

2019

Student ID: 1801774

WORD COUNT: 6,563

DAFYDD DAVIES



Aim of Research

The school issue that interested me was the levels of pupil engagement during different classroom tasks and lessons. In my professional teaching experience 1 (PTE1) school the year 5 and 6 classes have a variety of seating including school chairs, yoga balls, cushions on the floor, bean bags and air cushions. The teachers in key stage 2 found that if the pupils could sit in seating that they actually wanted to sit in then their engagement levels improved. During the second part of my PTE1 I will be moving into the foundation phase (year 1) and I am interested to learn whether we can improve pupil engagement through the use of alternative seating in a foundation phase classroom.

Research Context

The school is a large suburban school in an affluent area of Bridgend area, South Wales. The school currently has approximately 600 pupils on roll. In my reception/year 1 class there are 28 pupils; 17 boys and 11 girls. There is 1 boy and 1 girl who practice English as an additional language (EAL) and there are 3 children with additional learning needs (ALN). The class has 1 full time learning support assistant.

This research was carried out with a research partner also on PTE1. Our research question is 'How can we improve pupil engagement through the use of alternative seating?'. My research partner and I were both placed within the same school for PTE1 and were both in different foundation phase classes. This allowed us to learn how the alternative seating had an effect on engagement within two different classes of children, all of whom were of similar age. We decided to use wobble cushions (WCs) as our chosen alternative seating. WCs are disc-shaped inflatable

cushions strong enough to sit on and when doing so create an unstable surface (Sensory Direct, 2015) (figure 1 and 2).



Figure 1 and Figure 2: Photographs of each side of a wobble cushion on a school chair.

My research partner and I would each observe a whole class lesson delivered by the other. Three focus pupils were selected on their general levels of engagement seen across normal school lessons. The intention of this sample selection is that they will be representative of the population of the class. The focus pupils were then interviewed in a semi-structured group interview following the lesson.

Review of the Literature

I have read into the current literature regarding the use of alternative seating and WCs and their effect on pupil engagement in the classroom. Only in recent years has research focused on the types of seating in the classroom and their effect on pupil engagement and on-task behaviour. Previously, the focus regarding seating in the classroom was how the layout of seating arrangements could affect classroom learning behaviour (Marx, Fuhrer and Hartig, 1999; Rosenfield, Lambert and Black, 1985; Weinstein, 1979). Bronfenbrenner (1979) believed that a pupils' on-task behaviour can either be promoted or inhibited by their interaction with the classroom physical environment. The physical environment encompasses all the elements of the classroom such as the lighting, floors, desks, temperature and seating arrangements to name a few. The type of classroom seating is a typical, often overlooked component of the classroom physical environment (Stapp, 2018). In key stage 2 the physical environment of the classroom is predominantly sedentary in that pupils spend a lot of time in the day sitting at desks (Stapp, 2018). Stapp (2018) conveyed the notion that with few opportunities for pupils to move and expend energy there was an increased incidence of restless behaviour especially in recent years with the increased number of Attention Deficit Hyperactivity Disorder (ADHD) and Autistic Spectrum Disorder (ASD) diagnoses. This notion is reinforced by Strauss (2015) who found that if children sit still for a period of longer than ten minutes deregulation of their physical and emotional senses can be observed, and so decreased movement can lead to an increase in sensory processing issues. Sensory processing is the brain's method for managing sensory input from multiple sources simultaneously and determining appropriate responses (Burgoyne and Ketcham, 2015). Sensory processing usually occurs constantly and efficiently in healthy individuals, however, in those with sensory

processing difficulties this management system can become impeded (Burgoyne and Ketcham, 2015).

In Stapp's (2018) study into alternative seating and pupils' perceptions she found that the use of WCs in the classroom allowed pupils to experience a natural range of movement whilst sitting at their desks giving them greater opportunity for the expenditure of energy and increased sensory integration. She learnt that 80% of pupils concurred that WCs were not uncomfortable and that on average 77% of the sample were engaging at a higher level than before using WCs (Stapp, 2018). There were, however, several limitations to this study. The first being that only a small sample size of 25 participants was used and that they were all fifth-grade pupils (10-11 years old). This means that there is poor external validity and it is difficult to generalize the results to the wider population. Also, data could not be collected from certain students on some days of the study due to absences from school. Additionally, the study observed the same pupils both using and not using WCs instead of having a control group to compare results of engagement behaviour against.

