

Design, conduct and critically evaluate a close-to-practice research project (lesson study) focusing on the model of the transformative teacher in developing practice that has a positive impact on the learner.

The issue that interested me when conducting this research project was the use of the outdoor environment affecting engagement within the Foundation Phase. I was interested in this subject as all the Foundation Phase classrooms have access to a private, secure outdoor space within my placement, whereas the Key Stage 2 classrooms do not. In my class, the children are given independent challenges to complete throughout the day when not working with an adult. These activities take place in a range of stations around the classroom including carpet, maths centre, creative centre. Having discussed with members of staff from the Foundation Phase, they all agreed that the outdoor areas are rarely used for enhanced provisions or teacher led activities until the summer term.

Having discussed this with my partner in the same educational setting, we both agreed that the only outdoor activities observed or taught by ourselves were games and physical education, whereas mathematics, language and other everyday subjects were strictly done indoors. Therefore we agreed on the research title 'How can an outdoor environment influence pupil engagement in Foundation Phase?' For my class this means taking an everyday independent enhanced provision that usually happens indoors and using the outdoor area instead. This way we would be able to assess if the children were engaged because of the environment rather than the activity.

Before conducting this research, I looked into this further through articles, books and government documents. This allowed me to gain a deeper understanding on the knowledge needed to conduct this research and also estimate a sensible outcome based on the findings. Outdoor learning has been described as the developmental progression of children becoming knowledgeable about themselves and others including the world and allows children to use a variety of cognitive skills and aptitudes (Banning and Sullivan, 2011 and Joyce, 2012). The first aspect I focused on was the benefits an outdoor environment has on children, their development and their learning. An outdoor environment provides children with an opportunity to take part in active learning. The constructivist approach in education focuses on learning through first-hand experience in order to make sense of what they have discovered, and an outdoor environment promotes trial and error (Bilton, 2011). Theorist, Jean Piaget researched closely on the effects of first hand experiences had on children's development and concluded that it had great impact on children's cognitive development (Whitebread, 2012). This links closely with the Welsh Government (2015) framework for Foundation Phase which main ethos is learning through play and experiences. This is also supported by Hattie's (2018) visible learning ranking, scoring 'Piagetian programmes' 1,20 points, suggesting to be one of the most effective factors in the classroom. However, Piaget believed children all went through the same stages at the same time, therefore overseeing learning as a continuous process and children with additional learning needs (Whitebread, 2012).

Outdoor environments have also proven to have an effect on health and well-being of all ages. According to a research project conducted by the University of Queensland, the scents of outdoors including grass, leaves, trees and fresh air have provided evidence suggesting the reduction in the levels of stress shown by children (The Outward Bound Trust, 2020 and TEDx Talks, 2013). This is backed by theorist Friedrich Froebel, who specialised in learning in the outdoors, stating ‘space and sunlight are essential to learning’ (Pound, 2006: 15). Wilson (2012) suggests that educators should reduce the metaphorical walls between indoor and outdoor environments by allowing as much sunlight and fresh air into the indoors and avoid blocking windows with display work.

An outdoor environment is also known for taking risks, accepting failures and developing resilience. Under the four core purposes, which the chosen school have been embedding ready for the new curriculum 2022, ‘ambitious capable learners’ promotes learners to enjoy challenges by setting themselves high standards (Hwb, 2020). By developing children’s self-confidence and resilience skills, they are able to transfer these to everyday schooling as a mechanism for dealing with difficult situations and therefore enhance engagement levels (RSPB, 2010). On the other hand, the humanist approach to learning in psychology encourages practitioners to meet the needs of the learner emotionally and too much failure will affect the children’s maladjustments (Ryback, 2011). Theorist John Holt, expressed that pushing children to take too many risks will give them timid traits, lack in self-confidence and use all energy in withdrawing themselves from the activity, resulting in total lack of engagement (Ryback, 2011 and Serlin, 2011).

