Effective questioning and bloom's taxonomy in the classroom

Introduction

The aim of this professional enquiry is to investigate the use of effective questioning and how questioning affects the improvement of pupils learning in the classroom as I feel there is an area for improvement in this field. Since the time of Socrates, asking questions has been a core component of teaching and learning, it provides teachers with important information about pupils understanding and learning progress. Effective questioning is a great and natural way to engage children in classroom dialogue and expand their learning. Teachers ask about 400 questions per day (Leven and Long, 1981) and that shows the importance of developing appropriate questioning approaches. Black suggests that " more effort has to be spent in framing questions that are worth asking: that is, questions which explore issues that are critical to the development of students' understanding" (Black et al., 2003)

Formative assessment

In about 50 years of research the evidence shows that using formative assessment within the classroom has a large impact on student learning. In 1967 Michael Scriven highlighted differences between formative evaluations, which were intended to encourage progress within an ongoing activity, and summative evaluations – these used to assess whether the results of certain evaluations met certain goals (Scriven, 1967). However Bloom, Hastings & Madaus (1971) were the first to extend the usage to its accepted and current meaning. They described tests at the end of units, mid-term and at the end of a course, which were judging students' learning progress as summative

evaluations and they compare them with " another type of evaluation which all who are involved—student, teacher, curriculum maker—would welcome because they find it so useful in helping them improve what they wish to do" (p. 117), which they called ' formative evaluation'. Bloom (1969) supported the same views regarding to pupil assessment in classroom and he made a point of formative assessment as being a tool to correct any mistake during the learning process as provide a good quality feedback (Wiliam, 2006, p. 283). Crooks (1988) declared that classroom assessment is ' the most potent forces influencing education' however it needs careful planning which requires time to prepare it. Sadler (1989) stated that three concepts were crucial to the effectiveness of formative assessment: helping students to recognise clearly a goal they want to achieve, providing them with evidence about how well their work matches that goal, describing the ways to close the gap between their current performance and the goal.

In the UK, the term ' formative assessment' (also used synonymously with ' Assessment for Learning') is a result of the joint research of Paul Black and Dylan Wiliam. They described formative assessment as ' all those activities undertaken by teachers, and/or their students to modify teaching and learning activities in which they [the students] are engaged' (1998b, p. 8). They compared the classroom to a black box and started to investigate what was happening inside it. The results showed that students who learn in a formative way are able to achieve much more and reach better results than other students. Black and Wiliam's review concluded that " there is no other way of raising standards for which such a strong prima facie case can be made" (1998b, p. 148). AfL is an outcome of these and other research

findings and is now established as " one of the most powerful ways of improving learning and raising standards and current research is adding further evidence in support of this claim" (British Council, 2016).

Policy of Assessment is for Learning (AifL) in Scotland began in early 2002 with an overall aim to " provide a streamlined and coherent system of assessment to ensure pupils, parents, teachers and other professionals have feedback they need about pupils' learning and development needs" (Scottish Government, 2005). AifL includes a wide range of assessment including assessment for learning, assessment of learning and assessment as learning (Building the Curriculum 5, 2010, pp. 5-6). Assessment for learning (AfL) is considered and referred to as formative assessment, assessment as learning is recognised as summative assessment (Clarke, 2014, p. 7). Assessment for learning happens at all stages of the learning process. It is the process of collecting and interpreting gathered evidence to be used by teachers and also learners to establish where they are in their learning in this moment, where they need to go to achieve their goals, and how best to get there (Assessment Reform Group, 2002). AfL stimulate learning and promotes positive motivation by giving a priority to progress and achievement rather than failure.

Strategies of AfL help to understand where the pupils are at in their learning in particular moment. Dunn & Mulvenon (2009) report criticise interest in using formative assessment as they claimed that Black & Wiliams report (1998) is limited in its use of data and shows a need for more large-scale research to be carried out, to gather more valid information. Dunn & Mulvenon state " we do not argue that formative evaluation is unimportant,

only that limited empirical evidence exists to support the " best practices" for formative evaluation. In particular, limited evidence investigates the group that may benefit the most from formative evaluation, low performing students" (Dunn and Mulvenon, 2009).

Ravet (2012) shows that a need for assessment must be authentic and aware teachers not to make any assumptions or label children based only on gathered evidence. She also states that there are important connections for learning, social justice and inclusion in this area. Ravet points out the problem that suggested teaching actions are mainly ' talk' focused and it might cause some difficulties for children who might not be able to communicate effectively from different reasons, for example, pupils who have English as an additional language, selective mutism or autism. She stated that is absolutely necessary for all teaching practitioners to know and understand of inclusion and social justice while implementing AfL strategies.

AfL should be concentrated around the learning of the pupils and be considered as an essential professional skill for all teaching practitioners. Black and Wiliam (1998b, pp. 8-13) claimed that AfL is about making lifelong learners and becoming a better teaching practitioner. The evidence gathered by them help AfL practices to measure learning achievement as well as to identify the main elements of this practice (Black & Wiliam, 1998a, 1998b). They characterized these as: success criteria being shared with learners, providing suitable feedback, self-assessment and peer-assessment and, the development of class talk and questioning.