Effective sensory integration is fundamental for effective learning (Schoolcraft, 2018). As mentioned previously, children tend to move and fidget in their seats after sitting for prolonged periods of time because they are seeking sensory input. In children, sensory processing is very much in its developmental stage and therefore all children have the potential to experience difficulties in this area (Burgoyne and Ketcham, 2015). The brain receives sensory information from the visual, vestibular (balance and posture) and proprioceptive (position and movement) systems continuously. By overwhelming the vestibular and proprioceptive systems through increased movement in sitting the brain is better able to filter out extraneous input and select relevant information by becoming more attentive and alert (Burgoyne and

Ketcham, 2015). Therefore, increasing the volume of sensory information the brain receives can aid the learning experience of pupils in the classroom and create opportunities for effective instruction (Burgoyne and Ketcham, 2015; Stapp, 2018; Martinez, 2018; Schoolcraft, 2018; Sadr et al, 2016; Schilling and Schwartz, 2004).

Burgoyne and Ketcham (2015) carried out an observation study on classroom performance using therapy balls as a substitute for traditional school chairs. Therapy balls allow the user to move in a similar way to the WCs whilst remaining seated but allow for a greater range of movement and therefore greater sensory stimulation. Burgoyne and Ketcham (2015) found that the therapy balls created additional opportunities for sensory stimulation and thus resulted in greater levels of on-task behaviours and focus. Nineteen students from a second-grade class participated in the study which is a relatively small sample meaning the generality of the results to the wider population is poor. However, as an observation study it informs future experimental studies to investigate this area further.

A study by Schilling and Schwartz (2004) investigated the effect of alternative seating on classroom behaviour in children with ASD. In this study participants used therapy balls to sit on during classroom activities and the behaviours of interest were in-seat behaviour and engagement. Schilling and Schwartz (2004) found that participants exhibited substantial improvements in both in-seat behaviour as well as levels of engagement with the use of the therapy balls which correlates with the findings of Burgoyne and Ketcham (2015) and Stapp (2018). Children require an optimal state of arousal for learning (Schilling and Schwartz, 2004) and it is reasonable to suggest that the use of therapy balls as alternative seating has the potential to address sensory deficits in children with ASD. A strength of this study is that for one participant it they implemented the intervention without first acquiring an initial baseline

which is a situation which would more closely replicate the implementation of the intervention within the classroom. Some limitations of this study are that only 4 male participants were used, and all had a diagnosis of ASD. This means that the sample size was not extensive enough to generalize to the wider population of those with ASD diagnoses let alone the wider population of children without these additional needs. Also, this study identified that therapy balls were an effective intervention to improve in-seat and engagement behaviour, but it does not address why these were effective (Schilling and Schwartz, 2004).

Mead et al (2016) indicated that by allowing pupils to move more then there could be an increase in alertness and attentiveness which may facilitate learning. This is buoyed by Schoolcraft (2018) who stated that research in education as well as brain research has established that there is a strong link between movement and learning. Although the studies discussed in this literature review all had small sample sizes their results correlate with each other in that alternative seating which allows pupils to move has brought about improvements in learning behaviours in school children. However, Umeda and Deitz (2011) assessed the in-seat and on-task behaviours of children with ASD when implementing the use of WCs. They found that there were no clinically relevant changes in behaviour when using WCs and that the cushions do not augment the postural demands or the sensory stimulation sufficiently to have a positive impact on learning behaviour (Umeda and Deitz, 2011). According to Rahman et al (2018) research regarding the relationship between pupil engagement and alternative seating is still insufficient and more extensive research needs to be carried out in this area.

Research methodology

Our research will utilise a lesson study approach. Dudley (2014, p.1) defines lesson study as “a highly specified form of classroom action research focusing on the development of teacher practice knowledge”. Lesson study involves the collaborative planning, teaching, observation and analysis of the learning and teaching by groups of teachers during research lessons (Dudley, 2014). It is a model which has been seen to work effectively as its paramount focus is on the learning which goes on in the classroom and the progress which pupils make whilst teachers develop pedagogies and strategies to impact a specific aspect of the lesson (Department for Education, 2009). For teachers, the most impactful action they can take to improve outcomes in education is to participate in collaborative investigations to improve teaching and learning (Robinson et al, 2009 cited in Dudley, 2014). According to Dudley (2014) lesson study works because:

- It occurs in real-life classrooms with actual pupils.
- Teachers can see the pupil learning in much clearer detail than would normally be possible
- It involves problem-solving through teacher collaboration.
- Teachers are then able to change how they plan, deliver and support learning as a result of collaborative enquiry.

