

**How can the use of the outdoor environment contribute to pupils' engagement in
Key Stage 2?**

[5844 Words]

	Targed/Target	Yr hyn yr wyf wedi'i wneud yn yr aseiniad hwn. What I have done in this assignment.
Targed/Target 1	Further synthesis of reading will enhance your understanding of the pedagogical principles.	I have spoken with lecturers and found a wider variety of reading on outdoor learning.
Targed/Target 2	Ensure all referencing is accurate. Refer to Harvard referencing guide on UWTSD website.	I have followed the PowerPoint presentation on Harvard Referencing and spoken with lectures.

Introduction

An aspect of education that interested me is the wide range of uses the outdoor area has in a key stage one classes and how this does not translate into the teaching in key stage two. In my school, every classroom is on the ground floor and has access to the outside area, which includes a forest, however when speaking with pupils from key stage two classrooms, very few could remember using them as part of a lesson. In my class, there is a diverse range of pupils with different learning needs. This includes three MAT pupils, three who are non-statemented ALN, two pupils who require medication for ADHD and three pupils who are generally disruptive through anger and behaviour management issues. This can make engagement to lessons difficult for all pupils as sometimes, these additional learning needs can lead to whole class disruptions.

To conduct our research, I have joined two of my fellow student teachers. The three of us have a background in working outdoors with pupils and have seen first-hand the benefits it can have on children's well-being, concentration and engagement. Our research question is: How can the use of the outdoor environment contribute to pupils' engagement in key stage 2? For my class this will mean keeping a note of usual levels of engagement to classroom activities and seeing how this affects pupils when a lesson is taken outside.

Short Overview of Relevant Literature

Reiss, said that with the passing of each generation, there is less contact with the outdoors than the generation that has gone before. As educators we need to reverse this trend – for the sake of the environment, for our futures and most importantly that of the pupils (Hornton, 2019). A study (Sheldrake, Amos and Reiss, 2019) examined 451 pupils through observations, interviews and questionnaires. The study covered twelve different areas of England with pupils from diverse backgrounds including a variety of ages; a range of levels of previous engagement with nature; differing environmental values; and a split across gender (Walker, 2019). For the purpose of the study nature was defined as everything that is not artificially created (Hartig, Mitchell, Vries and Frumkin, 2014). In the research, they found that 79% of pupils saw an increase in their own wellbeing and self-confidence after they had spent time outdoors and in nature (Sheldrake et al., 2019). Their time in nature also saw benefits to the pupils' learning, as 84% of children found they were capable of successfully completing new challenges (ibid). In addition, 77% of pupils thought they could achieve more in their school work and 79% saw an increase in their personal relationships with classmates and teachers (ibid). The research also shows that children can experience a range of benefits from

regular contact with nature and the wild, the director of The Wildlife Trust has urged the government to allow everyone the opportunities to experience the “joys of wildlife”, by setting aside one hour of the school day for outdoor learning and playing in nature (Hornton, 2019). The authors believe that the use of the outdoor environment and links with nature can help bring authentic learning contexts to the national curriculum as well as overcoming barriers children may have to accessing nature in their home lives, a link to nature they would not otherwise have access to (Sheldrake, et al., 2019). As with all research there are certain limitations, for example the sample size of pupils is only a small percentage of the pupils in the UK, therefore results may not lend themselves to generalization into different areas, pupils, and contexts across the country (ibid). This research has however, backed up findings from 2005 where Kellert found through a society-wide departure from the outdoors, we have forgotten how nature can promote growth and development. The benefits of using the natural environment in education have been found over a number of research projects. The new curriculum for Wales, stresses the necessity of the use of the outdoors as an equal to the indoors (Welsh Government, 2020).

In a similar study conducted in Swansea, both pupils and teachers noticed improvements in pupil's engagement and positive impacts on their health and well-being with learning after adopting an outdoor learning programme (Marchant, Todd, Cooksey, Dredge, Jones, Reynolds, 2019). This effect carried over to the teachers who, after engaging in outdoor learning for at least one hour a week, had an increase to their job satisfaction (ibid) potentially improving relationships between pupil and teacher, and therefore improving learning. Rivkin's (1998) findings further prove that the freedom to be loud and run being expected from the class teacher while pupils are outside, can help to build those relationships with their teacher, rather than being inside and expected to sit quietly. Ouvry (2003) builds on this by suggesting pupils are able to build positive relationships with peers outdoors as there is more space to move easily away from confrontation and frustration. Bilton (2002) also reports that pupils are able to push personal boundaries and grow, without fear of being too loud or messy. During the present study, there were participants with ADHD; Taylor and Kuo (2009) found that pupils with ADHD were able to manage symptoms with access to the outdoors. They called this a “Dose of nature” and believed it may be a cost effective, widely accessible aid for those with ADHD without access to medication (ibid).

