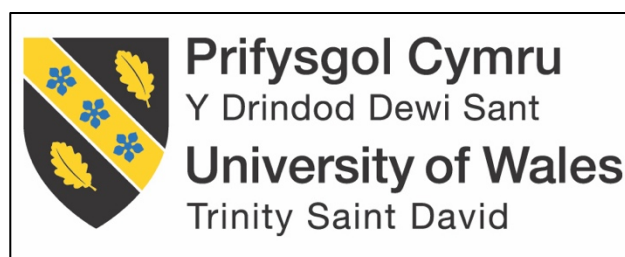


How can the use of differentiated questions support a pupil's understanding of an activity?



Word count: 6574

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Aim, focus and purpose

The use of questioning can be seen as a tool to widen and develop understanding and knowledge through both simple and complex ways (Wragg, 2001). This research project will be centred around the use of questioning in a classroom. The main focus of the research project is to assess the level of understanding by the child through the use of differentiated questions. This was decided by the importance of questions that are frequently used in the classroom to aid a pupil's learning. My research project centres itself on the way questioning supports a child's understanding of an activity.

The aim is to gather a variety of literature containing studies and research of using effective questioning to support pupil understanding. This will help gain a background knowledge of the use of differentiated questions and the way it could be used for the research project. This will lead to the research project being influenced by other research studies to potentially produce a successful research project. The use of differentiated questions can be supported by Bloom's Taxonomy (1990) pyramid which portrays a 'hierarchy of types of learning in the classroom' (West Lothian Council, p2).

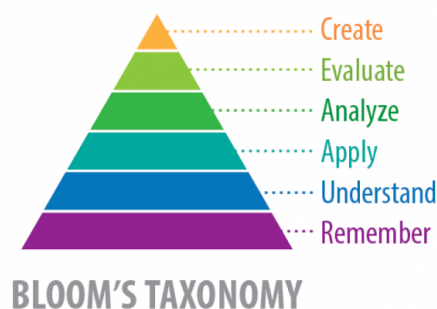


Figure 1: Bloom's Taxonomy (1990), West Lothian Council.

The figure above highlights that the top of the pyramid contains the 'most in depth' learning which can lead to questions that can 'develop deeper learning' (West Lothian Council, p2). It will be essential to ensure that all questions will be tailored to the children's needs, ability and level of development. It is essential to measure any improvement of the individual's understanding through the use of supportive differentiated questions.

Research context

The research will take place in two schools, School A and B. School A is situated in a deprived area of south west Wales. The school itself caters for a large amount of the local travelling community. The research will centre around the reception class which caters for 24 children ranging from 4 to 5 years old. School B is also located in a similar location surrounded by local authority council estates. The class in School B is a mixture of nursery and reception with 31 pupils ranging from 3 to 5 years old.

It was essential to discuss common factors between School A and School B where questioning could be a useful resource tool to strengthen the children's learning. This research focused specifically on how we can support a child's understanding through the use of differentiated questioning in an activity. Furthermore, Schools A and B are experiencing the introduction of the new revised curriculum produced by Donaldson (2015). The new curriculum is aiming to create developing and independent thinkers which is key for this research study. Directing questions to individuals can help create these characteristics.

Literature review

Questions are frequently used in the classroom to establish an understanding of the knowledge gained by a child. This is supported by Jones (2005) which concluded that questions are used to evaluate the level of learning gained by the pupil through thinking and progression. It is relevant in this study to consider the way differentiated questions support a child's understanding.

The use of questioning is the technique that is used to help teachers assess the understanding of the pupils where it is ultimately the response by the learner that is the main factor (Jones, 2005). It is acknowledged by Cotton (2001) that the use of questioning is used to help motivate, evaluate and develop learners' thinking skills by stimulating their own knowledge. This is supported by Ausubel (1978) who reveals that questions are used to analyse the pupils understanding of the subject matter rather than to retrieve new knowledge for themselves. This ultimately leads to the stimulation of recalling information which can result into expanding the pupil's imagination. A study by Pate and Bremer (1967) involved 190 teachers in primary schools across America which provided reasons as to why teachers ask questions. The study concluded with the majority of its participants believing

that questions are used to examine understanding and the recalling of subject facts (Pate and Bremer, 1967). However, this study lacks any suggestion that the encouragement of pupils talking and thinking independently was an intentional characteristic to promote. The type of differentiated questions is suggested to support a child's understanding independently (Wragg, 1993). Wragg (1993) researched into recording over a thousand questions that were asked by primary school teachers. From this study, the questions that were recorded were categorised into three groups, which were; management of the classroom, recalling data and information and lastly high order questions which involve analysing and generalising (Wragg, 2001).