The limitation of lesson study is that it relies solely on the teachers’ close-up study of pupil behaviours and learning during real-life lessons instead of using external measures of validity to collect scientific data so results can be widely generalized (Lewis et al, 2003). A lesson-study involves a cycle of lessons which are planned

collaboratively, then taught and observed and finally analysed by the lesson study group (Dudley, 2014) which, in the case of this research, was my research partner and me. The methods of data collection used for this action research was non-participant observation, semi-structured focus group interviews and reflection notes.

After planning a lesson jointly with my research partner, I would then teach the lesson with participants sitting on WCs for the duration. During this time my research partner will observe the three focus children. Observation plays an important role in the foundation phase setting of as it offers a method of ascertaining behaviours of individuals regarding a classroom phenomenon in an inobtrusive manner (Johnson and Christensen, 2000). Specifically, non-participant observation was used for this research which requires the observer to not interact with pupils and to remain an objective observer (Palaiologou, 2008).

Observation is an important method of data collection as pupils may not always do the things that they say they will do. So, classroom observations are advantageous as they allow primary data to be collected in a real-world setting where pupil behaviour is more likely to occur naturally (Johnson and Christensen, 2000). Due to the nature of child observation it is important for the observer to be well-prepared and organised, so my research partner and I developed an observation schedule for pupil engagement adapted from the Leuven scale for involvement (Laevers, 1994) (Appendix A). The observation schedule allows the observer to rank the participants on the engagement scale whilst also collecting qualitative observations regarding their engagement behaviour.

As soon as is possible following the research lesson the three focus children will be interviewed in the form of a semi-structured focus group interview to gain insight

about their thoughts and feelings of the lesson. Interviews are one of the most common methods of data collection in small-scale educational research as it can be used to exchange ideas, obtain information and/or canvass opinion giving high quality qualitative data (Drever, 1995). Semi-structured interviews allow the researcher to collect information about participants' circumstances, preferences and explore their motivations and experiences (Drever, 1995). A semi-structured interview involves the interviewer asking a list of pre-prepared questions (Appendix E) starting with more general questions and becoming more specific towards the end. The question list was used as a guide for the process, but the interviewer could allow the discussion to flow from this structure when it was felt appropriate to do so (Drever, 1995). Due to the young age of the participants it was deemed there may have been a need to refocus the discussion regularly.

A representative sample was required to conduct the focus group interviews (Johnson and Christensen, 2000). With the assistance of the class teacher, three focus children were chosen who represented different levels of general engagement in the class; one child had generally high levels of engagement, one child low levels of engagement and one child intermediate levels of engagement. Due to the uneven split of gender across the class two males were chosen and one female. The engagement levels of each of the children also coincidentally married up with their general attainment levels for lesson study 1 e.g. the child with high engagement levels was also high attaining. In lesson 2, two of the focus children were high attainers and one was average.

The interview was moderated by the researcher who taught the lesson as this researcher had already developed rapport with the pupils in the weeks of PTE1 prior to data collection. Also, prior to the commencement of the interviews the researcher

recited a pre-prepared preamble giving the participants information regarding participation, confidentiality and what is expected of them during the interview process (Appendix D). Due to the difficulty of taking notes whilst guiding a discussion my research partner will make notes during the interview and the interview process will also be audio recorded to be analysed later.

Following the lesson and interview the researcher wrote a reflection. Reflective practice is founded on the idea that an individual's knowledge and understanding about teaching is incomplete and tentative, no one can know everything there is to know about teaching (Smyth, 1993). This requires the practitioner to constantly reflect and evaluate their experiences, seek new ideas and try new methods (Zwozdiak-Myers, 2012). This process allows the teacher to enhance their understanding of their own work and its impact on pupils' learning as well as develop their understanding of their self, that being, their own perceptions, beliefs and practices and how these relate to the school context (Townsend, 2015).

We chose to adapt a reflective model to help guide our reflections. We developed a reflective pro forma (Appendix I) based on Gibbs' (1988) reflective cycle. Our reflective model allows the practitioner to follow a cyclical, well-structured and easy to follow method which is applicable to a variety of situations (Husebø et al, 2015). Gibbs' model is a helpful tool to aid students in the early stages of reflective work (Husebø et al, 2015), which my research partner and I are.

On their own the three methods of qualitative data collection utilised for this study (observation, interviews and reflection) are relatively weak. However, when using them in conjunction with each other it allows for the triangulation of data and therefore makes for higher quality results.