Shell's (2003) research clearly shows links between lifestyle and health, including a clear causeway between the amount of screen time and a child's risk of becoming over-weight or obese. This coupled with the changes to diet, increased use and access to technology are factors contributing to the increasing concerns of children's health and well-being (Garrick

2004). Further research supports this, showing healthier and happier children do better in school (Estyn, 2019a). Garrick (2004) also highlights that the majority of a young child's life is spent in the company of adults, completing tasks that do not meet the child's own needs and desires. The majority of the adult population spend a large portion of their time indoors, including work and leisure time. Children pick up on this behaviour and as a consequence are subject to deficient experiences in nature (Bottrill, 2018). Schools in more recent years have taken on the responsibility of providing guidance to pupils on healthy eating and lifestyle, sexual relationships and internet safety in the pursuit of developing pupils to become healthy, confident individuals who are ethical, informed citizens (Donaldson, 2015). Outdoor learning has been defined by Sommerset (2000) as learning both about and in the community, and as part of being an ethical and informed citizen, pupils are required to have knowledge about their culture, community and society, both past and present (Donaldson, 2015).

Educators have been committed to offering experiences of the natural environment to pupils growing up in "unhealthy cities" (Bilton, 2002). The outdoors environment presents children with opportunities to reinforce and develop previously learnt skills from the classroom in an authentic learning context (Stone, 2009; Burriss and Burriss, 2011). Pupils benefit from seeing an effectively managed outdoor environment used by adults (Malone and Tranter, 2003). Outdoor learning is not simply moving indoor provisions outside but should be a miniature microcosm of the world beyond, a natural extension of the indoor classroom (Burriss and Burriss, 2011; Bottrill, 2018). The benefits of learning outdoors can increase classroom engagement in indoor lessons that follow (Kuo, Browning and Penner, 2018; Szczytko, Carrier, Stevenson, 2018). However, simply being outdoors is not enough, it is the combination of the lessons purpose, delivery and experience that enriches the learning experience (Nicol, Higgins, Ross, Mannion, 2007).

Explanation of the Lesson Study Design

The methodology used is lesson study research, which is a form of action research that began in Japan, as a grassroots effort initiated by teachers (Fernandez, 2002). Brought to the UK by Peter Dudley it involves a group of teachers coming together to target and identify areas for development in their students learning and their own practice. Lesson study focuses on the development of teaching practice through a highly specific form of classroom action research (Dudley, 2014) They do this by co-creating the lesson, success criteria and observation schedule, then will observe each person in the groups teaching of the lesson, using peer reviews, interviews of the students and discussion with the other teachers. It has been in use in Japan since the 1870s (ibid). Robinson states that to take part in a collaborative enquiry to

improve teaching practice is the single most impactful step to improving educational outcomes for pupils (Robinson, Hohepa, Lloyd, 2009). As a trainee teacher, we can benefit from the use of lesson study as the observers can see and focus on the things you, as the teacher, may have missed. They are able to give you feedback that can help you understand how you can help all learners in the class.

During the lesson study, we collected qualitative data while conducting a non-participant observation of each other's lessons. Every day we are making observations in and about our surroundings. They are informal and help us to recognise human behaviour and expected social patterns. Although 'The Hawthorne Effect' research showed that the effect of an observer can have more of an impact on the observed rather than the change itself, most believe observation and lesson study are valuable tools for teachers to improve their practice (Adair, 1984). Drummond (1998) suggests that by observing the learning of children can help us make better provisions, by using what we see to identify and highlight the strengths and weaknesses in our learners. The main goal of an observation should always be to help practitioners understand and develop how they can improve their practice based on the learners needs (DCSF, 2008). We are looking at pupil's engagement in the outdoor environment, therefore our observation is structured. Dewey (1938) States that it is important that the observation is backed with the understanding of the significance of what we experience during the observation and the changes that come, when what is seen is acted upon. As a group we have agreed on an observation schedule based on the Leuven scale for involvement. The scale focuses on the extent to which pupils are engaged with particular activities and their willingness to participate (Lavers, 2008). Observation notes were taken on the three pupils chosen in each class (Appendix 1). The three pupils were chosen to approximately represent higher, moderate and lower engagement levels in lessons across the curriculum. Observers marked pupils on the Leuven scale for overall involvement in the lesson as well as making notes on the individuals and general class engagement (Appendix 1.5).

Brookfield said that it is a 'survival necessity' to be able to think critically of your own beliefs, assumptions and actions (1995). A reflection models encourage a structured guide through the reflection process. (Gibbs, 1998; Hargreaves and Page, 2013). As a group we have decided to adopt Brookfield's (1995) four lenses approach. It is made up of four parts; Self-reflection; Students reflection; Peers reflection and finally links to literature. We feel that for our research paper this would work best as we are already working with the feedback of our peers, students and linking it to literacy. What we have decided to add though is a fifth box which we have borrowed from Gibbs (1998) the 'Action Plan' where we discuss what will happen next. This is because we will be teaching three lessons as it is important to use your

reflection to better your practice (Appendix 2). One drawback of Brookfield's reflective module is that the main problem with seeing ourselves through the eyes of the learner is the fact that pupils can be reluctant to be too honest with us (1998). To limit this issue, we used the student class teacher to conduct the interviews because they have had time to build a trusting relationship with the pupils during their placement.

