

Targedau / Targets	Sut rydych wedi gweithio ar hwn / How you have worked on this	Ceir enghraifft ar / An example can be found on
Targed/Target 1 Make synthesis and critical analysis and evaluation a frequent and consistent feature of your writing.	I included contrasting opinions through the literature review and was critical about my study by evaluating the limitations and the impact this could have on my findings.	Within the literature review, page three – Pogrow (2005) and Cotton (1988) argue differing opinions.
Targed/Target 2 Please ensure that you are supporting your assertions.	I supported statements by referencing reliable sources when discussing ideas.	On page one, assessment for learning is explained, supported by Black and Wiliam.

Word count: 3833

Design and conduct a small- scale research study, and critically evaluate the impact of chosen research tools and data/findings on the learner and on your professional practice.

Introduction

This study aims to carry out research and gather the data for analysis, to provide an insight into the following question: “What are staff and year four students’ perceptions regarding the importance of effective questioning?”. As the researcher, I also intend to refine my research skills by utilising the appropriate research tools for this enquiry and evaluating their success.

The quality of questions is one of the four key elements of the assessment for learning (AfL) technique. These are ‘sharing criteria with the learners’; ‘the quality of feedback’; ‘the quality of questions and quality of talk’; and ‘peer and self-assessment’ (Black and Wiliam, 2009). AfL can be described as formative assessment, whereby pupils are assessed during the learning so that teachers can adapt their practice to maximise the improvements of their pupils (Black and Wiliam, 1998). This theory favours individualised learning, focusing on feedback which informs the learner of how to improve (Wiliam, 2011).

The importance of AfL is highlighted in the Curriculum for Wales (2022) within the qualified teacher status (QTS) Professional Standards. In the QTS descriptor 'Pedagogy: Advancing' is the strand 'progression in learning', stating that the teacher should understand that learning develops incrementally, building on past experiences and planning around the learners' progress (Welsh Government, 2017). This upholds the same ideals as AfL. In the 'Pedagogy: Influencing' descriptor is the strand 'listening to learners', which states that the teacher should seek and listen to the perspectives of their pupils, encouraging them to be 'active participants' in their learning (Welsh Government, 2017). These principles are reflected in the chosen research method, the 'Mosaic Approach'. The Mosaic approach is a research method which combines standard research methods with participation to understand the perspectives of young children (Clark and Moss, 2005). As the mosaic approach combines multiple research methods, I have selected both questionnaires and interviews for my study.

The research will be carried out in a small rural school (School A) with approximately two hundred pupils (Estyn, 2017). Based on my experiences of teaching and learning, my hypothesis is that both teachers and pupils will find questioning to be a valuable tool for making progress. I predict that most pupils enjoy asking and answering questions, and that the staff utilise questioning frequently as an AfL tool.

Literature review

Assessment can be defined as the array of methods or tools used by educators to gauge the progress, skill level, or needs of their students (Great Schools Partnership, 2015). There are two main types of assessment which are 'formative' and 'summative'; formative assessment aims to help the learner progress throughout, focusing on more specific aspects of the learning (Newton, 2007). Contrarily, summative assessment is about categorising performance over a broader topic or skill at the end of the learning process (Kibble, 2017). AfL is a style of formative assessment, as its core purpose is to support the learning, rather than simply measure it (Van der Kleij et al., 2015). Of the four elements of AfL, the chosen focus is the quality of questions.

Nappi (2017) states that questions are significant to teaching and learning with effects on quality instruction and strategic thinking. However, Tofade, Elsner and Haines (2013) note that when constructed poorly, questions can hinder learning by confusing or overwhelming the students, and restricting imagination. Questions can be separated into two categories, open and closed, or divergent and convergent (Bibi, Butt and Reba, 2020). According to Ho

