

Research into questioning in the classroom
Can 'basketball' questioning increase pupil
participation during a lesson?

	<u>Target</u>	<u>What I have done in this assignment.</u>
<u>Target 1</u>	Aim to present an argument based on readings and alternative viewpoints to develop my cognitive skills.	In this assignment, I have ensured that I improve on this target by presenting arguments for and against in order to develop my cognitive skills.
<u>Target 2</u>	Develop my ability to critically evaluate my practice giving more depth to your judgements.	In this assignment, I have ensured that I improve on this target by ensuring I am critical on my judgements.
<u>Target 3</u>	Proof read in order to improve upon sentence structure and referencing.	In this assignment, I have ensured that I improve on this target by proofreading my work.

The intended purpose for this research proposal was to research how different types of questioning techniques used within the class can affect pupils participation throughout. The issue that interested me to carry out this research proposal was introduced by Critelli and Tritapoe (2010) who proposed that the use of effective questioning techniques in the classroom structured frequent pupil participation enhancing pupil's learning experience. Thereby, in my placement school, I was interested in looking at how different questioning techniques may enhance or diminish pupils participation as I had noticed during my professional teaching experience that certain pupils would participate more than others during class teaching. Furthermore, by following different questioning techniques, I intended to see if pupils participation would differ in my class by focusing upon prior knowledge of those pupils who always tend to participate and those pupils who never tend to participate through questioning.

For the purpose of this research proposal, I will describe the setting context to allow further understanding to be gained by the reader. After discussing my interest with my two student-teacher colleagues at my placement school, we came to an agreement that we were all interested in looking at how different questioning techniques may affect pupils participation. Thereby, myself and my two student-teacher colleagues decided upon our research questions as "Can 'basketball' questioning increase pupil participation during a lesson?". This research action was proposed to take place over a period of two days at our placement school involving the use of 3 lessons; one lesson per student-teacher.

The first lesson took place in my colleagues classroom which was a year 5 class involving 21 pupils. The second lesson took place in my colleagues classroom which was a year 4 class involving 31 pupils. Lastly, in my teaching class, the research proposal took place in a mixed year 3 and 4 classroom environment involving 29 pupils. Prior to carrying out the lesson study, myself and my student-teacher colleagues chose 3 pupils from our classes to observe in the lesson study. In order to choose 3 pupils, we decided to focus upon one pupil who generally would participate a lot, one pupil who generally would not participate and one pupil who would generally be placed in the middle in regards to their participation.

The decision for this action research looking into different questioning techniques and its relationship with pupils participation was followed by the reading from Spendlove (2009) who promotes the idea that research has previously shown how educational practitioners tend to

recognise and give their attention to pupils who appear to have the correct understanding or answer. By this, Spendlove (2009) argues that teachers may fail to engage pupils in participation, particularly if they have a low understanding of the lesson itself. In order to combat this issue, key theorist Dylan Williams (2011) advocates the importance of using a range of questioning techniques as a form of assessment for learning. Black and William (1998) define assessment for learning particularly through the form of questioning techniques as a process of continuously interpreting and collecting data on where pupils are at with their learning and how they can move forward. This reading helped us refine our action research question to include how questioning can affect pupils participation.

Before looking into relevant literature, it is important to define the term 'basketball' questioning; one of the two questioning techniques we decided to focus upon throughout this action research. Roberts (2020) defines 'basketball' questioning through the ideology that questions and discussions are moved between pupils in the classroom creating enriched authentic discussion from answers. In relation to this, Barlett (2015) defines 'basketball' questioning as when questions and answers are 'bounced' around the classroom. Barlett (2015) states that by applying the use of 'basketball' questions in a classroom, it can ensure that questioning can be successively developed between pupils and is particularly effective as a use of assessment to inform learning. In support of basketball questioning in particular can be seen through the work of Walsh and Sattes (2015) who argue that 'basketball' questioning encourages pupils to build on each others thinking and experiences. Wales and Sattes states that although there is still evidence of teacher scaffolding, it allows pupils to gain more independence through student interaction and collaboration. Another theorist Pope (2014) who is also in favour of basketball questioning advocating that this form of assessment for learning invites other students to participate in a group initiation-response-feedback approach. However, this approach to questioning is viewed as critical to some. Kelly (2010) is critical of 'basketball' questioning arguing that some pupils may feel reluctant to take part whilst some pupils may try to dominate. This is backed up by Cruickshank (2009) stating that students with low self-concept respond poorly to this technique and are often discouraged by it due to the fear of failure in front of their peers. Despite this, Cotton (2009) acknowledges that 'basketball' questioning is effective as it allows pupils to build their confidence and increase the likelihood of providing future responses.