To add to the data, we had collected through observation and reflections, we met with a focus group to ask them a few questions about the lesson and their experience. The sample was chosen at random from the pupils who brought back consent forms in each class. Pupils were sorted in to groups; high, moderate and low levels of engagement. A pupils was picked from random from each group. Interviews are a widely recognised instrument for collecting data (Cohen, Manion, 2016) They allow the participants to discuss their own point of views on the chosen subject through a series of questions. The interview was designed to be semi structured, which meant questions were pre-determined but also allowed the participants freedom to talk around the subject, whilst allowing the interviewer to add any additional questions they feel necessary (Appendix 3). The interviews were conducted by one of the observers and the class student teacher to aid with making the participants relaxed and more honest with their feedback. Data collected was qualitative data. Pupils were able to express their opinions towards the outdoor learning environment and lesson with their own words rather than a numerical scale.

Ethical Considerations

When doing any research in education, the researcher must always operate with respect for all persons involved, including themselves (BERA Guidelines, 2019). Only pupils who consent to take part in the research will have their data recorded and used for the research. Each participant will be briefed on the research question and we will obtain their agreement to take part on the basis of that information (UWTSD 2019). We have attained consent from the school, parents and guardians of the pupils in the class and the assent of the pupils who are willing to be a part of the research. Article 12 of The United Nations Convention on the Rights of the Child (UNCRC) states that the views of a child should be respected (Unicef, 2019). All pupils were briefed that if they wished to withdraw from the research portion of the lesson, they were able to at any point for any or no reason. (BERA Guidelines 2019). At all times during the research, observation and writing of our findings, pupils will be kept anonymous and all data will be secured confidentially in order to protect those involved.

Lesson Study 1 – Results and Analysis

Lesson study 1 took place in school A with Teacher 1 as the lead student teacher. The purpose of the lesson was to record an accurate measurement of six liquid potions. Pupils 1 was sat upright and ready to learn during the introduction to the lesson however their attention was fading towards the end (Appendix 4, Section C). During the interview, pupil 1 was shy and would only offer short sentences in response to questioning. Although the pupil took part in the activity, they were not clear on the purpose of the lesson only the physical actions they took, “We had to collect six potions” (Appendix 6, Question 4). During the lesson, pupil 1 initially stood off from getting involved but with the assistance of the class LSO, pupil 1 took control of writing the measurements for the group, a position the pupil enjoyed (Appendix 5, Section C; Appendix 6, Question 1). One factor that may have led to pupil 1 having scored lower on the Leuven scale was the weather (Appendix 4, Section B; Appendix 5, Section B). Pupil 1 had wet hair and was seen to be “dancing” on the spot when other pupils were measuring the potions (Appendix 4, Section C). During the interview, although she enjoyed the fresh air and was happy to be outside, pupil 1 showed concern for the weather and its unpredictability (Appendix 6, Question 6).

Pupil 2 was more confident in the interview and was happy to give feedback but often needed questions repeated or re-worded, their answers were occasionally off topic. Pupil 2 had an acceptable understanding of the purpose of the lesson, answering first “measure the capacity” of each potion using the measuring jugs available (Appendix 6, Question 4 and 1). Pupil 2 shows high levels of engagement throughout the lesson and is motivated to complete the task (Appendix 4, Section B). Research shows that pupils show more interest when they collect and analyse their own data (Weiss, Banilower, McMahon, Smith, 2001). Pupil 2 is described as “constantly happy” throughout the task and has taken a leading role within their group (Appendix 5, Section C). The pupil talks about their own enjoyment in the lesson, saying they were “really excited for the lesson” and that they felt particularly engaged in the session throughout the interview (Appendix 6, Question 3 and 6). Overall, both pupil 1 and 2 would like to see more lessons outside, stating that the fresh air and space available made the lessons more enjoyable (Appendix 6, Question 8).

During the introduction, pupil 3 was spoken to by Teacher 1 for being disengaged and once outside needed the task repeated on a one to one basis (Appendix 4, Section C). However, once pupil 3 began the practical aspects of the task, they were able to make a strong connection between the instructions and purpose of the task (Appendix 5, section C). Pupil 3 lead their group with confidence and was keen to take part in every aspect of the challenge

(Appendix 4, Section C). Throughout the interview, pupil 3 was comfortable and confident when expressing their opinions and was able to link their answers to previous questions. Pupil 3 remarked that within their home life they spend a lot of time indoors and that it would be “nice” if the school offered more lessons outdoors (Appendix 6, Question 8). Pupil 3 showed high levels of engagement throughout the lesson and built upon this when taking part in the interview, stating that by practically measuring the potions it was more interesting than “paper work” and that they liked to be outside “it was like playing” (Appendix 6, Question 1 and 3).

To improve on our first lesson study, the introduction should have taken place outside. The break between the introduction and the excitement of getting pupils coats, managed to be enough of a distraction for some pupils to start the lesson off task. Due to the lesson taking place outside, I found that the observers needed to move around a lot more to be able to make multiple notes on each of the pupils and could not just stand back and watch. Each of the pupils through the lesson expressed enjoyment in the lesson and showed engagement towards the task (Sheldrake et al., 2019). Through the interview, all pupils state that the freedom of movement and the space the outdoor environment has to offer to be key factors to their enjoyment and wanting more lessons outside (Ouvry, 2003; Bilton, 2002; Rivkin, 1998)(Appendix 6, Question 8).