(2005), a closed question (convergent) requires a short response that the teacher already knows but has asked to perceive the student's knowledge. However, an open (divergent) question pursues an unascertained response explained in more depth (Ho, 2005: Bibi, Butt and Reba, 2020). A study found that although teachers were confident that they ask a range of convergent and divergent questions, those in exam classes usually asked low-level convergent questions, rather than divergent questions to incite deeper thinking and discussion (Joseph, 2018). Pogrow (2005, in Conklin, 2012) advocates that the use of higher order thinking skills can increase academic achievement, and created a curriculum called HOTS (higher order thinking skills) for educationally disadvantaged children. In opposition, Cotton (1988) argues that a study found higher order questions to be no better for progression than lower order questions, and that lower order questions are better for primary aged and disadvantaged children. Pate (2012) sits between, contending that research implies that one is not better than the other, suggesting that it is more successful to utilise both for an effective learning environment.

To differentiate further which types of questions are simple from complex, a framework was established, named Bloom's Taxonomy (Krathwohl, 2002). It has six levels which have been summarised as a hierarchy, meaning that reaching the higher levels requires accomplishing the lower-level knowledge and skills first (Cullinane, 2009). The original Bloom's Taxonomy was completed in 1956, and its continued relevance implies it is a valuable tool (Forehand, 2010). It has since been revised, now with two dimensions – knowledge, and cognitive process (Näsström, 2009). With this study being about questioning, the focus will be the cognitive process dimension. The six levels in this dimension are: remembering, understanding, applying, analysing, evaluating, and creating (Forehand 2010). Remembering, understanding, and applying are classified as lower-order cognitive skills, whereas analysing, evaluating, and creating are higher-order skills (Forehand, 2005). Examples of these in questioning would be to ask, "What is...?" to encourage 'remembering', using lower-order thinking, or "What is your opinion of... and why?" to 'evaluate' using higher order thinking (Allen, 2013). Although, a flaw in the taxonomy has been recognised that creation is portrayed as the highest level, despite it not being better than the other levels, as different skills are necessary in different contexts (Arend, 2021). There may also be the misconception to always reach for the highest levels, whereas there should be different focuses for different skills (Arend, 2021).

The Curriculum for Wales (2022) appears to reflect these principles through the progression steps. For example, within the Humanities sector, a 'description of learning' about ethics and humanity begins at progression step (PS) one: this is the first level, being to 'understand the

need to respect others' (Welsh Government, 2020a). It progresses to PS two, 'being aware of right from wrong', and then PS three, 'understanding that there is inequality in society and having an awareness of human rights' (Welsh Government, 2020a). This demonstrates advancement from remembering in PS one, to understanding in PS two, to applying in PS three of that knowledge to their own rights and people's experiences within society. This is supported by Armstrong (2010), who highlights the suggestion that Bloom's Taxonomy has multiple uses for educators, these being: to create objectives for students, and organise these objectives in an appropriate way so that the instruction is suitable for the learners. This is applied to questioning by asking differentiated questions using the taxonomy, causing the pupils to employ those cognitive skills. Although, a criticism of the taxonomy is that it implies that each aspect of learning is separate, whereas a blend of learning often happens at once (Marzano and Kendall, 2007).

Mcleod (2023a) states that all teaching and learning requires sharing and debating knowledge. Through questioning, discussions can be stimulated, and information can be shared. Asking questions which provoke the learner to think critically and come to their own conclusion is synonymous with the theory of cognitive constructivism; this sees the learner as a problem-solver whereby students are encouraged to think for themselves (Mcleod, 2023a). The teacher's role in a constructivist classroom is to facilitate the learning through scaffolding (Mcleod, 2023a), which can be done by moving up or down the Bloom's taxonomy scale in accordance with the learner's capabilities.

An overlooked aspect of questioning is wait time: the moments awaited by the teacher for pupils to respond to a question. Rowe (1986, in Bulent et al., 2016) claims that three to five seconds is favourable and that this time allows for longer, better responses. In agreement with this is Stahl (1994, in Zepeda, 2013), who recommends that three or more seconds can lead to: longer, more accurate answers, more volunteer respondents, and higher test scores. Despite this, it has been found that average wait time is a second or less to answer a question, and under a second before reacting or responding with another question (Rowe, 1986, in Albergaria-Almeida, 2010). This insinuates that questioning is not as valuable an AfL tool as it should be, due to insufficient wait time inhibiting students.