Before looking into relevant literature, it is important to define the term 'ping-pong' questioning; the second questioning technique we decided to focus upon throughout this action research. Barlett (2015) defines 'ping-pong' questioning as when a question is posed from the teacher to the pupil who will respond to the answer straight back to the teacher. For the benefit of this action research, myself and my student-teacher colleagues decided to use lollypop sticks for this approach. Spendlove (2009) argues that the use of lollypop sticks allows the use of random pupils to be identified and thereby pupils are more likely to be aware that they may be chosen to answer a question. In support of the use of 'ping-pong' questioning is Wragg and Brown (2001) who state that lessons where the questioning is effective are shown in a classroom climate whereby pupils have the opportunity to take risks and make mistakes. In addition to this, Holt (1995) argues that through the use of 'ping-pong' questioning, it allows pupils to develop their self-esteem as certain pupils simply will not take part in 'basketball' questioning as failure is seen as easier to accept than participating for pupils. Furthermore, Goodrich (2012) states that through the use of using 'ping-pong' questioning, it steers away from the consistent hand raiser dominating the classroom. Despite this, a critique of 'ping-pong' questioning is produced through Berk's (2009) perspective arguing that it does not allow discussion and pupils opinion to be shown.

For the purpose of this research proposal, I am going to talk about my lesson study design in greater detail to enable the reader to gain a further understanding. The methodology that I used throughout was a lesson study research; a form of action research whereby educational practitioners collaboratively work together to observe and analyse research lessons. Dudley (2011) argues that the use of lesson studies are highly successful in that it collects information and vital practitioner knowledge to teachers who in turn may miss it due to the complex, hectic working environment of a school classroom. To facilitate Dudley's argument, Lee (2008) argues that through the methodology of a lesson study research, teachers can acquire new insights into their teaching, reflecting upon how to improve their practice. Thereby, the methodology in this research proposal involved the process whereby my two colleagues at my placement school observed my lesson and in turn I observed both of theirs.

The method of data collection involved the process whereby my two colleagues at my placement school observed my lesson study as a non-participation to reflect upon the findings of the lesson. Scott and Marschall (2009) states that non-participant observation is a type of research technique in which researchers observe the participants in the study with

their knowledge but do not actively take part in the lesson. This meant that I made pupils aware at the start of the lesson that my two student-teacher colleagues would be present throughout the lesson. In relation to this, I reassured pupils to act as normal as possible and carry out tasks how they normally would on a day-to-day basis. A critique of ethnographic research comes from the well-respected work of Lansberg (1920) who argued that observers in the classroom may create a 'Hawthorne effect' on those being studied as pupils may have acted differently. In support of this comes from the work of Wilson (1977) who argues that the presence of a researcher may influence the norm behaviour of the pupils being studied. However, due to the nature of this action research proposal, it was unavoidable to not have my colleagues observing and recording data.

Following on from this when observing each other's lesson study, myself and my colleagues created an observation schedule prior to carrying out this action research (appendix 1,2 and 3). The observation schedule allowed observers to record data through the method of a tally chart, used when pupils in the study participated through the method of a ping-pong question or a basketball question. As stated above, three pupils were chosen prior to the lesson study based on their usual level of participation in class; labelled pupil 1,2 and 3. From the use of the observation schedule, there was a creation of quantitative data collected. The Organisation of Economic Cooperation and Development (OECD, 2001) states that quantitative data is expressed in terms of a certain quantity or amount. Regarding this action research, we gathered quantitative data by using a tally chart. I believe this was successful in using it as it can be communicated easily and effectively to others who may be analysing the results (Kelle, 2008). Despite this, Savela (2018) is critical of quantitative data arguing that results are much less limited in providing detailed narrative.