When looking at outdoor learning it is vital to consider the international perspectives of other nations. Scandinavian countries, such as Sweden and Denmark, rely heavily on the outdoors to promote independent learning primarily and thus becoming active, contributing citizens (Aasen et al., 2009 and Maynard and Waters, 2014). Many practitioners believe that as children are naturally curious, they benefit more outside from limited support from the teacher and more from independent play, allowing them to be explorers (Wilson, 2012). From this we decided to take an enhanced provision from the classroom for our research, rather than a teacher led activity. According to the director of National Centre for Outdoor Education at the Linköping University in Sweden, alternating outdoor provisions and indoor provisions allowed teachers to get the best results; however it is vital for them to be knowledgeable on the subject and how to link it appropriately with the curriculum, otherwise it will be unsuccessful (McGurk, 2015). This suggests that the chosen school of research does not incorporate the outdoor provisions into everyday teaching as they may not feel confident in doing so due to lack of training and knowledge. On the other hand, some settings are using Forest School organisations that provide trained staff to promote their ethos of positive relationships, challenge and risk, feeling successful, equal and valued (Forest Kindergarten Association, 2014). Many of these features, including risk, challenge and success link closely with the four core purposes of the new 2022 Welsh Curriculum (Welsh Government, 2015 and Hwb, 2020). This implies that using the outdoors may be a more popular

area of the classroom provision during the new curriculum in order to imbed the core purposes to everyday teaching.

In order to implement this research, a lesson study was carried out. A lesson study runs as a circle; planning, observe, reflect and return to plan and is often implemented within a triad. Lesson studies were developed in Japan and introduced to the United Kingdom in 2001 by educator Pete Dudley after Japan scored significantly higher than the United Kingdom on the Programme for International Student Assessment (PISA) scores. Studies have shown that there are a range of research outlining the benefits of lesson studies including 'greater teacher collaboration, sharper focus among teachers on students' learning, development of teacher knowledge, practice and professionalism, improved quality of classroom teaching and pupil learning outcomes' (Cajkler, et.al. 2014). As I was working in partnership with another student teacher, I felt this method of observation fit the best. On the other hand, lesson studies may not show a true representation of the lesson as children's behaviour/ engagement may alter as they are aware of another adult in the room (Cajkler, et al. 2014). This is known as the Hawthorn effect, where people are aware they are being observed and therefore change their behaviour. This could be giving responses and actions in ways that they believe you want to hear (Kumar, 2011).

When conducting the research project, observation techniques were used when looking at practice and planning for improvements, observations are commonly used within educational settings (Malderez, 2003). Within this research project, non-participant observation technique was used. A non-participant observation requires the researcher to be completely objective within the research and to not interact with the subjects, in this case the children (Palaologou, 2008). However, as I am a teacher-researcher, although I will not be present within the observation, I will ensure my teaching duties are present throughout, for example, class management. Before undertaking this observation, my partner and I discussed exactly what we are looking for within our aims and objectives within the children's behaviour and engagement. The observation method we have decided to use for young participants in a short session is a check list. By using a checklist, it allows us to keep our focus narrow and record information at different intervals throughout the session (Unicomb et al. 2015).

When gathering data within an educational setting, interviews are a commonly used tool. The three main techniques used are structured, unstructured and semi-structured. A semi-structured interview allows the researcher to prepare questions while also allowing room for questions to be asked from the interviewee's answers (DiCicco-Bloom and Crabtree, 2006). When implementing semi-structured interviews, it allows complex answers and follow up questions to gather more detail on the data required, allowing the data to be recorded quickly and efficiently. However, the focus group may be biased with their responses due to the role I play within in the placement class and the age of the pupils. The children may answer with responses they believe that I am looking for in order to please (McGregor and Fernandez, 2019). Due to the young age range within the focus group, both open and closed

questions have been designed in order for the children to have a clear understanding and the structure gives allowance to expand on the closed answers.