Target of question		Type of question	
Whole class	22	Managerial	57
Small groups	12	Informative/data	35
Individuals	66	High order	8
Total	100	Total	100

Figure 2 highlights the questions that were recorded by Wragg (1993) (Wragg, 2001).

From the results above, it is evident that questions targeting individuals through informative and managerial questions were the most common. The use of high order questions needs to be used more frequently in the classroom to increase the level of critical thinking. This will be included in the research project to help understand the support gained from differentiated questions for children in an activity.

Focusing on Wragg (1993, 2001) and the use of differentiated questions, we settled on the leading factor of questioning for the research project. Differentiated questions involve; management, understanding, factual and gaining attention from the pupils (Wragg, 1993, 2001). Therefore, this research project will focus on the way differentiated questions can support a child's understanding of an activity. It is important to try and minimise the use of unnecessary questions such as managerial due to the lack of analysis on pupils' understanding. This is supported by Wragg (1993, 2001) who outlines the lack of support and understanding that managerial questions provide to a pupil.

Wragg (1993, 2001) studied important questions however there are limitations and leading theorists now study the use of open and closed questions. Researchers suggest that

the use of open and closed questions can create opportunities and further classroom interaction (Smith & Higgins, 2006). It is revealed by Smith and Higgins (2006) that open questions create opportunities for discussions and independent thinking between pupils and peers. However, the use of open questions needs to be used carefully as their 'purpose is crucial' (Smith & Higgins, 2006, p.3) which could lead to the discussion coming to an end. The use of closed questions is essential as they provide correct factual answers which it could lead to an opportunity of elaborating more discussion (Smith and Higgins, 2006). Therefore, the use of open and closed questions will be considered in the research project as it is suggested it could lead to further learning. It is important to carefully decide on which style of question will be suitable for the situation and the child's ability of understanding.

The use of differentiated questions will help determine whether questions support a child's understanding throughout an activity. It is revealed by Kerry (1982) that there are four key questioning skills that can be considered when using questions as an essential tool in the classroom. Kerry (1982) has examined the ways questioning skills can produce questions in order for pupils to think cognitively, subjectively and independently.

1. Vocabulary level and clarity of expression	• A question is unable to function if it lacks expression. • Need a high level of vocabulary, however does depend on the age and ability of the pupil. • The misunderstanding of one word can essentially lead to no response. • Maybe ideal to use preliminary questions that break down the question into using simpler vocabulary.
2. Timing	• Ensure not to be impatient when the pupil is thinking, allowing an attentive pupil time to think. • Do not be afraid of silence within the classroom when allowing pupils to think in case other disruptions within the classroom may occur.
3. Reinforcement	• To praise good answers. • To build upon pupil's responses. • To support the pupils when incorrect answers are given. • To encourage the pupils to respond and improve their answer where possible.
4. Prompting	• To include simpler prompting questions. • This involves aiding pupils when they are unable to give a correct answer/response.

Figure 3 outlines a summary of the steps featured in the Four Questioning Skills by Trevor Kerry (1982).

The table above outlines the Four Questioning Skills that are used when asking questions to deliver positive, encouraging and engaging questions (Kerry, 1982). This is supported by Caram and Davis's (2005) view that teachers need to build a comfortable environment for pupils when responding to questions that focus on the pupil's ability. It was agreed for this research project to attempt to deliver skilful questions that can support a child's understanding. This was through Trevor Kerry's questioning skills summary. It is also suggested by Rowe (1972) that allowing a longer response time can evoke positive changes in the classroom such as increasing the length of response given and building up the confidence of the pupils. However, allowing more response time is determined by the ability of the individuals (Walsh and Satter, 2005) as all pupils develop at different cognitive levels.