Another way in which non-participant observations was collected was through the use of semi-structured interviews. Galletta (2013) defines semi-structured interviews as incorporating open-ended relevant questions and thereby not following a formalised set of questions. Prior to carrying out this research action, myself and my student-teacher colleagues designed open-ended questions [appendix 4,5 and 6]. These questions also had prompt questions in order to probe extra information from pupils. In support of semi-structured comes from the well-respected work of Silverman (1993) who argues that semi-structured interviews permits flexibility of discussion allowing pupils to raise issues and matters on their own accord. I believe this was an effective tool to use in the action research proposal as it allows un-bias evidence to be gained from pupils in how they have

the flexibility to be discussed from their own autonomy. In relation to this, in order to ensure reliability and validity of the evidence gained, myself and my colleagues transcribed the interviews to help us analyse findings (appendix 7) . Despite this, it can be argued that semi-structured interviews are time consuming and are often interpreted in different ways (Mitchell et al 2010) By this, I argue that the open-ended questions may have caused pupils to interpret in different ways.

As stated previously throughout this research, myself and my colleagues choose 3 pupils to observe in each lesson which were therefore selected for the focus group. Nyumba et al (2018) states that focus groups are a popular form of obtaining qualitative data and is appropriate for this research design in purposely selecting a sample of pupils. In support of focus groups comes from the work of Krueger (2000) who promotes the idea of using focus groups in research as it promotes self-disclosure among participants. By this, I argue that pupils may feel more comfortable using focus groups semi-structured interviews rather than individual interviews. Despite this, it is also important to acknowledge that some pupils may have felt more uncomfortable in a focus group interview rather than an individual interview. Following on from this collection of qualitative data, myself and my colleagues transcribed these recorded interviews. Regarding the sampling of choosing participants, myself and my colleagues each chose three pupils based on knowledge of their previous participation in lessons. Finally to reflect upon, myself and my student-teacher colleagues created a reflective model following Gibb's 'model of reflection' in which we used after our lesson studies (appendix 9).

Prior to carrying out the research proposal, there were ethical considerations that myself and my colleagues needed to take into consideration. Prior to the research proposal, myself and my colleagues each submitted an ethics form to University of Wales, Trinity Saint David who abide by British Educational Research Association (BERA) ethical guidelines. As the research was to be taken part in a school classroom environment, it must be conducted ethically in order to minimise any risk or harm to participants or researchers. One ethical consideration I took into account was through the use of providing participants and their guardian a consent form whereby participants had the opportunity to assent or withdraw from any research activity (appendix 8). This consent form allowed participants to state they would assent to participate in the semi-structured interviews. In addition to this, the consent form also provided information about how myself and my colleagues would be obtaining data from the semi-structured interview through the use of audio recording stored in a safe

encrypted storage. Upon completion of transcribing the semi-structured interviews, the raw data would be destroyed following the BERA's (2018) ethical guidelines. Furthermore, all participants were all confirmed that the research proposal was anonymous and confidential. There are other ethical considerations with during research in a class which are the risks to participants, investigators and the university which are stated on the ethical form (appendix 8).

The first lesson involved myself and my student-teacher colleague 1 observing my student-teacher colleague 2 teacher. This lesson was based in a year 5 classroom setting involving the attendance of 21 pupils. For the context of the reader, this lesson was based around the objective of pupils learning about the effect of drugs and alcohol on the body. Myself and student-teacher 1 observed this lesson focusing upon the participation of 3 pupils who had been identified as the focus group from student-teacher 2. These 3 pupils were observed to look at their participation during questioning techniques.