Alongside interviews, the non-participant observation used to measure engagement within the lesson study was a Leuven scale. A Leuven scale was developed at Leuven University in Belgium to help practitioners track and monitor children's engagement and well-being (Uren and Stagnitti, 2009). The Leuven scale we decided on had five key areas and ranged from low activity, with total lack of engagement, to sustained intense activity, where the child appears to be completely absorbed in the activity and cannot be distracted. The results of the participants were recorded every ten minutes over a period of 30 minutes all together. This allowed us to observe if the children were more engaged at a certain time of the activity and provided a more accurate result. However, as the Leuven scale only required recordings every ten minutes, if the children were not engaged during this time but were in the lead up to the ten minutes, it would be recorded as low on the scale. Therefore, the time scale of this observation schedule may have been too long to provide precise results (Kumar, 2011 and Unicom et al., 2015).

The focus group chosen for this research included six children from two separate classes, who are usually disengaged within activities, especially independent, enhanced provisions. These children were chosen from previous lesson plan reflections made by myself; discussion with the classroom practitioners and those who fit a criteria of easily distracted, often lack of interest and often lack in concentration on a regular basis (Azevedo et al., 2012). The focus group subjects had to obtain consent from a parent or guardian, and the school as they are the loco parentis and give ascent, following the BERA ethical guidelines (2018) and the University of Wales, Trinity Saint David research guidelines (2019).

The reflections from this lesson study were recorded using Brookfield's four lenses reflective model (Appendix three). The model follows four sections: the autobiographical, the student, our colleagues experience and theoretical literature. I felt this model to be effective as I was working collaboratively with another student-teacher and also able to include the children's reflections around this activity which was obtained through the interview questions (Brookfield, 1998). On the other hand, the four lenses model does not allow progression within practice; whereas Gibbs' reflective model incorporates conclusions and an action plan in order to develop practice further and, therefore may have been more beneficial when looking at suggestions and recommendations for future practice (Paige-Smith and Craft, 2011).

When gathering and recording data, I ensured it was stored on a USB stick which is password protected. Any hard data was also stored within a locked cabinet, such as consent forms from parents. This is in line with the Data Protection Act 1998 stating participants must be aware of where their personal data will be kept, how to access it and how it will be used within the study (Legislation. Gov, no date). In

order to follow the University of Wales, Trinity Saint David's Data protection policy (2019) data was only collected if it was relative to the subject in order to maintain accuracy and reliability.

It is essential to consider the ethical issues that may occur and ensure everything is done to minimise these issues as much as possible when researching within the classroom. When speaking about the children I referred to them as 'Child A/B/C' to keep anonymity. According to the BERA guidelines (2018) participants have the right to withdraw at any time throughout the study with no reason and I ensured this by creating a self-register where the children can move their face to the cross if they do not wish their data to be analysed. This is age appropriate for the children in the class. However, this does not mean they will not take part in the classroom activities. Pupils were told that three children will be interviewed at the end of the session and there is a right to withdraw. It is also important to ensure children's rights when researching. United Nations Convention on the Rights of the Child articles 12 and 16 protect children's views and ensures privacy (UNICEF, no date).

Lesson one involved six children from the Year One classroom (appendix one). The lesson included the children playing a game of transportation bingo, because transport is the class topic. The focus group was made up of mixed ability as the children were chosen if their engagement within the classroom is usually lower than the other children. One child is also going through the statementing process for attention deficit hyperactivity disorder. The children had never played this game before so required adult supervision for the first part of the activity. Once the children had all had a turn and were aware of the rules, adult supervision dropped back and allowed the children to focus on the activity collaboratively. The Year One classroom have been focusing on enabling children to become more independent within the classroom activities and through enhanced provisions. This was one of the main aims to the lessons. The school as a whole have been encouraging the four core purposes ready for the new curriculum in Wales. One of these purposes is 'ambitious, capable learners' which encourages the importance of children seeking challenges and are equipped with the skills ready to learn (Welsh Government, 2015 and Hwb, 2020). Independent learning also enables children to set their own goals and how much motivation and engagement they want to put into an activity (Broad, 2006). According to findings from the journal of teaching in higher education, the key to independent learning was working collaboratively with peers, preferably more knowledgeable, in a relaxed situation (Thomas et al., 2017 and Kellogg, 2017).