Effective questioning and Bloom's Taxonomy

Effective questioning and classroom talk help with progress in learning and higher order thinking, promote imagination, creative thinking, achieve a suitable challenge level and is a key aspect of any primary classroom lesson (Clarke, 2014). Paul and Elder (2000) state that thinking process cannot develop without asking questions. Teachers use questions in order to create and keep pupils learning ' alive', to create an active style to the learning and as a part of the AfL in order to decide on planning, organising and delivering forthcoming learning. Approximately 80% of a teacher's school day is spent on asking questions, that makes it the one of the most common practices of all (Stevens, 1912). Tienken, Goldberg and DiRocco (2009) raised a concern that teachers are not asking purposeful, right types of questions that have been support learner in achievement like higher order, curious and critical thinking, and problem solving questions. Good questions will lead to new knowledge, generate discussion, poorly constructed questions can prevent from learning by creating confusion and reduce creative thinking.

The simple way to define questions is to classify them as either convergent or divergent. A convergent question, also known as a closed question, is designed to collect a specific response or a limit list of possible answers (McComas, Abraham, 2012). Teachers use closed questions to get a definite, clear response from learners; this is useful in checking pupils' memory and recall of facts. Closed questions play very important role in learning process and developing the core knowledge that pupils need to be able to fully engage with higher cognitive questions. Divergent questions, known as open questions, elicit a varied and individual response that often requires

substantive elaboration and discussion. Divergent questions do not have a single " best" response. Answers to them can include detailed descriptions of personal ides or opinions about specific subject and the control of the discussion moves to the person being asked the questions. It is important for teachers to plan the use of open questions carefully and attempt to foresee and understand the potential pitfalls/downfalls of our questions (McComas, Abraham, 2012). Anderson and Krathwohl (2001, p. 101) described open questions as ' productive' and closed questions as ' reproductive'.

Bloom's taxonomy is a six-level hierarchical model for use during questioning and assessment, that uses observed student behaviour to infer the level of student achievement. Moving from simple to more complex level thinking skills, the taxonomy include knowledge, comprehension, application, analysis, synthesis, and evaluation. (Bloom et al., 1956).

Bloom's taxonomy had permeated/spread/filled in teaching and pedagogical planning for almost 50 years before it was revised in 2001 by Anderson and Krathwohl. Low-order thinking skills are those where the learner is working on skills like remember, understand and apply concepts. Higher-order thinking questions are those where learner is required to analyse, evaluate and create. The model was named after Benjamin Bloom, who chaired the committee of educators that devised the taxonomy and who edited the text " Taxonomy of Educational Objectives: The Classification of Educational Goals" (Bloom et al., 1956). He classified different types of thinking and placed them in order with the most simple at the bottom and the most difficult at the top. Although Bloom's taxonomy is applied in classroom

setting every day, some critics doubt in existence/presence of a hierarchical link (Paul, 1993, p. 27).

Bloom's taxonomy of learning categorizes cognitive levels into several domains (Bloom 1956). Specific questions that have answers in the knowledge, comprehension, and application domains are frequently considered lower-order questions, while questions in the analysis, synthesis, and evaluation domains are considered higher-order questions (Neal, 2012). Higher-order questions encourage deeper and critical thinking and teachers are heartened to ask these types of questions. Although this does not mean that teachers cannot ask lower-order questions, some teachers see lower levels presented in taxonomy as the lower levels as not really important during a lesson (Flannery, 2007). Some critics see the three lowest levels as hierarchically ordered, but the three higher levels (analyse, evaluate, create) as equivalent (Anderson & Krathwohl, 2001, p. 121). Clarke mentions that effective questioning is one of the key ingredients of AfL and used as a starter before every lesson helps to establish current understanding and prior knowledge (Clarke, 2014, p. 6). The research showed that lower-order questions are far more frequently used than higher – order questions in the classroom: 20% of classroom questions are higher cognitive questions, 20% are procedural questions (for example ' have you got your books with you?'), 60% are lower cognitive questions (Simmonds, 2017). Perhaps teachers do not value higher-order questions and do not find them effective, or the reason for this could be a lack of formal training on how to build questions to stimulate progress in learning (Brualdi, 2012). This definatelly suggest that teachers need to increase their use of higher cognitive questions in order to

stimulate pupils learning and thinking process, however we cannot forget of the value of lower cognitive questions.

Conclusion

Formative assessment is a process and involves working with students so that teachers and learners know where they are in their learning, where they need to be, and how they are going to get there. Asking good questions extremely important in the classroom, it improves children's thinking and engagement and that is why I have chosen it for my professional enquiry. After my research and literature I have read I am planning to link this to the classroom settings during my next placement. I will investigate the use of effective questioning and how questioning can improve children understanding in the classroom. I will use higher – and lower -order questions however I will be working with early year's pupils and I think that using lover – order question might be more beneficial.