It is therefore vital for all teachers to understand the sufficient use of altering questions to tailor to different individuals. This is important to apply within the investigation, however without the consideration of individual's needs regarding response time, a pupil's confidence could be altered drastically. More recent studies consider the use of vocabulary within a question due to this interpretation and breaking down questions can allow a more effective response (Sackstein, 2017). Therefore, tailoring questions can create communication to be individualised and lead to a more efficient response (Hawkins et al. 2005). It is important to consider the age and ability of the participants by using simpler words for them to understand, to show support and engagement in their response and to encourage the pupils when they are unable to respond as it could lead to anxiety within the pupils. This is supported by Dillon (1981) who has revealed that excessive questioning can result and provoke anxiety and unwillingness to contribute to class discussions. It is essential to promote the engagement of the pupils and limit any risk of anxiety and discomfort. The use of open questions can lead to a range of possible responses where there is no specific right answer (Smith and Higgins, 2006). The use of questioning for the research project is suggested by Kerry's questioning skills which has led to us believe that being positive can help reinforce pupils' contribution by making key connections, allowing sufficient thinking time and including an open discussion with the class which could possibly lead to pupils working and learning off each other's ideas and cognitive thinking. This research is supported by Hannel and Hannel (2005) whom suggest that asking the correct question can result in the evolution of critical thinkers and problem solvers within pupils. This is important for this research project as the target age is the Foundation Phase therefore all aspects need to be considered to promote positive extensive responses and encourage children to talk confidently and independently.

Methodology

The literature is based on the way questioning supports a child's understanding throughout an activity and has been closely examined within the empirical evidence that was recorded and collected. It is essential to link between my own empirical evidence gathered to various research studies to help understand the support children need throughout an activity by the use of differentiated questions.

The methodology that I will undertake for the empirical evidence will be through the use of lesson study to develop the role of teaching and pedagogy. Lesson study (LS) focuses on groups of teachers that work collaboratively through planning, observing and analysing from research lessons which originated in Japan in the 1970's (Dudley, 2014). The use of LS could lead to developing pedagogy and pupils learning through this technique of active research (Dudley, 2014). Active research is a process of creating change that involves thinking (MacNaughton and Hughes, 2008). According to Dudley (2014) LS helps to see between the gaps of prior knowledge and present knowledge gained by an individual to improve planning that suits the needs of different individual needs and abilities. However, the Education Endowment Foundation (EEF) have suggested the limitations that LS has on future teachings. This includes the lack of empirical evidence revealed by LS that improves pupil attainment (Education Endowment Foundation, 2009). Even though LS is believed to be effective for peer support and teacher observation there is doubt in its pupil progress (Education Endowment Foundation, 2009). Although the literature is not unanimously positive, there is sufficient evidence to suggest that LS would be beneficial in our context in order to improve our knowledge of the way that the use of differentiated questions supports a pupil's understanding of an activity. The LS will be conducted over two consecutive research days in Schools A and B. This will allow any alterations or improvements to be made from the first day to prepare for the second research day. This is due to developing further as a researcher on our focused question and closely identifying improvements that could affect the results in a positive manner. The empirical evidence has been divided into Lesson Study 1 (LS1) and Lesson Study 2 (LS2) according to the specific research days that were conducted in School A and B. The empirical evidence includes; findings from the observation schedule, the checklist, the interview, the post research reflection, revising the lesson by making amendments, learning from the experience and lastly its relation to literature and research.

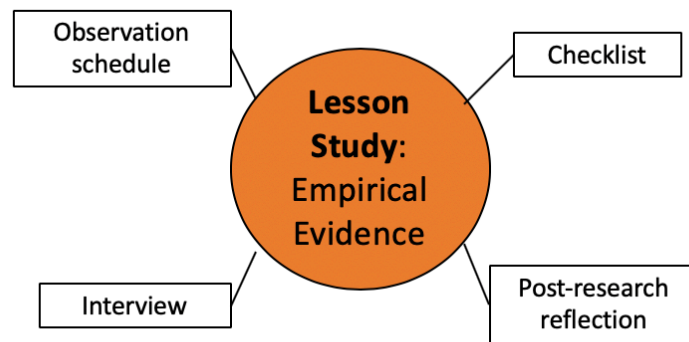


Figure 4 outlines a diagram of the way the empirical evidence can help gather empirical evidence.