Lesson Study 2 – Results and Analysis

Lesson study 2 took place in school B with Teacher 2 as the lead student teacher. The purpose of the lesson was to use previous knowledge of heights of mountains and scale them down using divide to compare sizes. Pupil 4 expressed the most enjoyment out of any of the pupils, during the interview, they were comfortable answering questions, interact with other pupils’ answers and occasionally shouted responses in excitement (Appendix 10, Question 5 and 8). Pupil 4 was mostly focused throughout the introduction to the lesson and “very keen to answer questions” sometimes shouting them out (Appendix 8, Section C). Once pupil 4 understood the aim of the lesson, they took control of the group, dividing all of the mountain heights to the correct size needed to show comparison in the lesson (Appendix 9, Section C). This understanding was confirmed during the interview where they were able to fully explain the aims of the lesson and could remember the original height of Mt. Everest (Appendix 10, Question 4). Research at Fairfield Primary School suggests that outdoor learning makes lessons more memorable (Lough, 2020). On the whole this pupil was seen to show the highest level of engagement in the task (Appendix 9, Section B). Pupil 4 credited his “extremely high” levels of engagement to being given the choice of where to work and the fact the lesson was

not continuously stopped because of too much noise (Appendix 9, Section B; Appendix 10, Question 3 and 5).

Pupil 5 was highlighted by Teacher 2 for usually having disruptive behaviour during regular lessons. Although they showed low levels of engagement with the task, his behaviour throughout the session was greatly improved (Appendix 8, Section B). Pupil 5 started the lesson well, sat up and engaged with the introduction and asking other pupils to be quiet (Appendix 8, section C). However, they moved themselves to the back of the introduction and became distracted with the aid of another pupil from the class (Appendix 8, Section C). The pupil required monitoring throughout the session, once the other pupil was removed, pupil 5's concentration greatly improved and took part in scaling down and drawing one of the five mountains (Appendix 9, Section C). During the interview, pupil 5 recognises that they got distracted from the lessons objectives by the freedom to draw with the chalk wherever they could, however, they were able to fully explain the lesson aims and their involvement (Appendix 10, Question 4 and 6). Like pupil 4, pupil 5 also found that the lesson had fewer interruptions and this aided their own behaviour (Appendix 10, Question 6). Pupil 5 is easily distracted in class by interruptions, pupils fidgeting and the general volume of the class and believed that his behaviour outside was better in the absence of distractions (Appendix 10, Question 7).

Pupil 6 was very similar to pupil 1 from the first lesson study. Pupil 6 started of the lesson, very engaged and was shuffling forward during the introduction (Appendix 8, Section C). Throughout the lesson, remained on task but took a limited role within the group, this could be because the groups were mixed abilities and they were not with their friends (Appendix 8, section B; Appendix 9, section C). Pupil 6 was quiet in the interview but discussed how the weather affected their enjoyment of the lesson stating that "it was hard to concentrate on the work" because they were freezing and it was hard to hear the teacher (Appendix 10, Question 1 and 7). Subsequently pupil 6 was unable to recall the aims of the lesson and although not totally against future lessons being taken outdoors, they would prefer fairer weather (Appendix 10, Question 4 and 8).

To improve on lesson study 2, I will look to keep the pupils standing during the introduction and keep it concise. Pupils were cold after sitting on the floor during the introduction to the lesson. Similar to lesson study one, pupils found the freedom of movement to be beneficial to their learning, however, pupils expressed that the behaviour of the class was much better outdoors and there were fewer interruptions to the learning (Appendix 10, Question 8). Research shows that when learning outdoors pupils have improved engagement and a steep

decrease in disruptive behaviours (Szczytko, Carrier, Stevenson, 2018). Kuo (2003) suggests that spending time outdoors can improve pupil's attention, engagement and reduce hyperactivity.

Lesson Study 3 – Results and Analysis

Lesson study 3 took place in school B with Teacher 3 as the lead student teacher. The purpose of the lesson was an investigation to separate solids and liquids. Pupil 7 showed “extremely high” levels of engagement throughout the lesson (Appendix 13, Section B). Pupil 7 showed a great deal of similarities to pupil 4, showing a “superb understanding” of the task both during the lesson and the interview afterwards (Appendix 13, Section C; Appendix 14, Question 4). Pupil 7 also lead their group and spoke well during the interview expressing their enjoyment building relationships and team work with their peers (Appendix 14, Question 3 and 8). Research shows that the space of the outdoors helps pupils to build better relationships with their peers and teachers (Ouvry, 2003; Bilton, 2002; Rivkin, 1998).