References:

- ANDERSON, L., KRATHWOHL, D., (2001). *Taxonomy for learning, teaching and assessing: A revision of bloom's taxonomy of educational objectives.* New York: Longman.
- ASSESSMENT REFORM GROUP (ARG), (2002). *Research based principles to guide classroom practice.* London: ARG. Available: https://www. aaia. org. uk/content/uploads/2010/06/Assessment-for-Learning-10-principles. pdf[Date Accessed 29th November 2018].

- BLACK, P., HARRISON, C., LEE, C., Marshall, B., William, D. (2003). *Assessment for Learning- putting it into practice* . Maidenhead, U. K.: Open university Press.

- BLACK, P., WILIAM, D., (1998a). *Assessment and classroom learning* . Assessment in Education: Principles, Policy and Practice, pp. 7-73.

- BLACK, P., WILIAM, D., (1998b *). Inside the black box: Raising standards through classroom assessment* . London: GL Assessment

- BLOOM, B., (1969). *Some theoretical issues relating to educational evaluation* . In R. TYLER, ed., Educational evaluation: New roles, new means (National Society for the   Study of Education Yearbook, 68(2), pp. 26–50). Chicago: University of Chicago Press.

- BLOOM, B., ENGELHART, FURST, E., HILL, W., KRATHWOHL, D., (1956). *Taxonomy of educational objectives.* Handbook 1: The cognitive domain. New York: Longman.

- BLOOM, B., HASTINGS, J., MADAUS, G.,(1971). *Handbook on Formative and Summative Evaluation of Student Learning* . McGraw-Hill Book Co, New York

- BRITISH COUNCIL, (2016). *Assessment for Learning* . London: British Council and BBC World Service. Available: https://www. teachingenglish. org. uk/article/assessment-learning[Date Accessed: 27 [th] November 2018]

- BRUALDI, A. (1998). *Classroom questions. Practical Assessment, Research & Evaluation.* Available: https://pareonline. net/getvn. asp? v= 6&n= 6[Date Accessed: 1 [st] December 2018]

- CLARKE, S., (2014). *Outstanding formative assessment* . Oxon: Hodder Education

- CROOKS, T. J. (1988.) *The impact of classroom evaluation practices on students* , *Review of Educational Research* , 58, pp. 438-481.

- DUNN, K., MULVENON, S. (2009). *A Critical Review of Research on Formative Assessment: The Limited Scientific Evidence of the Impact of Formative Assessment in Education.* University of Arkansas. Available: https://pareonline. net/pdf/v14n7. pdf[Date Accessed: 1 st December 2018]

- FLANNERY, C., (2007). *Observations on biology* . The American Biology Teacher, 69(9), pp. 561-564.

- LEVEN, T., LONG, R. (1981). *Effective instruction.* Washington, DC: Association for Supervision and Curriculum Development

- MCCOMAS , W., ABRAHAM, L. (2012). *Asking more effective questions* . Rossier School of Education. Available: https://uwaterloo. ca/centre-for-teaching-excellence/sites/ca. centre-for-teaching-excellence/files/uploads/files/asking_better_questio ns. pdf[Date Accessed: 26 th November 2018]

- NEAL, M. (2012). *Engaging students through effective questions.* EdCan Network. Available: https://www. edcan. ca/articles/engaging-students-through-effective-questions/[Date Accessed: 3 rd December 2018]

- PAUL, R., (1993). *Critical thinking: what every person needs to survive in a rapidly changing world* . 3rd ed. California: Sonoma State University Press

- PAUL, R., ELDER, L. (2000). *Critical Thinking: Basic Theory and Instructional Structures Handbook.* Foundation for Critical Thinking

- SADLER, R. (1989) *Formative assessment and the design of instructional systems* . Instructional Science, 18, pp. 119-144.

- SCOTTISH GOVERNMENT, (2005). *AifL – Assessment is for Learning.* Edinburgh: The Scottish Government. Available: https://www2. gov. scot/Publications/2005/09/20105413/54156[Date Accessed: 1 st December 2018]

- SCOTTISH GOVERNMENT, (2010). *Curriculum for Excellence: Building the Curriculum 5 a Framework for Assessment: Recognising Achievement, Profiling and Reporting.* Edinburgh: The Scottish Government. Available: https://education. gov. scot/Documents/btc5-achievement. pdf [Date Accessed: 5th December 2018]

- SCRIVEN, M., (1967 *). The methodology of evaluation* . In: R. TYLER, R. GAGNE and M. SCRIVEN, Eds., Perspectives of curriculum evaluation, Chicago, IL: Rand McNally. pp. 39-83.

- SIMMONDS, M. (2017). *The importance of questioning.* Class teaching. Available: https://classteaching. wordpress. com/2017/01/19/the-importance-of-questioning/[Date Accessed: 5 th December 2018]

- STEVENS, R., (1912). *The question as a measure of efficiency in instruction: A critical study of class-room practice* (No. 48). Teachers college: Columbia University.

- TIENKEN, C., Goldberg, S., DiRocco, D. (2009). *Questioning the questions* . Kappa Delta Pi Record, 46(1), 39-43.

- WILIAM, D., (2006). *Formative assessment: Getting the focus right* . Educational   Assessment, 11(3-4), pp. 283-289.