Ethical Considerations

This study strictly adhered to the ethical guidelines for educational research (BERA, 2018), the University of Wales, Trinity Saint David (UWTSD) Research Ethics and Integrity Code of Practice and the Education Workforce Council (EWC) Ethical Practice Guidelines throughout. To gain informed consent a letter was sent home to the parents/legal guardians of all pupils in the two classes and returned with written confirmation as to whether they agree to their child participating in the study. Informed consent was collected in line with the school's policy. Assent was sought from the focus children by verbal confirmation and by observing their body language prior to and during the lesson study and was confirmed in the presence of the class teacher. Confidentiality was ensured by omitting the name of the research school and of the participants from any and all data records. Identifiers have been used for the 2 sets of focus children. All data records have been stored securely in a password protected folder on the UWTSD cloud storage until my research partner and I complete the Primary-Postgraduate Certificate in Education at which point it will be deleted.

Lesson 1: Results and Analysis

In lesson 1 all participants met the learning objective which was to "Show an awareness of internet safety and know when to ask an adult for help" as they were all able to answer differentiated questions as an assessment for learning (AFL) strategy concerning cyberbullying and how to stay safe on the internet. In my research I was interested in pupil's engagement levels while sitting on WCs for the duration of the lesson. The three focus children were selected with the facilitation of the class teacher depending on their general levels of engagement across normal lessons, who for the

purpose of this study will be referred to as child 1a, child 2a and child 3a. All lesson 1 observations can be found in Appendix B.

Child 1a was selected as she had generally high levels of engagement during the normal school day. She was ranked at a level 4 to level 5 on the engagement scale as she exhibited continuous levels of engagement throughout the lesson. Child 1a was always willing to offer answers to questions, always being the first in the group to put her hand up. She made strong eye contact with the teacher when listening and when answering questions. When in talk partners where pupils discuss answers to questions in pairs, she tended to lead these discussions but also listened closely to the answers of other pupils when it was time to give feedback. She did not seem overtly affected by the WC.

Child 2a was selected to participate in the study as he displayed a generally low level of engagement during normal school lessons. Following the lesson study, he was ranked as being a level 2 on our engagement scale. For most of the lesson child 2a seemed to be distracted by the WC and on two separate occasions he stood to turn the WC over to sit on the opposite side of it. Child 2a showed some signs of engagement during the slideshow but focused on specific features of the slides, demonstrating a lack of true engagement in the subject matter. Child 2a showed little signs of engagement when answering questions always being the last to put his hand up (which could be a sign of passive, learnt behaviour) or not putting his hand up at all. When he did offer answers to questions he would often deviate from the focus of the question. When working in talk partners child 2a again exhibited low levels of engagement and some vacant periods. However, he was partnered with child 1a for talk partners and she tended to dominate the discussion.

Child 3a was selected as generally he displayed an intermediate level of engagement across normal school lessons. Following the lesson study, he was ranked at a level 4 for engagement. Out of the three focus children child 3a was the one to show most signs of movement on the WC whilst listening to the teacher. This could indicate that he required movement to help regulate sensory information in his brain. Alternatively, he may have just enjoyed the novelty of the movement, something he alluded to in question 3 of the interview (Appendix G). Child 3a became somewhat distracted by the cushion in the middle portion of the lesson and began playing with the bumps on the cushion but still demonstrated signs of engagement as he was still able to provide relevant answers to questions. Child 3a seemed to lose concentration towards the end of the lesson but began moving more on the cushion and subsequently seemed to re-engage in the lesson.

Following the lesson, the focus children were interviewed in a semi-structured group interview to gain feedback on how they felt the lesson went and how things can be improved. All interview questions for lesson 1 can be found in Appendix G. Overall the pupils enjoyed the lesson subject and enjoyed sitting on the WCs for the lesson. Child 3a did not enjoy sitting on the side of the WC with the bigger bumps on it as he found it uncomfortable and distracting, something child 1a agreed with later in the interview process. Child 2a felt it made him more alert and more able to concentrate. When asked to rank how well they each felt they could concentrate on an emoji scale (Appendix F) child 1a and 2a felt they could concentrate the whole time during the lesson whereas child 3a felt he could not concentrate at all.