Linking to my previous point, the children were put into mixed abilities as the main focus of the research was engagement levels in the outdoor environment and therefore some children were able to work with more knowledgeable others (MKO) in order to complete the activity by working with children in the top ability group. Theorist Lev Vygotsky believed children learn best through a more knowledgeable other, whether this be a teacher or another child (Abtahi et al., 2017). Sonbul and Schmitt (2010) agree with children becoming the MKO, stating that practitioners' influences within a lesson can often

provide too many instructions for the children and therefore a lack of problem-solving skills are used. On the other hand, one of the pedagogical principles suggested by Professor Donaldson for the curriculum for Wales is ‘good teaching and learning means employing a blend of learning approaching, including direct teaching’ suggesting that there is a certain place in the curriculum for teachers to become the MKO (Welsh Government, 2015 and Hwb, 2020).

On the other hand, having mixed ability groups means the activity was not differentiated to suit and challenge the learners to their full potential. Differentiation enables children of all abilities to be successful and achieve attainable goals and targets without comparing themselves to other children in the classroom (Standerfer, 2011). Professional practice (2019) agrees stating ‘learning is optimised when teachers pitch the content and the instruction ‘at or just above’ each student’s developmental level, considered to be their ‘zone of proximal development.’ This is also supported by Hattie (2018) in the visible learning ranking, grading ‘appropriately challenging goals’ at 0,59, above the success cut-off line of 0,40. This suggests that the activity may not have been engaging for some of the children as may have been too easy or too difficult for them, resulting in low levels of engagement. In order to improve this lesson, I would ensure it was differentiated appropriately for the three ability groups to ensure the children were not overly or under challenged in order to maintain a good level of engagement throughout. This also may have affected the outcome of the observation schedule and the overall results of the research (Appendix one). However, this would require the children being in ability groups and having to do three lesson studies to see the focus group in their normal sets.

Lesson two (Appendix two) included six children from the Year Two classroom chosen due to their average levels of engagement within activities: therefore chosen from a mix of ability groups. Within this class, the children complete a teacher led activity, teaching assistant led activity and independent challenges within a challenge workbook. The focus group were working on the challenge books during this research task. The children are given a set of challenges in their books to complete over the week and therefore the focus group were completing different tasks throughout the research. This links to my previous point of independent learning. This is also supported by Hattie (2018) in the visible learning ranking, grading ‘problem solving teaching’ at 0,68, above the success cut-off line of 0,40. When conducting this research, the challenges had already been set at the beginning of the week where the teacher explains each challenge and the children are allowed to start on any one but must complete all tasks. This allows the student autonomy within the classroom and allows the children to take responsibility for their learning. By allowing the students to have autonomy, they may be more engaged within the lesson as they may choose the challenges they enjoy more (Hockett and Doubet, 2017 and Perlman and Webster, 2011).

However, when the children are given challenges to do throughout the week, the work is all pitched at one level rather than being differentiated. This links to the lesson one activity of the collaborative game.

These challenges may have been too challenging or too easy for the children, therefore affecting the levels of engagement within the lesson. Lev Vygotsky's zone of proximal development (ZPD) indicates what a child can do alone, with tools/support and what is out of their reach. In order for children to learn and have the most benefit from an activity, the children need to be in the ZPD, otherwise the children will either struggle or be too advanced and therefore tuning out of the activity (Kellogg, 2017).