Methodology

To understand the perspectives of School A regarding questioning, the research method chosen was the Mosaic approach. This approach combines various research methods, accumulating the different data to shape an informed understanding of the child's

perspectives (Greenfield, 2011; Clark, 2017). The Mosaic approach values the child's voice, recognising that children are adept communicators, but the adult must acknowledge this and try to understand it (Clark, 2001). This is inspired by the Reggio Emilia approach, whereby children and adults are viewed as equal participants and given an equal voice (Schroeder-Yu, 2008). These standards are upheld within the United Nations Convention on the Rights of the Child (UNCRC), outlining in Articles twelve and thirteen, that all children have the right to express their thoughts and have them heard and considered (UNICEF, 2017). The study also involves mixed methods research; the researcher accumulates data drawn from multiple methods, incorporating the results to make their inferences in consideration to both qualitative and quantitative data (Tashakkori and Creswell, 2007).

The tools utilised in this study were interviews and a questionnaire. Semi-structured interviews were conducted, meaning that there is a basic structure to the interview, planned around a central focus; however, this plan can be deviated from to pursue relevant insights that may not have been considered in the planning of questions (Magaldi and Berler, 2020). Adeoye-Olatunde and Olenik (2021) agree that it is a practical tool for this research question, stating that semi-structured interviews are useful for understanding the recipient of a service's perspective. The interviews were conducted with the year four pupils, meaning that the perspectives were coming from the 'recipients' who experience questioning as an AfL tool. An advantage of this technique is that the combination of verbal and non-verbal responses allows multifaceted interpretations for the researcher to evaluate, such as body language and pauses (Kakilla, 2021).

Purposeful sampling was done to select the eight interviewees, meaning that the selection was not purely random (Alsaawi, 2014). To avoid complaints of favouritism, the participants were chosen by the class teacher rather than the researcher. To ensure 'maximum variation' of perspectives (Alsaawi, 2014), it was requested that the sample be a mixture of children who are eager respondents to questions in class, and those who are more reserved. While there is not one best sample size for a study, saturation may occur when the interviewer receives repeated data that they have already acquired from other interviews (Alsaawi, 2014). Due to this, the decision was eight participants.

The evidence was documented by transcribing the interview, with audio recording for reassurance. The data produced is qualitative, which entails written notes, audible, or visible data to be copied into written format (Bailey, 2008). This will be analysed by grouping the responses to each question together into tables, for clearer comparison.

Doody and Noonan (2013) underline the disadvantages to interviews: time-consuming, vulnerable to bias, and the interviewees trying to please the researcher. This justified the decision to interview in pairs, as individual interviews would take longer, resulting in less responses, while larger groups could cause opinions to be overshadowed. The risk of dishonest answers to please the researcher or interviewee partner can not be eradicated completely, though attempts to limit this were made by stating that there are no right or wrong answers, and pairing children rather than grouping them. Despite this, a significant advantage to the interview process is the depth of information that can be elicited from conversation, providing thorough data (Harvey-Jordan and Long, 2023). The interviewer is also able to use probing questions to encourage further explanation (Whiting, 2008). Misconceptions about both questions or responses can be clarified, and more complex questions can be asked (Doody and Noonan, 2013).

The questionnaire was an anonymous online questionnaire, sent to all staff members of the school. Bartram (2019) notes the advantage that by highlighting anonymity to the participants, it encourages more honest answers. The questionnaire included a description at the beginning, explaining the purpose of the study and to emphasise that anonymity and confidentiality will be maintained. It involved ten, mainly open questions, but also including a likert scale, and rating of one to five. A likert scale is a selection which can range between answers, for example 'strongly agree' down to 'disagree' (Joshi et al., 2015). The variation of question styles will generate mainly qualitative data, but also some quantitative data. Quantitative data provides a numerical measurement (Dewitt Wallace Library, 2023), which will come from questions such as the rating. Johnson and Turner (2003) indicate that usually, using both qualitative and quantitative data produces a more accurate conclusion. However, some argue against this, implying that the two forms of data are incompatible to mix due to contradicting criterion (Doyle, Brady and Byrne, 2009).