The focus children came up with some ideas on how to improve the lesson at the end of the interview. My research partner and I took these ideas into account and adapted the slideshow to include more pictures to serve as a source of stimuli for

discussion and to limit the text. Also, we decided to change the text that was on the slides to more child-friendly speak. These changes may allow the pupils to maintain focus for a larger portion of the lesson. They also felt that the teacher was talking for too much of the lesson and that they really enjoyed the talk partners sections of the lesson. My research partner and I felt we should limit teacher talk time and increase the pupil participation for the next lesson.

I also reflected on the lesson to personally identify areas that went well and areas for improvement (Appendix J). My research partner and I decided for lesson 2 to include a period at the beginning of the lesson for the pupils to explore the WCs as prior to this lesson they had never seen them before and were expected to come into the class, sit on them and get on with the lesson. The pupils needed time to look, feel and ask questions about the WCs first so that they might be less distracted by their novelty. Moreover, following this lesson we learnt that some of the participants had a preference as to which side of the cushion they wanted to sit on, and an exploration period could allow them to discover their preference prior to the lesson beginning which would also aid focus for the following lesson. Although differentiated questioning was used throughout the lesson as an AFL strategy another opportunity for AFL could have been utilised at the end of the session in the form of a plenary. My research partner and I decided to include a 'Pupil as teacher' plenary in lesson 2 whereby one or two pupils are chosen to be the teacher and to sum up the main points of the lesson to the rest of the group and then to ask the group questions on what they have learnt.

Lesson 2: Results and Analysis

In lesson 2, all participants met the learning objective as they all answered differentiated questioning throughout the lesson, and all participated in the plenary at

the end of the lesson which allowed the teacher to gauge their learning. For this lesson, three focus children were again selected with the assistance of the class teacher based on their general levels of engagement across normal school lesson. The focus children for lesson 2 will be referred to as child 1b, child 2b and child 3b for the purpose of this study. All observations made in lesson 2 can be found in Appendix C.

Child 1b was selected due to having generally high levels of engagement across normal school lessons. She was ranked as a level 4 on the engagement scale for this lesson as she displayed high levels of engagement throughout. Compared to other participants in the group she remained relatively still on the wobble cushion which could indicate that she has no sensory processing issues. Conversely, it could also mean that the sensory feedback she gained from the bumpy surface was enough to help her regulate sensory information. Child 1b was always eager to answer questions and her answers always linked closely to the question asked and were clear and concise. This demonstrates that she was able to remain focused and engaged in the subject matter for the duration of the lesson. She did, however, turn the cushion over twice during the lesson which could reveal that the exploration period prior to the beginning of the lesson where the pupils had chance to effectively 'climatize' to the WCs may not have been enough time.

Child 2b was selected as he displayed generally intermediate levels of engagement across normal school lessons. He was ranked as being a level 2 overall on the engagement scale following the lesson. However, child 2b exhibited aspects of levels 3 and 4 at the very beginning of the lesson and fluctuated through levels as the session went on finishing the lesson displaying aspects of level 2 and even level 1. Although unwilling to offer answers to questions independently, when prompted he was able to give relevant answers which shows that he was engaging with the subject

matter at some level. However, in situations where questions were posed to the group to vote yes or no, he always waited to see what the majority decided before joining in. This could indicate that he was not engaged during this portion of the lesson and did not even hear the question. On the other hand, this conformist nature child 2b exhibited could be the consequence of a lack of confidence in his own ability.

Child 3b was selected due to generally showing signs of low engagement across normal school lessons. She was ranked a level 2 on the engagement scale following the lesson. At the start of the lesson child 3b was relatively still on the WC with some slight rocking back and forth. This only lasted for approximately ten minutes however, after which her in-seat and off-task behaviour worsened. My research partner informed me following the lesson that child 3b is often easily distracted and constantly moving in class with an excess of energy and that the class teacher is making enquiries in getting her assessed for ADHD. This could explain her exuberance but the initial inhibition of off-task behaviour when using the WC might suggest that for that time the cushion allowed child 3b to self-regulate the sensory information she was receiving and consequently made her more attentive to the lesson. Child 3b became more energetic and disengaged in the lesson as it went on, shouting out answers and needed to be told to sit down regularly. It is possible that although the WC provided a barrage of sensory feedback for child 3b initially compared to what she is used to, it may not have allowed her to move as much as she would have liked to.

The answers to the group interview for lesson 2 can be found in Appendix H In summation, all three of the focus children expressed that they enjoyed the lesson and that they really liked using the WCs. The focus children all agreed that they felt their concentration levels were not negatively affected at all. Following this lesson, the

children could not think of anything from their point of view that they would like to change about the lesson.

