					
0	45-54					
0	55-64					
0	65+					
<	Done					

School Name	School type*
Archbishop's Seminary	С
Attard Primary	S
Bahrija Primary	S
Birgu primary	S
Birkirkara Primary	S
Birzebbuga primary	S
Currently virtual school - pre Covid San Gwann Primary	S
De la Salle College	С
Dingli Primary	S
Fgura Primary A	S
Fgura Primary B	S
Floriana Primary	S
Ghajnsielem Primary	S
Għaxaq Primary	S
Gudja primary	S
Hamrun Primary, G.P.	S
Kalkara Primary	S
Kercem Gozo	S
Kirkop Primary School	S
Laura Vicuna Primary Għasri	I
Lija-Balzan-Iklin Primary	S
Luqa primary school	S
Marsa Primary	S
Marsascala St. Anne	S
Marsaxlokk	S
Mellieha Primary	S
Mgarr primary	S
Mosta Primary A	S
Mosta Primary B	S
Mqabba Primary School	S
Msida Primary	S
Naxxar Primary	S
Our Lady Immaculate School	С
Paola Primary	S
Pembroke Primary	S

Pieta primary	S
Qala Primary	S
Qawra primary	S
Qormi San Gorg	S
Qrendi Primary School	S
QSI International School of Malta	I
Rabat Primary	S
Sacred Heart College	С
Saint Monica School - B'Kara	С
Saint Paul's Bay primary	S
San Andrea School	I
San Anton School	I
San Benedittu primary	S
San Gorg Primary School	S
San Gwann Primary	S
Sannat Primary	S
Sannat primary and special unit	S
Santa Venera Primary	S
Senglea and Vittoriosa Primary	S
Senglea Primary	S
Siggiewi Primary	S
Sliema Primary School	S
St Aloysius College Primary Balzan	С
St Anne Marsaskala Primary	S
St Augustine College Primary	С
St Dorothy's Junior School, Sliema	С
St Dorothy's Junior, Zebbug	С
St Gorg Preca College Pieta Primary	S
St Ignatius College, Zebbug Primary	S
St Joseph Junior School Sliema	C
St Joseph Mater Boni Consilii Paola	C
St Julians Primary	S
St Monica School Birkirkara	C
St Nicholas College Rabat Primary	S
St Paul's Bay Primary	S
St Paul's Missionary College	C

St Thomas More Zejtun Primary A	S
St Venera Primary	S
St. Aloysius Primary School	С
St. Angela Kindergaten - Pieta	I
St. Dorothy's Sliema	С
St. Edward's College	I
St. Julian's Primary	S
St. Monica School B'Kara	С
St. Monica school, Mosta	С
St. Nicholas College, Mgarr	S
St. Paul's Bay Primary	S
Stella Maris College, Gzira	С
Tarxien Primary	S
Valletta Primary Malta	S
Vittoriosa Primary	S
Xewkija Primary	S
Xghajra Primary	S
Zabbar Primary A	S
Zabbar Primary B	S
Zebbug Primary	S
Zejtun Primary A	S
Żejtun Primary B	S
Zurrieq Primary	S
	*S=State;
	C=Church;
	I=Independent

State = 70; Church = 1; Independent = 6