After reflecting and analysing upon student-teacher 1 observation schedule (appendix 1), it is clear to see that pupils achieved the lesson goal of participation during two types of questioning techniques; ping-pong and basketball. This can be seen through the quantitative data recorded in appendix 1. Through the method of using a tally chart when pupils responded through questioning, this allowed myself and my colleagues to generate quantitative data. In support of the collection of quantitative data comes from the work of Jovancic (2019) who states that quantitative data collection methods are usually seen as objective and reliable of what has occurred throughout this lesson. This is shown in appendix 1 whereby all pupils participated the same or more through the technique of using 'basketball' questioning in comparison to 'ping-pong' questioning; a hypothesis we predicted would occur. One reason for the increase in the tally chart frequency for 'basketball' questioning may be due to the nature of the lesson being discussion based around the effects of drugs and alcohol on the body. This was therefore something all pupils from the focus group were interested in and wanted to voice their opinion through discussion. From a critical perspective, Brookfield and Preskill (1999) argues that the use of 'basketball' questioning allows pupils to create a discussion based lesson whereby they can view problems from a variety of different perspectives. This was shown throughout the lesson whereby pupils participated in a discussion around good and bad drugs and therefore looking at different sides to an argument. However, a critical aspect can be seen through the work of Needham and Palauiologou (2000) who argue that quantitative data needs to be

collecting sufficient amounts of data to be able to represent the population you are sampling. This is a critical aspect of the action research lesson as only 3 pupils were chosen for the focus group.

Furthermore, in relation to the quantity data collected, the lesson objective was met and verified that there would be a low participation rate from the focus group pupils when looking at the use of 'ping-pong' questioning. As seen in my appendix 1, all pupils from the focus group only had the opportunity to participate once through the use of 'ping-pong' questioning. As there were only 21 pupils involved in this classroom setting, the probability of the pupils being chosen to participate in general is relatively higher as 21 pupils was deemed a smaller class than your average class within this school. Therefore, this shows how the use of 'ping-pong' questioning may be more effective to use in a smaller class as pupils have a higher chance of opportunity to participate. Despite this, Coles (2014) argues that we should not be focusing upon deciding who gets to answer questions but instead spending time and effort on generating questions everyone can answer. This is something I would consider a limitation to the method as is represented in the literature research in that there is too much focus on choosing a randomised sample, rather than asking questions everyone will be able to participate in.

Looking at the qualitative data collected from the semi-structured interviews (appendix 4), it allowed us to see what pupils thought of the different types of questioning. All pupils from the focus group semi-structured interviews stated that they preferred the use of 'basketball' questioning in the classroom arguing that it allows pupils to build on each other's ideas. In addition to this, all pupils argued that throughout the lesson there was a point where they wanted to participate but could not as student-teacher 1 was asking questioning through the method of 'ping-pong'. I believe this is something I learnt in that 'ping-pong' questioning may not always be appropriate, particularly in a discussion based lesson. Furthermore, after analysing the transcription of the semi-structured interviews, pupil 3 argued that there was a need in future lessons to use different types of questioning incase "you didn't get picked". (appendix 7). This can be related to the literature research of Fadem (2009) who argues that teachers should pose a combination of open and closed questions in order to meet difficult learning. In relation to this, I believe I have learnt that the type of questioning needs to be based around the pupils needs and the outcome intended for their learning. This evaluation is backed up by Fusco who argues that despite designing appropriate questioning

techniques being time consuming for teachers, it allows students to deepen their thinking and participate in a diverse exchange of opinions.

After analysing and reflecting upon this first lesson, we decided that we would modify our action research by only one observer collecting and recording the quantitative data. This is because we found that this would increase the reliability and validity of the data incase observers missed 'instances'.

The second lesson study involved myself and student-teacher 2 observing a lesson study carried out by student-teacher 1. This lesson was based in a year 4 classroom setting involving the attendance of 31 pupils. For the context for the reader, the lesson was based around the objective of pupils understanding and exploring growth mindset. As stated previously, as observers, myself and student-teacher 2 focused upon the participation of levels during different questioning techniques on the focus group.