The reflection pro forma written by my research partner following the teaching of her lesson can be found in Appendix K. She noticed that all the children showed signs of distraction at some level as the lesson continued and that the lesson tended to be dominated by the higher attainment level children as this was a mixed ability group. She found the changes made to lesson 1 for this lesson had a positive impact overall as there was more time for discussion and pupil participation and secured more engagement. One of the main disruptions on this day was the lesson taking place in the computer suite which was constantly being entered and exited by staff and other pupils who were using the photocopier.

As no suggestions could be made by the focus children on how they would like the lesson to be improved, any adaptations to the lesson for future teaching are based solely on my research partner's reflection of the lesson. We decided that for future teaching pupils should be grouped in ability levels as this may resolve the issue of the higher attainment level pupils dominating the lesson and the lower attainment pupils from losing interest (Tereshchenko et al, 2018). Also, the school could be informed that a research lesson is taking place in future and that no one is to enter the classroom while the lesson is in progress. This would minimise any minor disruption caused by external sources. Finally, for future teaching utilising WCs it would be a good idea to pilot the use of WCs in the classroom first so that the pupils are comfortable with them and not so distracted by the novelty of their use. Even though the climatization period at the beginning of this lesson seemed to reduce the distraction of the pupils compared to lesson 1 they were still very interested in them.

Discussion

Dunn et al (2002, cited in Rahman et al, 2018) suggested in their study that there is an association between physical stimulation and engagement, whereas Baker et al (2001) indicate that an association existed between sensory stimulation and engagement. One of the most common and steadfast barriers to learning is disengagement in the task (Baker, 2007; Dixon and Salley, 2007; Lemnov, 2010, cited in Stapp, 2018). Alternative seating, and in the case of this study WCs, aimed to address both physical and sensory stimulation to improve engagement and consequently improve learning in the classroom.

Overall, we found out that using WCs can, in some cases, improve engagement levels in school children. However, the effectiveness of dynamic, alternative seating differs according to the individual using it and future prescription of said seating should depend on the pupil's response to it (Sadr et al, 2016).

Child 3b responded well to the WC initially, focussing on the lesson and showing signs of engagement for approximately 10 minutes before her behaviour became more energetic again and she lost concentration in the lesson. It is difficult to say why her behaviour started to change after 10 minutes. It is possible that she may have exhibited greater concentration on other types of alternative seating such as therapy balls which allow a greater range of movement because, according to Rahman et al (2018) some children have a need to move more than others. Child 3b is currently in the second from top ability group in her class but due to her erratic and energetic behaviour it is difficult to get her to stay on-task. Stapp (2018) stated that if children are more engaged in the lesson then this allows for more teaching time which has been shown to improve learning. It could be inferred that using alternative seating

more with child 3b could improve her on-task behaviour and therefore her learning. This is an area which requires further investigation.

Across the two lessons the two children who were seemingly unaffected using WCs were also the two students with the highest attainment levels (child 1a and child1b). This is noteworthy as it could imply that these pupils do not have any issues with sensory processing and could also suggest that this is the reason why they are such high achievers in school. As they are less distracted by the need to seek sensory stimulation or expend excess energy, they are more able to focus on the learning. However, these notions would need to be investigated in future studies.

All participants in lesson 1 were seemingly more distracted by the WCs compared with the participants in lesson 2. This could be because lesson 1 participants had no time to acclimate to the WCs beforehand like in lesson 2. This acclimation period is important when introducing an intervention into the classroom as it minimises the disruption caused by the novelty of using, in this case, the cushions. A study by Umeda and Deitz (2011) which investigated the effects of WCs on classroom behaviours included a 1-week acclimation phase to allow participants time to adjust to the cushions so not to bias the results.

For my class these findings could indicate that there would be little benefit to the use of WCs for high achievers with already high levels of engagement. Generally, the use of WCs improved the engagement of those with lower and intermediate levels of engagement. However, when implementing the use of WCs with the wider class it is important to consider that all pupils are individuals and will react in different ways to the cushions. Therefore, baseline levels of engagement need to be formally acquired beforehand and then pilot and trial periods of use of WCs should follow to both

acclimate the pupils to their use as well as gauging the pupils' reactions to them. Following this, better prescription of alternative seating for engagement can be established. This concept correlates with that made by Goodman et al (2014, p.136) who stated, "educators need to evaluate the individual needs of their students when determining whether the balls should be used a sensory modulation technique". Most of the research in the literature review reported positive improvements in the engagement levels of the participants, although the current study saw some improvements in engagement for periods of the lesson, they were not substantial.