Pupil 8 was less engaged in the lesson than the other two pupils (Appendix 12, Section B; Appendix 13, Section B). They were unable to clearly remember the aims of the lesson and only accessed the lesson from the practical parts that they took part in (Appendix 14, Question 4; Appendix 13, Section C). Pupil 8, like pupil 7 enjoyed the ability to work with peers and build on relations but also briefly spoke about the behaviour in the session saying that the outdoors felt calmer “because the teachers weren’t shouting as much” (Appendix 14, Question 5 and 7). Pupil 9 continued this though by suggesting that the “space to take a breather” may have helped those pupils who normally misbehave during lesson (Appendix 14, Question 7). Kuo (et al., 2018) suggests that some teachers are worried about taking pupils outside because they feel they have less control over behaviour outdoors. However, their research shows that the outdoors has a positive effect on subsequent indoor lessons, in fact allowing teachers to teach for longer, uninterrupted periods (ibid).

Pupil 9 showed high levels of engagement throughout the lesson, moving away from their group to complete the writing part of the task, something the pupil has been known to avoid on occasion during lessons inside (Appendix 13, Section B and C). Pupil 9 was overheard praising the outdoor spaces available in the school and their desire to use them more (Appendix 12 and 13, Section C). This sentiment was continued through the interview process (Appendix 14, Question 1, 3 and 5).

Lesson study 3 could have been improved by setting up all of the equipment outside before the lesson. There was a brief pause between getting ready to go outside and starting the introduction, this meant that pupils were standing around and had to be called back to start the lesson. Similar to lesson study 2, pupils saw improved behaviour and enjoyed using the outdoor space. Pupil 7 linked this to pupils actively behaving better in order to have more opportunities to go learn outside (Appendix 14, Question 6). Pupil 3 and 7 both commented on their available access to the outdoors and nature in their home lives, saying that it was limited. Pupil 7 suggested that schools can have a positive effect on pupils' interactions with the outdoors in the home life by exposing pupils to the outdoors more in school (Appendix 14, Question 5). Pupils have expressed they feel calmer, more relaxed and would like more access to the outdoors during the three lesson studies, similar results were found in Sheldrake (et al., 2019) and Marchant (et al., 2019) research.

Discussion of Research findings

The nine case study pupils showed higher than usual levels of engagement during our research and expressed enjoyment throughout the study. Natural England (2016) found that 92% of pupils who took part in their outdoor learning research enjoyed their lessons more when outside and that children were more engaged when the learning took place outdoors. Similar to research by Sheldrake (et al., 2019) and Marchant respectfully (et al., 2019). Denworth (2018) found that when pupils partake in outdoor learning as part of the curriculum, they show significantly more intrinsic motivation and feel more competent in their learning.

During the lesson studies, we found that disruptions to the lessons were reduced and pupils found themselves on task and working well collaboratively. Lieberman and Hoody found that natural settings enable pupils to focus better and enhance cognitive abilities (2005). While researchers in Sweden found that pupils who had regular access to outdoor learning were able to focus for longer than pupils who were predominantly taught indoors (Martensson, Boldemann, Soderstrom, Blennow, Grahn and Englund, 2009). Pupils from all three lesson studies commented on the improvements in behaviour during the lessons taught outdoors. They believed that due to less disruptions they were able to stay on task for longer. Natural England (2016) found that 85% of teachers saw a positive impact on pupils' behaviour and 90% of pupils feeling happier and healthier as a result.

Pupils 1 and 6 found that the weather had a bearing over their enjoyment of the lesson and ability to remain engaged. Both stating in the interview they struggled to focus due to being cold (Appendix 6, Question 6; Appendix 10, Question 1 and 7). Hubbert suggests that when

you are cold, the body uses up energy trying to keep warm and the thought process is interrupted, making it hard to stay on task (2017). Perhaps for future research regarding the outdoors, warm clothes can be available to assist pupils who are not appropriately dressed. Bottrill (2018) comments that the Norwegians believe there is no such thing as bad weather only bad clothing, and given the extreme weather conditions in Norway, they can definitely be considered to have authority on the matter.

Due to the size of the study, the research is limited by its ability to be generalised. We observed nine pupils from approximately ninety, over three classes and three lesson studies. Findings may not transfer to other pupils in different contexts or across the UK. As three student teachers, we have limited experience observing. Therefore, when looking at our research we found our notes to not be thorough enough. Learning from this, in future I would make alterations to our observation schedule to allow for more notes to be taken, prompts of what to look for and set timings to spend with each subject. Finally, with the methodology, I believe the interviews could do with improving. Pupils knowing that this was our last week with them may have compromised their honesty with their answers. Building on this, with hindsight, I would look to add in additional questions on pupil's general engagement in their usual lessons before going into the research question.

Conclusion

In Hattie's "Visible learning" (2018), outdoor learning has a positive rating of 0.43 which is above the 'hinge point' of 0.40. The findings of this lesson study show that the outdoor environment can have a positive effect on engagement, which support the findings of Marchant (et al., 2019). The observations and interviews highlight that not only did pupils see improvements in their own and peer's engagement but also in the class' behaviour and well-being. This supports the theory of Szczytho (et al., 2019) in which the outdoors can see a reduction in the amount of disruptive behaviour. Kuo (2018), believes that appropriate use of the outdoor environment in education could be an inexpensive and convenient way to boost behaviour as well as pupil's engagement. With wellbeing our findings are similar to a recent Estyn report on Crwys Primary school, the outdoor learning program had a positive impact on their wellbeing, as well as a rise in pupil's attendance and academic standards (2019b). Similarly, at Plasyfelin Primary School pupils' wellbeing and enjoyment saw improvement due to investment in their outdoor facilities, pupils arrive at lessons after break, calm and ready to work (Estyn, 2016).