Reflecting upon the quantity data collected from this lesson study, it can be argued that 'basketball' questioning may not always increase participation rates. This can be shown in the observation schedule (appendix 2) whereby pupil 3 did not participate at all throughout 'basketball' questioning. One reason for this which differs from lesson study 1 results is that the class contains 10 more pupils meaning that there is less opportunities for pupils to participate. This is supported by the literature review of Giovanelli and Clayton (2016) who argues that 'basketball' questioning still retains the teacher control over who speaks and thereby the same opportunities for non-participation still occurs. By this, I argue that student-teacher 1 had more students to choose from and thereby pupils have a less probability of being chosen. However, it could also be argued that pupil 3 was not engaged and seemed distracted throughout this lesson arguing that their participation in 'basketball' questioning did not occur. This could therefore be stated that this pupil did not achieve the lesson goal in being engaged in the 'basketball' questioning that we believed from our hypothesis would have the highest rate of participation.

In addition to this, it is important to acknowledge that pupils within this class had the knowledge of using 'talk signs' from previous lessons. By this, I mean that pupils were more knowledgeable than the previous lesson on how to build on each other's ideas and thereby had a better understanding of how to appropriately use 'basketball' questioning. Pupils used hand signals to let the teacher know if they wanted to 'build' on an idea that had previously

been contributed or discussed by another pupil. This can be related to the literature research by Hennessy (2014) who promotes the idea of peer discussion as through building on each other's ideas, it can lead to better listening and collaboration skills being developed in future years.

Despite this, it is also important to analyse the effects pupils from this class may have had on the 'ping-pong' questioning as this is something the class evidently did not use frequently. Although all 3 pupils from the focus group had the opportunity to be chosen through 'ping-pong' questioning, I noticed that pupil 2 was eager to contribute and participate more but did not have the opportunity as their stick had already been chosen. This is shown in our semi-structured interview (appendix 7) whereby pupil 2 states that pupils that may be "bursting with ideas may get annoyed if they cant share it." This is supported by the literature research of Baker et al (2017) who argues that 'ping-pong' questioning may discourage pupils in future lessons to contribute as they may start to become dependent on 'ping-pong' questions and answers. Therefore, myself and my colleagues agreed that in the next lesson study, we would put the lollypop sticks back in the pot to allow the probability of pupils being chosen again. In relation to this, we believed that it would increase the reliability and validity of a fair test.

Looking at the qualitative data collected from the semi-structured interviews, it can be argued that all pupils can see the advantages and disadvantages of using both questioning techniques. As pupil 1 stated that 'ping-pong' questioning may lead to pupils feeling embarrassed if they do not know the correct answer and they have been chosen. This may be another reason why pupil 3 did not participate at all through the use of 'basketball' questioning as they may have not known the answer or felt too anxious to do a talk sign letting the teacher know they have more information to build on. In support of this comes from the literature review of Sue Larkey (2015) who argues that only 30% of pupils in a class will put their hands up, or in this case use talk signs consistently. Despite this being the case for some pupils, pupil 1 and 2 both agreed that they felt confident in using 'basketball' questioning in the classroom stating that it "made them want to take part." (appendix 7). Therefore, I believe from this lesson study, I was able to gain the pupils perspective of what they believed should be used throughout the classroom.

The final lesson study involved student-teacher 1 and student-teacher 2 observing myself. The lesson was based in a mixed year and 4 classroom setting involving the attendance of

29 pupils. For the context for the reader, the lesson was based around the same objective as lesson 2 whereby the aim of the lesson for pupils was to understand and explore growth mindset. Furthermore, student-teacher 1 and student-teacher 2 were focusing upon 3 pupils, looking at how questioning techniques affected their participation.