On the other hand, by explaining the student challenges at the start of the week, when the children come to do their last challenge they may forget the instructions and success criteria in order to complete the work to a high standard. Hattie (2018) agreed ranked 'teacher clarity' highly with a score of 0,75. This may lower the levels of engagement and therefore affect the results of our research. Within this lesson study, my colleague spent the majority of the time helping the children with their work. While being an active participant within this study, I felt this may have affected the results as the children were receiving support which essentially kept the children on task. I feel that, to have a true perception of the children's engagement within the outdoor environment, a more independent task would have been more suitable for the results to be more reliable and accurate when comparing lessons. Hattie (2018) also agrees scoring 'self-efficacy' highly at 0,92. Self-efficacy also impacts children's self-confidence and self-esteem by allowing the children to use their knowledge and skills to support their peers.

Linking to my previous point, the MKO within the activity in lesson two, was the teacher rather than the students. This was due to the children all working on separate pieces of work, which eliminates the ability to help each other. Peer learning enables the children to develop responsibility for not only their learning, but other pupils as well. When pupils engage in conversation about work it allows ideas to flow and develop positive relationships (Thomas et al., 2017 and Broad, 2006). According to India Today (2018) 'students who engage in an environment of open and free communication, study well and perform better academically.' Allowing children to become the more knowledgeable other in activities links to the four core purposes, which the school have been embedding ready for the new curriculum. Enterprising, creative citizens expresses the need for children to lead and play different roles in teams effectively and responsibly (Welsh Government, 2015 and Hwb, 2020). Independent learning is an effective way in which children take on these roles and responsibilities, and therefore may improve engagement levels. I believe changing the lesson dynamic to more independent based one would have impacted the engagement results and therefore the overall results.

When analysing the children's responses from the interview, the majority of the children, from both focus groups, chose the indoor environment when asked where they would prefer to learn. However, when discussing how the children felt about the lesson altogether, the responses were positive, and the children spoke about how the outdoors makes them feel happy and relaxed. According to a research project conducted by the University of Queensland, the scents of outdoors including grass, leaves, tree and fresh air have provided evidence suggesting the reduction in the levels of stress shown by children

(The Outward Bound Trust, 2020 and TEDx Talks, 2013). The children may have also answered the first question with indoor environments as the outdoors is rarely used within the school for lessons other than games and physical education and the children may be more familiar with the settings and routines of the classroom. Continuity within the classroom enables children to feel secure and safe while also managing time and behaviour (Delceva – Dizdarevik, 2014).

From the research, the Leuven scale allowed us to appropriately gather the engagement levels of the children in Years One and Two (Appendix one and two). From the Leuven scales we can see that the children in Year One fell mainly into the ‘frequently interrupted activity’ and ‘mainly continuous activity’ categories. Also, from the results we can see that the engagement levels in Year One dropped by two of the three children to ‘frequently interrupted activity’ as the children were talking to each other when it was not their turn in the game and watching the environment. This also matches the results of the children in the Year Two class, with two out of three children moving down in the Leuven scale in the last ten minutes of the activity. This may be due to the new environment becoming too distracting for the pupils as other pupils started sharing the outdoor environment for break time; however it should be noted that this was at the other end of a yard and noise levels were still minimal.

Within the Foundation Phase department of the chosen school, the outdoor provisions, although highly accessible to all classes, are dismissed by the staff as they do not believe that the children are more engaged due to factors such as the weather, lack of indoor equipment i.e. whiteboard and classroom management. This was discussed prior to the research. However in this case, from the results it seems to be proven that the children are not more engaged due to the environment. When comparing the results to countries that predominantly use the outdoor environment as a main factor of the learning experience, Sweden frequently score higher in the program for international student’s assessment (PISA) on literacy, numeracy and science than the United Kingdom (PISA, 2018). Even though Wales is slightly below the average of 487 with a score of 483 in reading, Sweden scored 506 points and 502 points in mathematics compared to Wales’ 487 points (Welsh Government, 2019 and OECD, 2018). Although the scores may be higher, there is no indication to say this is due to the use of the outdoors and the impact it has on the children’s engagement during lessons. However, Bridgwater College Children’s Centre Forest School prioritise children with additional learning needs and behaviour issues as they have observed an improvement on the children’s self-control of own behaviour, concentration levels and social and emotional well-being (Pound, 2006). This suggests that a regular routine of outdoor learning affects factors that have a significant impact on engagement levels and therefore, the results of this research may not be reliable as the children do not interact with the environment often enough for the impact to be significant. This also links to the interview response of the Year Two focus group with one child stating he enjoyed the activity being outdoors as it was calmer than the classroom.