This research saw some limitations due to the weather. It is particularly cold in February and this meant that some pupils were not fully equipped for the lesson. I would recommend for future practice that teachers have extra warm layers available to those who seem to be cold to aid with their engagement in the lesson. During this experience it was clear to see that as a teacher, we do not see everything that is happening in the lesson, and maybe less so when that lesson is taken outside. This has made the use of pupils' feedback more valuable and important going into my future practice. What interested me the most was the variety of answers given during the interview stage, asking pupils what they thought the aims and purpose of the lesson was. This has highlighted the importance of making sure the pupils understand the aims and objectives of the lesson. If pupils start the lesson without this, they are possibly unable to access the full potential of that lesson.

I believe that there is an importance to use the outdoor environment alongside the indoor classroom, allowing pupils to flow between the two like the foundation phase flow between enhanced and structured activities. This is something that I plan to incorporate in my future practice. If it is possible for schools to take on the education of other responsibilities such as sexual relationships, healthy eating and internet safety, then it is worth considering what the schools can do to provide more opportunities for pupils to spend time outdoors. With appropriate and effective use, outdoor learning can benefit pupils' health (Bilton, 2002; Shell, 2003); well-being (Garrick, 2004; Natural England, 2016;); relationships with peers and teachers (Rivkin, 1998; Bilton, 2002; Ouvry, 2003); engagement in lessons (Natural England, 2016; Marchant et al., 2019); learning (Weiss et al., 2001; Stone, 2009;); and behaviour (Natural England, 2016; Szczytho et al., 2018; Kuo et al., 2018), then it makes sense to treat the outdoor environment as an equal to the indoor classroom. The new curriculum for Wales stressed the need for high-quality learning environments, opportunities for authentic learning both indoors and out and the freedom to move between the two (Welsh Government, 2020).

Bottrill (2018) said that buildings are designed to be shelters and suggests by keeping education indoors we are sheltering pupils from the very environment that brings them to life. If the benefits are such as stated in the earlier research discussed, and as found in the present study, then time would be well spent considering how best to incorporate this into the curriculum and my own practice. Not all students have the opportunities for these experiences during their home life and so provision of outdoor learning by schools could almost be considered a necessity.

Recommendations

To take this research further, the presented findings and how they fit in a wider context show a few key areas that could be further developed and explored through more thorough and extensive research. Szczytko (2018) and Kuo (2018) report that classroom engagement in a lesson that directly follows outdoor learning can be increased. During our research, we were not in class after our outdoor lesson and so this is something I would like to see further investigated. Similarly, further research to consider how learning outdoors over time affects students rather than just one lesson. During my practice, this is something I can consider researching when I have my own class and look at long term affects and potential benefits of regular access to the outdoor environment.

Through this research, I have found that with further practice and experience, that reflecting on your own teaching, the learning of your students and their feedback, you can draw on the positives, highlight the improvements and further your own professional practice. In the new Welsh curriculum, teachers are encouraged, where appropriate, to take up a research within their own classroom to highlight and share good practice but and develop our own professional learning (Welsh Government, 2020).

References

- Adair, J.G. (1984). 'The Hawthorne Effect: A Reconsideration of the Methodological Artefact', *Journal of Applied Psychology* 1984, Vol 69, No 2, 334-345. Available at: <https://web-a-ebscohost-com.ezproxy.uwtsd.ac.uk/ehost/pdfviewer/pdfviewer?vid=1&sid=9d1b863d-37f7-4b52-a2c8-30d99357c682%40sdc-v-sessmgr03> (Accessed: 13.02.2020)
- Bilton, H. (2002), 'Outdoor Play in Early Years: Management and Innovation', Second edition. London: David Fulton.
- Bottrill, G. (2018), 'Can I Go Out and Play Now? Rethinking the Early Years', London: Sage Publishing.
- British Educational Research Association (BERA). (2019) 'Ethical guidelines for educational research', fourth edition (2018)'. Available at: <https://www.bera.ac.uk/publication/ethical-guidelines-for-educational-research-2018-online#consent> (Accessed: 10.12.19)
- Brookfield, S. D. (1995) 'Becoming a Critically Reflective Teacher', San Francisco, CA: Jossey-Bass, Inc
- Brookfield, S. (1998). 'Critically Reflective Practice: The Journal of Continuing Education in the Health Professions', Volume 18, pp. 197–205. Available at: <https://www.kent.ac.uk/teaching/documents/academic-practice/New%20to%20teaching%20Staff/Brookfield%20models%20of%20reflective%20practice.pdf> (Accessed: 13.02.2020)
- Burriss, K. and Burriss, L. (2011). 'Outdoor Play and Learning: Policy and Practice', *International Journal of Education Policy and Leadership*, Vol. 6. Issue. 8, Available at: https://search-proquest-com.ezproxy.uwtsd.ac.uk/docview/2123967487?accountid=130472&rfr_id=info%3Axri%2Fsid%3Aprimo (Accessed: 15.02.2020).
- Cohen, L., Manion, L, K. (2016). 'Research Methods in Education', 6th edition. Oxford: Routledge. (pp409)
- DCSF. (2008). 'Practice Guidance for the Early Years Foundation Stage: Setting the Standards for Learning, Development and Care for Children from Birth to Five', Nottingham: DCSF.
- Denworth, L. (2018). 'Brain Waves, Psychology Today: The benefits of learning outdoors', 9th February. Available at: <https://www.psychologytoday.com/gb/blog/brain-waves/201802/the-benefits-learning-outdoors> (Accessed: 20.02.2020).
- Dewey, J. (1938). 'Logic: The Theory of Inquiry', New York: Henry Holt and Company.