The research will consist of qualitative data which will be collected through written form closely connected to other research studies (Denscombe, 2010). Qualitative research is primarily based on creating and constructing the meanings of our actions and human interactions (Roberts-Holmes, 2011). This involves ensuring the validity of data by the research participants for the improvement of pupils learning and pedagogy (Roberts-Holmes, 2011). The understanding of individuals is vital from qualitative data and research; it will allow greater evaluation and detail to be considered which can lead to other findings other than the focused topic (Bell & Waters, 2014). This suggests that qualitative data can open a new direction of pedagogy, however, qualitative data can reveal limitations. These include the way that the data can ‘leave out contextual sensitivities, and focus more on meaning and experiences’ (Silverman, 2010, p.104). In addition to this, it has been suggested by Harry and Lipsky (2014) that using a smaller sample size can lead to the generalisation of the wider population which wouldn’t make the data valid to an extent. However, the data will be recorded through an observational schedule checklist (Appendix A). An observation schedule will aid the researchers to directly focus on the participants and help to examine the key specific questions (Roberts-Holmes, 2011). This will allow the researcher to focus on specific criteria and findings for the study. However, the schedule consists of notetaking due to other observations not on the criteria leading to further results. The schedule will potentially provide the required information of results, a suitable checklist and field notes (Bell and Waters, 2014). The use of a checklist can allow more direction and focus.

Supporting the observation schedule and checklist, the research project will include focus group interviews. The main purpose of a focus group is to focus on an issue through a specific discussion (Bell and Waters, 2014). It will be structured through prepared questions (Appendix B) within an informal situation (Bell and Waters, 2014). The participants are all infant pupils therefore due to their age; it is important for them to feel comfortable within a focus group activity which could be a daunting situation if they are not used to the environment, especially with the addition of an unfamiliar adult as an observer. It is also essential for the environment to be neutral and the participants to feel equal (Keller-Hamela, 2019). Furthermore, it is revealed by West and Blom (2016) that the pressure of participating in an interview can affect the efficiency of valid empirical evidence. The use of a group interview for this scenario could be considered as a more useful tool as it will be a source of reflection through the children's thoughts on the issue (Laws, 2013). The group interview will focus on the prepared set of questions. It is suggested by Hayes that it could be important to consider including the same sex for the interviews that are similar age 'in order for the atmosphere to be permissive and relaxed' (2000, p.395). This could allow more valid reasoning and opinions; therefore, it will be considered for the case pupil selection. The choice of case pupils will be considered on mixed and same sex groups. This will show how children react and respond around their peers. It will also be dependent on the pupils' ability to gauge how different learners respond to specific questions and aspects of the learning. The interviews will be recorded to ensure the accuracy of post research analysis and allowing time to summarise the comments by the individuals in case anything important has been missed (Bell and Waters, 2014). The key objective of the interview is to help participants reflect on their learning and support the research project.

The process of the research project includes a post reflection of analysis and discussion. During the reflection aspect it is vital to look upon the event including the positive and negative elements. The reflective model for the research project will follow Brookfield's Four Lenses (1998, 2005) intertwining with Gibbs Reflective Cycle (1988). The Four Lenses focus upon the four elements; myself, the student, the research colleague and analysis of critical literature (Brookfield, 2005). However, it was decided that the reflection could be made stronger by connecting the Four Lenses to Gibbs' Reflective Cycle that include six specific stages (Appendix C shows how they are connected alongside each other). The

reflection will be focusing on the areas of Brookfield and the six stages of Gibbs Reflective Cycle. The reflective cycle contains aspect of feelings towards to the lesson, specific aspects been learnt and suggestions for future experiences. Connecting the two reflective models will contribute to creating an in-depth reflection of further pedagogy and learning.

Ethical consideration

Ethical consideration is needed to obtain the approval of minimising risk of harm and ensuring confidentiality, anonymity and protection of all involved and the data collected. It is important as a researcher to abide by professional ethical considerations when conducting empirical evidence. Therefore, ethical standards must be acknowledged.