After analysing the research data collected from the lesson study, I can see that there are both strengths and limitations to this method. When analysing the data collected from the Leuven scale, it was easy to compare the results from the two classes and find the average engagement level quickly as we presented the data using a checklist. A checklist is common practice within the classroom as it allows practitioners to clearly see children's progression in development (Greig et al., 2007). Another benefit of using the Leuven scale to identify the children's engagement levels is being able to clearly set boundaries between each level beforehand to give a clear indication of what to look for in the research from each colleague. The results of the participants were recorded every ten minutes over a period of thirty minutes all together. This allowed us to see if the children were more engaged at a certain time of the activity and provided a more accurate result. However, as the Leuven scale only required recordings every ten minutes, if the children were not engaged during this time but were in the lead up to the ten minutes, it would be recorded as low on the scale. Therefore, the time scale of this observation schedule may have been too long to provide precise results (Kumar, 2011 and Unicom et al., 2015). For future practice I would record the results every five minutes for more detailed data.

Another research method used to collect data was the semi-structured interview. Using this technique allows participants to give open answers to prepared questions while also allowing the researcher to add additional questions based on the children's responses (McGregor and Fernandez, 2019). Although that aspect was beneficial to the data and allowed the children to talk more about the experience, I felt doing a group interview was not favourable as the children copied the ideas of their friends and therefore did not give honest answers. For example, Child A in the Year Two cohort answered the question 'Where do you prefer to learn?' with 'Inside the classroom', but when Child B responded with 'I liked the outdoors because it was quieter' Child A was quick to contradict their response and agree. This could be due to the age of the cohort being young and they may give responses that they think are correct in order to please. They may also change their answers to match their friends due to social status in the class of fellow pupils and looking for acceptance from them (Malderez, 2003 and Unicom et al. 2015). I felt the children during both interviews started to go off topic when giving the responses which also suggests that they did not understand fully what was being asked. Therefore some of this data has not been discussed as part of the research as it provides no relevance to the questions asked. In order to reduce this issue in future practice I would interview the children separately, so they do not feel pressured to answer the same as others and can ensure the children understand what is being asked: however this does not eliminate the aim to please the researcher. One way to do this if through using anonymous questionnaires as well, although this would have to depend on the children's ability and age. In order to make it age appropriate we could use a scale of one to five and use closed questions, thus providing quantitative data which would be easier to compare and categories the responses of all children (DiCicco-Bloom and Crabtree, 2006 and Cohen et al., 2018).

If I were to repeat this study, I would implement recommendations that I have concluded from the research. One way in which I would do this is by planning and delivering lessons using the outdoor areas on a regular basis with a range of teacher led activities and enhanced provisions before executing the lesson study. This way it eliminates the distractions of a new environment and therefore show a more reliable result in the observation study. When conducting research it is not uncommon practice for researcher to do the same experiment multiple times in order to compare the results and gain an overall trustworthy result (Greig et al., 2007). On the other hand, Bottrill (2018) and Garrick (2009) insists that simply taking indoor activities and implementing them outdoors is not effective practice, and the outdoor environment should allow the children to take more risks, work together, investigate and discover. This suggests that although an important feature of the classroom, the outdoors offers different learning experiences than inside and therefore should have activities that support these opportunities. Beckley (2012) expands on this, stating that the indoor and outdoor spaces share equal importance, emphasizing teachers must plan and organise with the same amount of attention to both areas, with adaption to the activities in order to gain the most from the environment (Johnston and Nahmad-Williams, 2009).

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