- Donaldson, G. (2015). 'Successful Futures', Available at: https://dera.ioe.ac.uk/22165/2/150225-successful-futures-en_Redacted.pdf (Accessed: 14.12.2019)
- Drummond, M.J. (1998) 'Observing children, in S. Smidt (ed.) *The early years: a reader*', London: Routledge.
- Dudley, P. (2014). Lesson Study: A Handbook. Available at: <http://lessonstudy.co.uk/wp-content/uploads/2012/03/new-handbook-revisedMay14.pdf> (Accessed: 10.02.2020).
- Estyn. (2019a). 'Taking Teaching Outdoors', Available at: <https://www.estyn.gov.wales/effective-practice/taking-teaching-outdoors> (Accessed 18.02.2020).
- Estyn, (2019b). 'A report on Crwys Primary School', Available at: [https://www.estyn.gov.wales/sites/www.estyn.gov.wales/files/documents/Crwys%20Prim ary%20School_0.pdf](https://www.estyn.gov.wales/sites/www.estyn.gov.wales/files/documents/Crwys%20Primary%20School_0.pdf) (Accessed 20.02.2020).
- Estyn, (2016). 'Making spaces for play and learning outdoors', Available at: <https://www.estyn.gov.wales/effective-practice/making-spaces-play-and-learning-outdoors> (Accessed: 20.02.2020).
- Faber Taylor, A Kuo, F E (2009), 'Children with Attention Deficits Concentrate Better After Walk in the Park', *Journal of Attention Disorders*, March 2009, 12, 402–409.
- Fernandez, C. (2002) 'Learning from Japanese approaches to professional development: The case of lesson study', *Journal of Teacher Education*, 53 (5), P.393– 405.
- Garrick, R. (2004). 'Playing Outdoors in the Early Years', London: Continuum International Publishing Group.
- Gibbs, G. (1988) 'Learning by Doing. A Guide to Teaching and Learning methods. Further Education Unit', Oxford: Oxford Polytechnic
- Hargreaves, J. and Page, L. (2013) 'Reflective Practice', 1st ed. Polity Press, p.29.
- Hartig, T., Mitchell, R., de Vries, S., & Frumkin, H. (2014). 'Nature and Health. Annual Review of Public Health', 35, p.207-228.
- Hattie, J. (2018). 'Visible Learning: Hattie Ranking: 252 Influences and Effect Sizes Related to Student Achievement', Available at: <https://visible-learning.org/hattie-ranking-influences-effect-sizes-learning-achievement/> (Accessed: 20.02.2020).
- Hornton, H. (2019). 'Learning outside for just one lesson a week boosts learning and behaviour, say researchers', *The Telegraph*, 6th November. Available at: <https://www.telegraph.co.uk/news/2019/11/06/learning-outside-just-one-lesson-week-boosts-learning-behaviour/> (Accessed: 15.02.2020).
- Hubbert, B. (2017). 'How room temperature affects your brain while studying', [blog] 5th December. Available at: <https://www.championac.com/blog/how-room-temperature-affects-your-brain-while-studying/> (Accessed: 20.01.2020).

Kellert, S. R. (2005). *'Building for life: Designing and understanding the human nature connection'*, Washington, DC: Island Press

Kuo, F.E and Taylor, A.F. (2003) A potential natural treatment for attention-deficit/hyperactivity disorder: Evidence from a national study. *Am. J. Public Health* 94, 1580-1586. Available at:

<https://ajph.aphapublications.org/doi/full/10.2105/AJPH.94.9.1580> (Accessed: 18.02.2020)

Kuo, M. Browning M. H. E. M. and Penner, M. L. (2018). *'Do Lessons in Nature Boost Subsequent Classroom Engagement? Refuelling Students in Flight'*, *Frontiers in Psychology*. Available at:

https://www.frontiersin.org/articles/10.3389/fpsyg.2017.02253/full?utm_source=G-BLO&utm_medium=WEXT&utm_campaign=ECO_FPSYG_20180117_outdoor-lessons#B11 (Accessed: 18.02.2020)

Lavers, F. (2008). *'Good Practice Conference: Dynamic Learning in the Early Years'*, Available at: https://www.teachertoolkit.co.uk/wp-content/uploads/2016/03/LeuvenScale_tcm4-735285.pdf (Accessed:11.12.2019).