Conclusion

The reflection model used for this study was adapted from Gibbs' (1988) reflective cycle. Gibbs' model of reflection has garnered criticism over the years for encouraging a more superficial form of reflection (Atkins and Murphy, 1993). The reflective cycle does not enable the user to be reflexive or critical in their approach and does not allow them to view the experience from someone else's perspective (Middleton, 2017). As a result, there may be a lack of depth in the learning from the reflection using this model. In future educational research it would be beneficial to use a different reflective model to enable deeper reflection and learning such as Brookfield's (1995) four lens model of reflection. This model allows the teacher to reflect on the experience through the eyes of the pupils and of colleagues providing more gravity to the experience. Even though Gibbs' model can be helpful to those who are just starting out doing reflective work it has been said by Husebø et al (2015) that it is a tool which should be discarded with as soon as possible.

Although the semi-structured focus group interviews all ran seemingly smoothly there are limitations of interviews as a research method. One limitation is that some participants of the interview may dominate the discussion whereas others may contribute very little (Drever, 1995). It is important that there is an established trust between the interviewer and the interviewees as a lack of trust could result in biased research data (Johnson and Christensen, 2000) where the interviewee may be less forthcoming with information. This was prevented by the researcher who taught the lesson being the one to moderate the interview. One of the major limitations to interviews is that conducting an interview requires skill. The interviewer must know when to prompt and when to probe for answers and to be able to explain misunderstandings and ambiguities in questions (Drever, 1995).

Classroom observation as a data collection method has several limitations. Firstly, and perhaps most importantly, the pupils may act differently when they know they are being observed (Johnson and Christensen, 2000) often referred to as the Hawthorne effect or observer effect. A second limitation of classroom observation is that although behaviours may be witnessed it may not be possible to establish why an individual has behaved the way they have. Finally, a third limitation of observation is that, generally, it takes a long time for observations to be collected (Johnson and Christensen, 2000).

The research tool used for observation places children on an engagement scale. My research partner and I found that it was difficult to place some participants on the scale as their levels of engagement tended to fluctuate throughout the lesson. Although the same engagement scale was used by each researcher when observing participants there is a degree of subjectivity when concluding where the focus children rank on the scale. Similarly, what one researcher deems a noteworthy behaviour when

observing may not be deemed noteworthy by the other. This coupled with the fact that the observation tool was not piloted prior to the study calls into question the inter-rater reliability and therefore the validity of the results.

Neither the wobble cushions nor the observation collection method was piloted prior to the study. Piloting is the process of testing data collection methods to ensure inadequacies can be noted and rectified before research begins (Hassan et al, 2006). If I were to conduct this study again, I would pilot the use of wobble cushions in normal school lessons so the pupils could acclimate to their use. I would also pilot the method of observation data collection as this would improve inter-rater reliability. Also, if I was to use a lesson study design again for research, I would include more cycles of lessons. Dudley (2014) states that lesson study should take place over at least three lessons. Our study utilised only two which does not provide an adequate quantity of acceptable data.

In conclusion, this study has shown that there is an association between alternative seating in the classroom and engagement, but the study was limited to only 2 lessons with no piloting of methods prior to research. A lack of substantial evidence was able to be collected but this does inform future research. It is important to remember all children are individuals and will all react differently to WCs (Sadr et al, 2016). Although literature reviewed in this study supports the positive relationship between alternative seating and engagement, further research should be carried out to investigate the relationship between alternative seating and learning (Rahman et al, 2018).