Reflecting upon the quantitative data collected from this lesson study, it can be argued that pupils have more of an opportunity to participate during 'basketball' questioning rather than 'ping-pong' questioning. This can be seen in the observation schedule (appendix 3) whereby every pupil participated more in comparison to 'ping-pong' questioning. As stated throughout this action research, the reason for the increase throughout participation in 'basketball' is due to pupils having more opportunity. This can be related to the literature findings from Bartlett (2015) who argues that 'basketball' questioning creates opportunities for cognitive development and allows pupils to develop their high-order thinking skills. By this, I argue that pupils have more opportunities to develop their own ideas as they can build off each other's thoughts. This can be related to the literature of Vygotsky (1980) whereby Vygotsky promotes the idea of discussion based questioning in that pupils can learn from a more knowledgeable others ideas. Referring back to the quantitative data collected from this lesson study (appendix 3), it also shows us how 'basketball' questioning encourages pupils who may not usually participate. As stated previously, myself and my student-teacher purposely chose our focus groups to entail one pupil who would usually participate, one pupil who would usually not and one pupil who would be in the middle. After looking at the observation schedule, pupil 1 (pupil who in general would not participate) participated more than they usually would. This thereby shows how 'basketball' questioning encourages all types of pupils, allowing a fairer classroom environment instead of the dominant hand raiser.

Reflecting upon the qualitative data collected from this lesson study (appendix 6), the pupils from the focus group stated that they preferred the use of 'ping-pong' questioning to 'basketball' questioning; something that differs from the pupils of lesson study 1 and 2. This can be seen after analysing the interview transcription whereby pupil 2 states that they preferred the use of 'ping-pong' because you "didn't know who was going to answer." In addition to this pupil 2 stated in the interview "... and I like how you don't know who's going to be chosen to answer it, so if someone got to be chosen, they would think what the answer is." After reflecting upon, I believe naturally with a younger and less mature class than the other previous lesson studies, ping-pong questioning was deemed the most appropriate and was quickly picked up upon from the pupils. Due to the very fussy nature of the classroom environment, the 'basketball' questioning created discussions whereby pupils were talking

over each other. This therefore meant that it was hard for the observers to record accurate data. This view can be backed up by Chandler (2017) who states that a 'ping-pong' approach allows the classroom to be deemed controlled and safe; something that is needed in a hectic and 'fussy' classroom.

The qualitative data also allows me to see how some pupils do not feel confident enough to participate in 'basketball' questioning. Pupil 1 stated in the semi-structured interviews that they did not feel confident in participation, to which pupil 3 agreed. One reason for this may be due to the low understanding of the lesson. Pupils had not been introduced to the topic of growth mindset before, meaning that this was something pupils knew little about. As pupils in both lesson study 1 and 2 had a better understanding of their learning, this is something myself and the observers had anticipated. Furthermore, it is also important to point out that pupils throughout this lesson study were at a younger age than the other 2 previous lesson studies and thereby this was shown throughout the 'fussy' classroom environment. In relation to this, another difference from this lesson study was that it was the first time pupils were introduced to lollypop sticks. As pupils were very excited about the new technique that was being introduced to them, I believe pupils were missing the objective of the lesson in enabling their thoughts on participation. Therefore, I believe this can be related to the qualitative data in which pupils seemed to prefer the 'ping-pong' questioning as it was something new and excitable for them.

After reflecting upon my choice of lesson study design and methodology, I believe it is of importance to critically analyse in order to enable improvements in the future. I believe the use of a lesson study observation was widely beneficial for everyone involved collecting valid and useful data that will allow researchers to take forward in their future teaching practice. This is because through observation, it allowed us as researchers to see experiences that we may miss on a day-to-day basis (Kohut, 2007). In relation to observation, I believe the decision for observers to participate in a non-participation way is a strength that benefited in this design. The use of non-participation observation means that there is an unbiased effect on participants and allows the observers to see what exactly accurately occurs (Hall, 2008). This is because if observers were participant, they may have missed instances when pupils from the focus group participated. However, it is important to acknowledge that pupils may have acted differently and not carried out their norm behaviour due to observers in the classroom known famously as the Hawthorne effect. For example, pupils who in general participate frequently may have felt nervous about answering questions around observers and thereby created unreliable and invalid data. However, I believe the use of

non-participant observation was deemed the most appropriate as the benefits outweigh the disadvantages.