The research will follow BERA (2018) Ethical Guidelines for Educational Research, UWTSD Research Ethics Integrity Code of Practice (2017) and The Education Workforce Council EWC guidelines. This will allow protection towards the research students working on the educational project including other participants.

There are important ethical considerations with conducting research in a classroom environment which include many factors. It is vital to gain parental consent and pupil assent for the observation which will allow participation with the empirical evidence for the three case pupils and the other individuals involved to be confidential and anonymised (BERA, 2018). It is integral to minimise any risks that could be caused by collecting data. The risks are clearly highlighted in my accepted Ethics Form which include, emotional distress from the process and interview, to follow safeguarding policies of both schools and ensuring anonymity and confidentiality with all data. It is essential to consider the risks to the researcher due to accusations of being biased and altering the research which would not be ethical. It is vital to ensure confidentiality and anonymity when gathering the empirical evidence to provide security and protection of the participants involved. It is fundamental that all ethical considerations are considered for the process of classroom empirical evidence involving other participants.

Lesson Study 1: analysis and discussion

The target of this research project was to investigate how we can support a child's understanding through the use of differentiated questions through an activity. It was integral to analyse the empirical evidence of how the use of differentiated questions can support a child's understanding.

Due to the agreement of ethical considerations of BERA (2018), confidentiality and anonymity needed to be kept throughout the lesson study by referring to the representative sample pupils as Case Pupil 1,2,3,4,5 and 6 in LS1 and LS2. This will minimise any risks of identifying the participants (BERA, 2018).

LS1 was conducted in School B which focused on literacy. The objective of the lesson was to assess their understanding and knowledge of a story, 'The Smartest Giant in Town' (the lesson plan can be seen in Appendix D). During the empirical evidence only 3 mixed case pupils were chosen to participate in the lesson, as suggested by Dudley. The inclusion of using mixed case pupils was decided to help build a comfortable atmosphere for pupils. During the observation stage, observational notes were created through a checklist and an observation schedule (see Appendix E). The checklist specifies the pupils' engagement and the participation from the questions provided in the lesson. It is evident from the empirical evidence that all children were engaged to some extent. The children's responses differed. Case Pupil 1 and 2 responded strongly and answered confidently with detail and enthusiasm. However, Case Pupil 3 seemed to be easily distracted by the toy medal he was wearing during the lesson. This led to his response being 'misunderstood', 'distracted' and at a standard level as he continuously played with the item and ignored listening to the question fully. Due to this being noticed early on in LS1 it was essential to change the style of questions to tailor to his ability and need. This involved changing the pace of the questions and using simpler words in order to gain the attention of Case Pupil 3. This relates to the work of Hannel and Hannel (1998) that suggested that changing the vocabulary can promote curiosity and their engagement of the question. The questions were altered by the use of closed questions which allowed Case Pupil 3 to focus on the topic specifically. This was evident in the work of Smith and Higgins (2006) that the closed questions can result into opportunities for interaction through the ability to respond correctly and boost confidence and morale. The use of closed and tailored questions was vital to use as it

allowed the pupils to focus and respond as a question's 'purpose is crucial' (Smith and Higgins, 2006).

The observation recorded the case pupils' responses through their understanding of the questions (Appendix E). The observation schedule refers to the extent of which the questions supported their understanding of the activity as suggested by Ausubel (1978) and from their response it was evident that the questions did to some extent. It is clear that the use of tailoring questions as previously mentioned aids pupils understanding as they are more focused. However, it was noticed from the questions that Case Pupil 3 formed his answers from the basis of Case Pupil 1 and 2's responses. It can be suggested that Case Pupil 3 did not work independently with his response. One key questioning technique revealed by Kerry (1982) is to use engaging questions to help create enthusiastic responses which other pupils who are struggling can use as guidance to create their own response. To an extent it is evident that the questioning supported all case pupils understanding as they all individually gave an answer even if they were developed from one and other. The use of questioning through the observation schedule and checklist evidently impacted on the pupil's learning by supporting them throughout the activity as supported by Roberts-Holmes (2011).