References

- Bronfenbrenner, U. (1979) *The ecology of human development*. Cambridge, MA: Harvard University Press.
- Burgoyne, M. E. and Ketcham, C. J. (2015) 'Observation of Classroom Performance Using Therapy Balls as a Substitute for Chairs in Elementary School Children' *Journal of Education and Training Studies*, 3(4), pp.42-48. doi: 10.11114/jets.v3i4.730.
- Department for Education (2009) *Improving subject pedagogy through Lesson Study*. Available at: <https://webarchive.nationalarchives.gov.uk/20110711163751/https://www.education.gov.uk/publications/eOrderingDownload/00937-2009BKT-EN.pdf> (Accessed 27th January 2019)
- Drever, E. (1995) 'Using Semi-structured Interviews in Small-scale Research: A Teacher's Guide'
- Dudley, P. (2014) *Lesson Study: A Handbook*. Available at: <http://lessonstudy.co.uk/wp-content/uploads/2012/03/new-handbook-revisedMay14.pdf> (Accessed 27th January 2019)
- Inceçay, G. (2010) 'The Role of Teacher Talk in Young Learners' Language Process', *Procedia Social and Behavioural Sciences*, 2, pp.277-281.
- Johnson, B. and Christensen, L. (2000) *Educational Research: Quantitative and Qualitative Approaches*. Needham Heights, MA, US: Allyn and Bacon.
- Laevers, F. (1994) 'The Innovative Project Experiential Education and the Definition of Quality in Education', in Laevers, F. (ed.) *Defining and Assessing Quality in Early Childhood Education*. Belgium: Leuven University Press.
- Lewis, C., Perry, R. and Murata, A. (2003) 'Lesson Study and Teachers' Knowledge Development: Collaborative Critique of a Research Model and Methods', *Annual Meeting of the American Educational Research Association*. Chicago, IL.
- Martinez, D. (2018) 'Flexible Seating Favors Focus' *International Educator*, 33(1), p.34.
- Marx, A., Fuhrer, U. and Hartig, T. (1999) 'Effects of Classroom Seating Arrangements on Children's Question-Asking', *Learning Environments Research*, 2, pp.249-263.
- Mead, T., Scibora, L., Gardner, J. and Dunn, S. (2016) 'The Impact of Stability Balls, Activity Breaks, and a Sedentary Classroom on Standardized Math Scores' *Physical Educator*, 73(3), pp.433-449.
- Palaiologou, I. (2008) *Childhood Observation*. Cornwall: Learning Matters LTD

Rahman, J. A., Zahari, N. Z. M., Jasmani, I. and Kamarudin, Z. (2018) 'Review of an Alternative Seating for Attention Deficit Hyperactivity Disorder (ADHD) Children' *International Journal for Studies on Children, Women, Elderly and Disabled*, 3, pp.103-109.

Robinson, V.M., Hohepa, M. and Lloyd, C., (2007). *School leadership and student outcomes: Identifying what works and why* (Vol. 41). Winmalee: Australian Council for Educational Leaders.

Rosenfield, P., Lambert, N. M., & Black, A. (1985) 'Desk arrangement effects on pupil classroom behavior' *Journal of Educational Psychology*, 77(1), pp.101-108.

Sadr, N. M., Haghighi, H. A., Samadi, S. A., Rassafiani, M. and Bakhshi, E. (2016) 'Impact of Air Seat Cushions and Ball Chairs on Classroom Behavior of Students with Autism Spectrum Disorder' *Journal of Rehabilitation*, 17(2), pp.136-147.

Schilling, D. L. and Schwartz, I. S. (2004) 'Alternative Seating for Young Children with Autism Spectrum Disorder: Effects on Classroom Behavior' *Journal of Autism and Developmental Disorders*, 34(4), pp.423-432

Schoolcraft, N. (2018) 'Student and Teacher Perceptions of Stability Balls as Alternative Seating in a First Grade Classroom' *The Journal of Teacher Action Research*, 4(3), pp.90-111.

Sensory Direct (2015) *Wobble Cushions for Active Sitting*. Available at: <https://www.sensorydirect.com/2015/05/wobble-cushions-for-active-sitting/> (Accessed 23rd January 2019)

Smyth, J. (1993) 'Reflective Practice in Teacher Education', *Australian Journal of Teacher Education*, 18(1).

Stapp, A. (2018) 'Alternative Seating and Students' Perceptions: Implications for the Learning Environment', *Georgia Educational Researcher*, 14(2), pp.35-50.

Strauss, V. (2015) 'The decline of play in preschoolers and the rise in sensory issues', *The Washington Post*, 1st September.

Townsend, A. (2010) 'Action Research', in Hartas, D. (ed.) *Educational Research and Inquiry: Qualitative and Quantitative Approaches*. London: Continuum International Publishing Group.

Umeda, C. and Deitz, J. (2011) 'Effects of Therapy Cushions on Classroom Behaviors of Children with Autism Spectrum Disorder' *The American Journal of Occupational Therapy*, 65(2), pp.152-159.

Weinstein, C. S. (1979) 'The Physical Environment of the School: A Review of the Research', *Review of Educational Research*, 49(4), pp. 577–610.
doi: [10.3102/00346543049004577](https://doi.org/10.3102/00346543049004577).

Zwozdiak-Myers, P. (2012) *The Teacher's Reflective Practice Handbook*. Oxon: Routledge