Firstly, it is crucial to point out that I did not pilot any of the methods before and therefore was the first time I had carried out any of these experiences. This meant that I went into this action research design with an open mind in terms of the strengths and weaknesses of the design. However, I believe if I was to carry out this lesson study again, it is of vital importance to pilot the methods in order to address any problems in the early stages that may affect the quality of the results. For example, in lesson study 3, the use of lollypop sticks should have been introduced in a previous pilot lesson so pupils understood the concept of how 'ping-pong' questioning works. In support of this comes from the work of Blessing and Chakrabarti (2009) who states that the use of a "pilot study prior to undertaking the empirical lesson study cannot be overemphasised." This is because Blessing and Chakrabarti argue that it will allow researchers to become aware of any changes that need formulating.

As stated previously, after reviewing lesson study 1, myself and my student-teacher colleagues decided that only one observer would record and collect the quantity data. This is because 2 observers may interpret different recordings and would therefore create unreliable data. From this recommendation, I believe the method of quantity data for lesson study 2 and 3 is considered reliable and did not cause confusion if observers disagreed regarding the collection of quantitative data. However, the quantity data collected from lesson study 1 may be considered not reliable and valuable as there was confusion between myself and student-teacher 2 when discussing if a pupil would be considered participating or not. Furthermore, if I was to carry out this lesson again, I would ensure that findings are accurate and agreed by observers.

In addition to quantity data, we also collected qualitative data from the use of semi-structured interviews. Smith et al (2003) argues that the use of semi-structured interviews allows participants to give a detailed and in-depth picture of their opinion. I believe the use of semi-structured interviews is a strength that benefited in this design and it allows us as researchers to probe further and gain a realistic opinion of what the pupils thought of different questioning techniques. In addition to this, Margaret et al (2009) promotes the idea of using semi-structured interviews in comparison to structured interviews as it allows participants the freedom and autonomy to discuss issues researchers may have not anticipated. Therefore, I believe the use of semi-structured interviews was best fit for the

design of this action research in order to allow pupils to express their opinion through the freedom of choice. Furthermore, our method of recording data from our qualitative data can also come under analysis. Myself and my student-teacher decided to use field notes and the use of audio recording throughout the semi-structured interviews. One strength of using two forms of data recording in the interviews is that through combining methods, it increases the effectiveness and efficiency of the qualitative data (Tessier, 2012). It also allowed us as researchers to analyse and remember what pupils had said as we were able to transcribe once the interview was completed. Despite this, it is important to acknowledge that pupils may have felt refrained from answering questions in the interview due to them being aware of the audio recording (Davidson, 2009).

Within this lesson study research, the sample size is considered a limitation in regards to the number of pupils myself and my colleagues studied. As previously stated, each lesson study only had a focus group of 3 participants; making a total of 9 altogether. I believe 3 pupils from each lesson study does not fully represent a fair sample of the population. Hackshaw (2008) argues that a small sample size affects the validity and reliability of results. I believe this occurred within this action research as only 9 pupils out of 81 were studied. Despite this limitation, this was compulsory advice set by the university. Furthermore, another limitation is that the lesson study was only carried out through 3 1-hour lessons and thereby is not a big enough sample to draw upon conclusions. Therefore, in future I would ensure that the bigger sample size is larger in future and is carried out over more lessons.

To conclude, I will end on the crucial point that a further recommendation that I would take forward if i carried out this lesson study again would be to participate in lessons whereby all pupils are the same age. I believe this affected the participation of questioning throughout lesson study 3 as younger pupils are less likely to have an awareness of not speaking over others. Furthermore, another recommendation for good practice in future would be to ensure that all lessons are the same. This will ensure that any discussion based lessons do not have the advantage regarding participation; something that was seen in lesson 1.