

## **What happens when Bloom's taxonomy is used in the classroom?**

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### ***Rationale***

Asking questions is a key aspect of teaching, in fact teachers ask up to two questions every minute, up to 400 in a day, which is around 70,000 a year (Hastings, 2003). From these statistics it's clear to see that questioning plays a pivotal part in the classroom. While other hierarchical systems have been developed over time, it is Bloom's taxonomy, which was published in 1956, that is still the de facto standard (Forehand, 2011).

Asking questions provides teachers with immediate feedback on what the pupils in front of them know, understand and what can be improved upon. Even so, research has shown that teacher led talking is overwhelmingly prevalent, rather than exchanges which elicit higher order thinking from pupils (Pollard, 2014). The aim of this enquiry is to experiment with asking a wider range of questions, especially in-depth questions that promote higher order thinking.

Bloom's questioning technique is based on six categories; Knowledge, Comprehension, Analysis, Application, Synthesis and Evaluation. This method of questioning is designed to promote higher order thinking, stimulate classroom discussion, and enhance understanding.

As a practitioner I wanted to expose my pupils to Bloom's taxonomy questioning, and record the impact it had on individuals, my own teaching, as well as the class as a whole.

### ***Aims***

The aim of this study is to implement Bloom's taxonomy questioning within the classroom, and to assess what impact it has individually on pupils, on my own teaching experience, and the class as a whole.

### ***Methodology***

This research was conducted in an S1 class, during the integer topic. All maths classes are set, however there are still a range of abilities within the class, as well as pupils with Additional Support Needs.

Before beginning my enquiry, pupils were grouped into three sections; lower order, middle order and higher order. These grouping were based on previous formative assessment in class, as well as summative assessment and teacher observations. This was to ensure pupils were asked questions that they had a high chance of answering successfully, so that they would increase in confidence. If pupils showed that they could answer a particular level of questions, then would then move up to the next level. For example, if they were confident answering knowledge questions they would move up to comprehension questions. In the same way, if pupils struggled with a level of questions, they would move down a level. The reason for this was to ensure that all pupils were set up for success, and unaware of their specific level within the class.

Initially, higher order questioning was introduced into lessons, based around pupils' groupings. Class discussions were initiated about how we can explain what an integer is, what a negative number is and so on. When verbally questioning pupils lower order questions were provided for the lower ability pupils. Examples of these questions are: What is -3 add 4? What is one more than -6? The more able pupils were given higher order questions, an example of some of these are: What are the rules for multiplying negative numbers? Can you write a question that has a negative answer?

During this part of the enquiry that data was collected on pupil participation and engagement. Questions were always asked first before a pupil was selected to answer, to ensure that all pupils were given thinking time and coming up with an answer.

At the end of each part of the topic pupils were given six questions, based on the Bloom's structure, to complete individually. Pupils were asked to attempt as many questions as they could, but not to worry if they struggled with some. The emphasis was for them to try their best. These questions were collected in to mark (Appendix 1).

The most formal data collection was through the sets of six questions which were collected in. The class was also observed in terms of their participation and engagement during questioning, and pupil's jotter work was monitored.

### ***Findings***

Incorporating Bloom's taxonomy into my classroom has allowed me to expand my questioning techniques and gather evidence about its affect.

The first thing I noticed was during questioning. When I asked a question first, and then picked a pupil to answer, all pupils were engaged and thinking. I then strategically picked a pupil to answer, based on the question and their grouping. This ensured a high level of success which was designed to build pupil confidence. I noticed that pupils who are usually quiet seemed to become surer of themselves, and more confident in answering out. Pupils with additional support needs, however, didn't seem to enjoy this type of questioning. They respond best to specific questions that have one answer, instead of the discussion questions. I noticed that they became frustrated at times, and wanted to get on with questions.

All pupils found it difficult to answer questions when I used language they weren't used to, words such as distinguish, examine, evaluate and construct all had to be explained before they could attempt to answer the question. I think this was beneficial within the lessons as it incorporated literacy into their maths.

When assessing the summative assessment questions the findings were less clear. There was an increase in correct answers between the first and fourth set, but it wasn't a large change overall. I noticed that some pupils scored lower on the last set of questions compared to the first, I think this has more to do with the increasing difficulty of the topic and less to do with the types of questions being asked. When pupils from the low order questioning section were evaluated, they made a bigger improvement than those in the higher order section. It shows they have gained a deeper understanding of the topic and can put their answers into words more easily.

Pupils with additional support needs showed consistent levels of answers, there seemed to be little or no change in their results over the enquiry period.

The biggest change I noticed was that the less confident pupils were more engaged in lessons, and more willing to participate and answer questions.

## ***Conclusions***

Overall, I think introducing Bloom's taxonomy into my classroom has had a positive effect, both on myself and my pupils. Pupil participation increased, and I believe that the confidence levels for my pupils was also boosted.

The pupils who this enquiry had the greatest effect on was the lower ability pupils, however pupils with additional support needs seemed reluctant to embrace this new questioning strategy and resisted. I think, in time, they would be more accepting of this strategy and improvements could potentially be seen.

I think the enquiry would need to be actioned over a longer period of time for a more definite conclusion to be made.

## ***Implications for Future Practice***

Implementing Bloom's taxonomy in my classroom has helped me to ensure all pupils achieve success in the classroom, and therefore build their confidence. In the future I will expand this questioning technique to my other classes, and hope to track their progress over a longer period of time. I also plan to hand out a questionnaire to see how the pupils feel about the process.

I also plan to read more about other questioning strategies and how they could have a positive impact on myself as a teacher, and within my classroom as a whole.

## ***Bibliography***

Forehand, M. (2011). Bloom's Taxonomy. *Emerging perspectives on learning, teaching and technology*, 1-3.

Hastings, S. (2003). <https://www.tes.com/news/questioning>. Retrieved from <https://www.tes.com/news/questioning>

Pollard, A. (2014). *Reflective Teaching*. Bloomsbury Publishing Ltd.

## Appendix 1

### Check-up questions

1. What is a negative number?

a number which is below 0

2. Where are negative numbers used?

money  
temperature  
Grids

3. Calculate the difference between -3 and 7

10

4. Put these temperatures in order, warmest to coldest

✓  
-4°C, 12°C, -7°C, -1°C, 6°C

12°C, 6°C, -1°C, -4°C, -7°C

4. Give a reason for why -12 is a smaller number than -5

because -12 is 12 below zero  
and -5 is only 5

6. Create your own division question that has a negative answer

$$-3 \div 3 = -9$$