A benefit to using questionnaires is that it gives the researcher the opportunity to gather data from a larger number of respondents in a reasonably short amount of time (Bartram, 2019). Although, (Mcleod, 2023b) argues that questionnaires using open questions are time-consuming for the respondent which can result in less participants. Considering this, the questionnaire was sent to all staff members, rather than only progression steps two and three teachers. The evidence is collected automatically online. It will be analysed in tables for the qualitative data, and in bar charts for quantitative data from the likert scale and rating questions. An additional strength is the lack of pressure on respondents and no interviewer bias (Gillham, 2008); participants can work through the questions at their own pace and be honest due to the anonymity.

Prior to conducting any research, an ethics form was completed and approved (see Appendix). This required detail of the research plans such as the purpose, methods, extent, and intended participants. A consent form was signed by the school, and assent was received from the children. Consent must be given from adults who are able to make an informed decision about the child's participation (Siegle, 2015). Assent then ensures that a child understands to their capabilities what their participation entails, to make their choice (Cotrim et al., 2021). Rabionet (2011) notes that interviews are more ethically complicated with issues of purpose, consent, assent, relationships, confidentiality, and protection to consider. BERA (2018) underlines the responsibility that the researcher has to participants to gain informed consent and assent, notify them of their right to withdraw, be transparent, and minimise any possible distress. The interview was explained to all children before participating, who were asked if they would be willing to partake. They were also given red and green cups to indicate to stop at any time throughout, ensuring ongoing assent. An explanation was given to staff that by completing the questionnaire, they consent to the data being used in a study, and that they have the right to stop at any time or avoid any of the questions. All data was anonymised at the source.

Findings and Discussion

Responses within the study quickly indicated that School A perceive questions as valuable to their learning. The questionnaire showed that one hundred per cent of staff rated questioning with five stars for effectiveness as an AfL tool (see Appendix, question eleven). When asked "Do you think questions are useful to us? Why?", all interviewees immediately replied positively. The pupils discussed how questions help them to learn more and that they "make your brain work" (see Appendix, question three). This connects to the ideology that teacher's questions can instigate thinking and encourage justification from students (Kawalkar and Vijapurkar, 2013; Nappi, 2017).

When queried which type of questions the staff felt provoked deeper thought, the response included questions involving "Do you agree with...?", "differentiating fact from opinion", "Prove it", and "What do you notice?" (see questionnaire responses, Appendix). These examples include a mixture of using both lower and higher order cognitive processes (Anderson and Krathwohl, 2001). Interestingly, when pupils were asked what they like and dislike about questions, there were differing opinions. A child from group C stated that "sometimes they are easy and sometimes they are hard, but the hard questions help you to learn". This demonstrates an understanding that using more difficult skills will aid their progress, which supports the findings of (Pogrow, 2005, in Conklin, 2012). In contrast, a

child from group D said that they enjoy questions when they are achievable, but “I get frustrated when they are hard, I lose my patience when it is difficult”. This coincides with Tofade, Elsner and Haines (2013), who debate that open questions can confuse and overwhelm students if phrased insufficiently. This led to the deduction that while higher order questions may appear better as they prompt deeper thought and longer replies from some children, they may reduce the number of children who are willing or able to answer the question. The lower order questions appear to be enjoyed by a larger spread of pupils who all seemed enthusiastic about engaging with them. These findings have led to a conclusion that agrees with Pate (2012) and McComas and Abraham (2004), suggesting a variety of questions to be good practice.

Many interview respondents said that their favourite way to answer questions is with a partner, using methods such as ‘think, pair, share’ and ‘hands up, pair up’. Every interview respondent said that they enjoyed discussing what they think with a partner, and that they would go to someone for help if work was challenging. This corroborates the theory of constructivism and the idea that learning is socially constructed, with Dewey (1938, in Mcleod, 2023a) describing learning as a collaborative social activity. In support of this is Vygotsky’s theory of the ‘zone of proximal development’, which argues that children can overcome challenges with the help of a ‘more knowledgeable other’ (Abtahi, Graven and Lerman, 2017).