The second phase of LS1 was the interview process which included the same pupils involved in the lesson. The pupils were asked their opinion of the use of questions during the lesson. Case Pupil 1 thought that the questions helped him to think. This suggests that questions supported their understanding due to their need to think about previous knowledge and knowledge learnt. One of the key questions during the interview was the recommendations to improve the lesson for future situations. Case Pupil 2 revealed the desire to learn more about the main character of the story. This consideration for the lesson could lead to more differentiated questions throughout the lesson. Therefore, the use of increased questions could provide more support towards a child's understanding as they are also designed to create further thinking. Case Pupil 3 revealed his recommendation to include an activity involving drawing the characters and the story. From the drawings, closed questions could be asked to describe the characters and extend to further discussions with open questions regarding the topic. These findings connect to Copeland's (2017) view that closed questions

help assess prior knowledge and lead to open questions with developing discussions, learning and pedagogy. Therefore, the interview has proved, to an extent, that the use of differentiated questions supports a child's understanding of an activity as suggested by Laws (2013).

However, it was noticed by both researchers that Case Pupil 3 was distracted by the issue of the interview being recorded. This could result in a positive effect of the pupil being more focused and responding to their best ability or in a negative effect by the pupil losing concentration and feeling intimidated. As stated by Keller-Hamela (2019), it is important to create a neutral environment with nothing to distract and sit at eye level to show that all involved are equal. Therefore, it is important to consider this to minimise its effect and for pupils to share their understanding and knowledge. To overcome this, it was integral to distract Case Pupil 3 by the questions used. Therefore, the researchers were contingent upon the process and questions were tailored using simpler vocabulary and more direct questions.

The last phase of LS1 was the post-research discussion through the reflection pro-forma (see Appendix F). The reflection was completed by both researchers and the pupils who participated in LS1.

The reflection pro-forma indicates the feelings from both researchers and students involved. Overall, it was noted that the experience was positive, the use of questions supported the pupils in their learning and improvements for future situations could be formed.

Within the self-reflection section, it was evident that aspects of the LS1 could have been improved. It was suggested for future situations to increase the number of pupils participating in the activity prior to the interview. This is important to consider as it could show how pupils react around other individuals under the pressure of questions throughout an activity. This could have affected the pupil's engagement negatively or positively as other answers could have ignited further responses from other individuals which was evident from the observation schedule. Therefore, the use of more pupils within the lesson needed to be considered for Lesson Study 2 (LS2) as the results of the way questions can support a child's understanding could be affected. Furthermore, recommendations for future development were outlined by all involved. It was identified by the students to include more

creative developments providing a diverse range of the curriculum which the New Curriculum for Wales is promoting. However, concerning the structure of LS1, it identified that the inclusion of a lengthier activity was needed to be investigated within LS2 as this could affect the results of pupils' understanding through the questions given.

It is evident that LS1 provided results regarding the efficiency of differentiated questions upon supporting a child's understanding. It was noticeable that other pupils' responses can affect others response, the need to tailor questions according to their ability which includes the use of open and closed questions and lastly recommendations to improve future teachings. An amendment that both researchers took upon themselves was to consider changing the topic of the lesson. The aim of the research is to measure the way the use of differentiated questions can support a child's level of understanding. Therefore, the use of open and closed questions can differ depending on the topic and objective. It was clear that amendments from LS1 needed to be carried out for LS2 to create effective empirical evidence. These recommendations include; increasing the number of case pupils involved and including a longer timed activity to allow more learning opportunities.

Lesson Study 2: analysis and discussion

Lesson study 2 (LS2) in School A was centred around numeracy. The main aim of the session was to order numbers from 1-12 and adding on 1 more digit by using differentiated questions to analyse the support that they provide a child's understanding. The activity involved a group of 7 pupils (see Appendix G). Due to the findings from LS1, LS2 was altered to create effective results. This was mentioned by Dudley's study analysis and suggests amending future lesson studies if improvements could have been made (2014). The recommendations that were altered were; including a longer activity, including a higher number of pupils involved in the lesson and changing the topic of the lesson to gauge the level of differentiated questions that can support a child's understanding (see Appendix G).