Lieberman, G. A and Hoody L. L. (2005), *'California Student Assessment Project Phase Two: The Effects of Environment-Based Education on Student Achievement'*, Poway, CA: State Education and Environment Roundtable.

Lough, C. (2020). 'Outdoor learning makes lessons more memorable', TES, 4th February. Available at: <https://www.tes.com/news/outdoor-learning-makes-lessons-more-memorable> (Accessed: 18.02.2020).

Malone, K. and Tranter, P. (2003). *'School grounds as sites for learning: making the most of environmental opportunities'*, *Environmental Education Research*, 9(3): 283–303. Available at: <https://www.tandfonline.com/doi/pdf/10.1080/13504620303459?needAccess=true> (Accessed:15.02.2020).

Marchant E, Todd C, Cooksey R, Dredge S, Jones H, Reynolds D. (2019) *'Curriculum-based outdoor learning for children aged 9-11: A qualitative analysis of pupils' and teachers' views'*, Available at:

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0212242> (Accessed:15.02.2020).

Martensson, F, Boldemann, C, Soderstrom, M, Blennow, M, Grahn, P and Englund, J.E. (2009), *'Outdoor environmental assessment of attention promoting settings for preschool children'*, *Health and Place*, Volume 15, Issue 4. Available at: <https://www.sciencedirect.com.ezproxy.uwtsd.ac.uk/science/article/pii/S1353829209000677> (Accessed: 20.02.2020).

- Natural England. (2016). *'England's largest outdoor learning project reveals children more motivated to learn when outside'*, Gov.uk, 14th July. Available at: <https://www.gov.uk/government/news/englands-largest-outdoor-learning-project-reveals-children-more-motivated-to-learn-when-outside> (Accessed: 20.02.2020).
- Nicol, R, Higgins, P, Ross, H and Mannion, G (2007), *'Outdoor Education in Scotland: A Summary of Recent Research'*, Inverness: Scottish Natural Heritage.
- Ouvry, M. (2003). *'Exercising muscles and minds: outdoor play and the early years curriculum'*, London: National Early Years Network. Available at: https://books.google.co.uk/books?hl=en&lr=&id=nbKoDwAAQBAJ&oi=fnd&pg=PP2&ots=h0MTU3IEeS&sig=1d0SvAKAFwDg-7C6ovtCA9rsVSQ&redir_esc=y#v=onepage&q&f=false (Accessed on 15.02.2020).
- Rivkin, M. (1995). *'The great outdoors: restoring children's right to play outside'*, Washington, DC: NAEYC
- Robinson, V., Hohepa, M., & Lloyd, C. (2009). *'School leadership and student outcomes: identifying what works and why best evidence synthesis'*, Auckland: New Zealand Ministry of Education.
- Sheldrake, R. Amos, R and Reiss, M.J. (2019) *'Children in Nature: A research evaluation of The Wildlife Trust'*, London: UCL. Available at: <https://www.wildlifetrusts.org/sites/default/files/2019-11/Children%20and%20Nature%20-%20UCL%20and%20The%20Wildlife%20Trusts%20Full%20Report.pdf> (Accessed: 15.02.2020).
- Shell, E.R. (2003). *'The Hungry Gene: The science of fat and future of thin'*, New Deli: Atlantic Books.
- Sommerset, B. (2000). *'Outdoor schooling. The Delta Kappa Gamma Bulletin'*, 66, p.45-49.
- Stone, M. K. (2009). *'Smart by nature. Berkeley'*, CA: Centre for Eco-literacy.
- Szczytko, R. Carrier, S.J. Stevenson, K.T. (2018). *'Impacts of Outdoor Environmental Education on Teacher Reports of Attention, Behaviour, and Learning Outcomes for Students with Emotional, Cognitive, and Behavioural Disabilities'*, Frontiers in Education. Available at: <https://www.frontiersin.org/articles/10.3389/feduc.2018.00046/full> (Accessed: 18.02.2020).
- Unicef. (2019) *'The United Nations Convention on the Rights of the Child'*, Accessed from Available at: https://downloads.unicef.org.uk/wp-content/uploads/2019/10/UNCRC_summary-1_1.pdf?_ga=2.118532361.162115570.1575993075-1124967247.1575993075 (Accessed: 10.12.19)

University Wales Trinity Saint David. (2019) '*Research ethics & integrity codes of practice*' Available at: <https://www.uwtsd.ac.uk/media/uwtsd-website/content-assets/documents/research/research-ethics-integrity-code-practice.pdf> (Accessed: 10.12.19)

Walker, R. (2019). '*Spending more time in nature can improve young people's confidence*', UCL News, 7th November. Available at: <https://www.ucl.ac.uk/ioe/news/2019/nov/spending-more-time-nature-can-improve-young-peoples-confidence> (Accessed: 15.02.2020)

Weiss, I. R. Banilower, E. R. McMahon, K. C. & Smith, P. S. (2001). '*Report of the 2000 national survey of science and mathematics education*', Chapel Hill, NC: Horizon Research.