Most pupils estimated that they are generally given around ten seconds of wait time for some questions, and even longer for more complex questions. These large estimates allude to the researcher that the pupils feel they have ample wait time from the teacher. While research suggests that three to five seconds is necessary to enrich responses, less than a second is given on average (Rowe, 1986, in Albergaria-Almeida, 2010; Bulent et al., 2016). Given that limited time restricts students’ answers, the fact that these pupils see questions as valuable may reflect that they are given enough wait time to answer successfully.

While discussing the study findings, a significant limitation to this research must be reflected upon. Faber and Fonseca (2014) underline that two of the same studies but with different sample sizes could result in differing outcomes, and so preferably sample sizes should not be small. Button et al. (2013) highlights that studies should be conducted with an adequate number of participants for a truthful depiction of results. The questionnaire responses were limited, with only one respondent. Such a restricted sample size means that there can be no comparison of questionnaire responses, and that the validity of the data is negatively affected as the perceptions of the staff overall cannot be comprehended. To improve this in

future, the questionnaire could be sent further in advance, and to staff from multiple schools. I would also arrange some staff interviews to guarantee I hear their perspectives.

Another consideration is the interviewer effect. This is when the responses given and the way that they are documented is affected dependent on who is the interviewer (Groves and Magilavy, 1986). This implies that as the interviewer has worked with these pupils before, they may be viewed as an educator rather than a researcher, causing pupils to feel that they should provide completely positive feedback, even if it is not their honest opinion. Due to this, the interviewer paid close attention to any hesitation when answering questions. The pupils were asked if they ever give an answer in class that they think the other person wants to hear, and there was some hesitation when answering this. All respondents first stated that they are always honest, but after a pause, some changed their minds. Two different interviewees said that they would agree with somebody else if they were not sure. This implies that some of the interviewees may have answered the same as their partner when doubtful during the interview, though they were asked for answers individually to reduce this. The interviewer attempted to avoid leading questions which could increase this issue further. However, being a novice researcher, I found it challenging to explain a question further, and probe for more information, without instilling ideas or examples which could affect the responses. Edwards (1993, in Hewett, 2001) clarifies that there is only a mere difference between aiding realisation and inflicting ideas. To improve future studies, I will avoid this by conducting research in multiple schools, all of which being unfamiliar to the researcher beforehand.

Conclusion

The predominant aim of the study was to discover the perspectives of School A regarding questioning as an AfL tool. The overarching conclusion drawn from the study was that staff and pupils agree that questioning is beneficial to pupil progression, recognising it to be a valuable part of their teaching and learning processes. This approved my hypothesis.

A focal point gathered from the findings is that for effective questioning, pupils must be given ample time to think, and questions should be phrased appropriately. Pupils appear to enjoy collaborating and can benefit from increased opportunities to debate and discuss amongst themselves. This study has positively impacted my professional practice by developing my skills as a researcher and providing the essential insights of pupils. Schroeder-Yu (2008) highlights the teacher's role as a researcher within the Reggio Approach, underlining that professional growth as an educator is necessary by using the data to reflect on personal

practice. By understanding the children this can help to inform my pedagogical choices in future, by involving more partner and group discussions and creating an environment encouraging enquiry and debate within the classroom. I will also be mindful to wait longer when asking questions, to allow more expressive responses.

Williams (in Conklin, 2012) states that information is always advancing, and people are needed to make critical decisions; he highlights the phrase 'life-long learners' and underlines that "The necessity for this is truer than ever in the twenty-first century" (Williams in Conklin, 2012, p. 7.). This links to the Curriculum for Wales (2022), as the core purpose is to create life-long learners, with 'critical thinking and problem solving' as one of the skills essential to reaching the four purposes (Welsh Government , 2020b). This validates the importance of implementing AfL, such as through questioning, to help pupils achieve this.

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