During the lesson an observation schedule, checklist and additional notes were completed to understand whether the use of differentiated questions can support a child's understanding. The same observation schedule was used, however due to the higher number of participants in the lesson than LS1 it could be suggested that the results could

have been affected due to this variable. It is revealed by the schedule (see Appendix H) that Case Pupil 4 and 5 answered with excellent responses and with confidence. It was noted by the observer that Case Pupil 6 was not focused which is believed to be by the intimation of another adult and feeling under pressure in the environment. It was evident by Crozier (2001) that quietness is inevitable by participants in the sense of uncertainty to talk to an unfamiliar adult. Therefore, this could affect the results and the response which led to tailoring the questions to focus Case Pupil 6's attention. For future studies, being familiar with all is integral.

It is evident from both occasions, that the case pupils who were distracted or unfocused resulted in the need to alter questions to gain their attention. This is due to the recognition by the peers to familiarise with each other in the context (Ireson and Hallam, 2001).

The results of the checklist of LS2 vary from LS1. The key finding is the observational note of response time required by the pupils (see Appendix I). More time to respond to the questions was needed for answering the questions, this is because it is key to support the individuals to articulate a more diverse and refined response (Smith and Higgins, 2006).

Following the lesson, the interview took place with three of the mixed ability selected pupils from the lesson. The interview was carried out in an informal approach and with same sex pupils to enable the case pupils to feel comfortable and respond to their best ability. Hayes suggested that involving same sex pupils can create a relaxed atmosphere which was evident from the interview (2000). Similarly, to the observation schedule and checklist, response time is a factor that was needed to be considered. It was revealed by Rowe (1972) that providing an efficient response time can lead to positive changes in the classroom of increasing the length of response and pupils' confidence. It is important to allow all responders time for them to provide an answer whether that involves waiting patiently or giving them motivation by breaking down the questions further to help them with their thinking process. The impact of breaking down questions is vital as it can affect the efficiency of the response (West and Blom, 2016).

It can be suggested that the case pupils felt under pressure due to their body language and expression of response in the interview which was noted by the observer.

Persistent nodding of the head was used to answer or agree with questions and participants' answers. It could be argued that due to an unfamiliar adult being in the room that could have affected their response. However, this was considered and both researchers agreed to provide an informal discussion to retrieve results that would benefit the research study. Lastly, a similar finding from LS1 from the participants saw them bounce from each other's ideas and suggestions. This can be seen through William and Black's work in the publication of *Inside the black box* (1998) as questions are proved to improve engagement and ultimately challenge others to think as they can project their views in relation to others. This can be seen as a positive impact as responses can lead to other pupils who are struggling to think to trigger other ideas. This can build upon confidence and reduce the risk of anxiety by the pressure of answering questions.

The last element of the empirical evidence is the post research discussion through the reflective pro-forma (see Appendix J). It was expressed by all participants involved that the experience was positive, and the use of questioning motivated a child's learning and encouraged a high level of response. Within the self and peer reflection sections it was outlined that recommendations could be followed for future situations. It could be suggested to use more 'simple worded questions for more understanding for the lower ability' (Appendix J). This closely links to Sackstein's (2017) theory that questions can mislead responders and breaking apart the meaning can enable efficient answers. This recommendation could potentially pose an effect on the results of how the use of differentiated questions can support a child's understanding.

Re-occurring patterns of findings were founded in LS2 as well as LS1 such as; altering questions to tailor to a child's ability and to gain their attention, also that pupils' responses can lead to supporting another pupil's knowledge and understanding.

However, new findings were discovered from LS2. The response time from answering the varied questions was noticeable in the interview by Case Pupil 5 and 6. It was extended to allow the pupils to have time to think and respond to the questions in their own time. It is essential to help motivate the pupils when they appear to be in difficulty answering the question. As noted by Kerry (1982), children learn at different rates therefore respond differently too. This is important to consider when conducting the interview and

the use of differentiated questions to enable to case pupils to process the action. This can be associated with the way pupils develop at different cognitive levels, as all need to accept the possibility of altering questions and increasing the response time to facilitate each individual (Walsh and Satter, 2005). Therefore, the use of more tailored differentiated questions can support a child's understanding. Lesson Study 2 resulted in tailoring questions by using simpler words to help break down the meaning to create more valid and accurate responses by the pupils. This was evident from the different cognitive levels that each individual works at different rates (Walsh and Satter, 2005). Lesson Study 2 conclusively demonstrated new findings regarding how the use of differentiated questions can support a child's understanding.

Conclusion

This research has investigated how we can support a child's understanding through the use of differentiated questions throughout an activity. It was evident from the research days that LS focused on a set of teachers to refine planning, observing and examining findings from the research. However, due to the limited time that was given to carry out the research, it needs to be acknowledged that the research may not had impacted the pupils to its full potential as it did for peer support and empirical evidence (Education Endowment Foundation, 2009). The results from the empirical evidence are significant in responding to the use of differentiated questions that supports a child's understanding of an activity. However, to produce more reliable and effective data it would be beneficial to conduct the research several times in the future, this would potentially provide more generalised empirical evidence.

Important findings emerged in the study from the group interview. The use of this provided strong evidence and data of supporting a child's understanding through the use of questions as responses helped other individuals to trigger their ideas and work from each other. However, the use of a group interview does pose limitations within its process. This includes the lack of independent thinking and feeling under pressure as suggested by West and Blom (2016). As some individuals are more vocal than others this poses a threat to others ability to think independently. This is important to consider in the future for this study as it is

significant to assess the way questions can support a child's understanding and not the responses from other individuals.

It can be suggested that further research could be concentrated on the same set of pupils. Different pupils were used for Lesson Study 1 and Lesson Study 2 due to the investigation taking place in two schools, therefore it was important to use a representative of pupils from each school. However, if this investigation was to be carried out in the future, increasing the lesson study days could potentially impact on the results and the research project. It could lead to creating more sufficient and reliable results. During Lesson Study 1 only three representatives were chosen for the entire empirical evidence which was increased for Lesson Study 2. This decision was made after Lesson Study 1 where it was believed that using more participants could affect the empirical evidence in a positive way. Using only a small number of participants may not create effective evidence on every occasion.

This research could have been strengthened for future school experiences by the use of piloting various methods prior to the investigation. This could be an important improvement for future studies as it would mean that both researches could be working at the same level of the observation schedule, checklist and further observational notes. With this research study there was a risk that due to this variable the empirical evidence could have lacked important findings. Therefore, it is integral to consider the limitations that individual methods pose.

To conclude, the research study demonstrated key supporting findings that with more active research taking place on the investigation it could lead to further pedagogical development. The investigation was successful in finding out; the way children work from each other by triggering further understanding; providing a longer response time can lead to more efficient responses; the need to alter the vocabulary and expression posed to a question due to pupils developing at different cognitive levels; and lastly the need to ensure all participants work independently by individualising and directing the questions. By understanding this focused research project, it will reinforce the use of questioning and its significance in my own future pedagogy and learning.

Recommendations

From this research project, I learnt several factors that impact how the use of differentiated questions can support a child's understanding. The key findings can be taken forward to inform further research by considering the recommended changes and outlining the limitations that specific methods highlight.

In the future, if I were to carry out this research project on another occasion, I would consider the following important variables and amendments. Firstly, I would consider the use of Lesson Study for further research due to its reliability of helping refining pedagogy. Including a group interview would need to be investigated further as there is a possibility of including a questionnaire or more tailored questions specifically towards the individual to potentially lead to more refined and independent answers. Also, to pilot specific methods when producing empirical evidence to ensure that the researchers are both at a high standard. This could lead to reliable consistent research. Lastly, completing more than two set days of research could help provide more empirical evidence to compare which could create more valuable research to analyse.

Even though there are several alterations to be made, the research days were a success in finding results regarding how we can support a child's understanding through the use of differentiated questions throughout an activity which can later be developed through the proposed New Curriculum for Wales which highlights the importance of creating more independent thinkers and learners. Questioning is used at all levels of education to check and support pupils' understanding. Therefore, it would be beneficial to research further into the use of questioning at a national level across the curriculum with the aid of the proposed New Curriculum for Wales.

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