

Creates, Chiara (2017) Can asking individual readers in Key Stage 2 higher order Bloom's questions improve their progress in reading when applied by Teaching Assistants? The STeP Journal: Student Teacher Perspectives, 4 (3). pp. 17-24.

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**Can asking individual readers in Key Stage 2
higher order Bloom's questions improve their
progress in reading when applied by Teaching
Assistants?**

The STeP Journal
Student Teacher Perspectives
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University of Cumbria
Vol 4 (3) pages 17-24

Chiara Creates
Canterbury Christ Church University

Abstract

This action research project explores how Teaching Assistants can use Bloom's Taxonomy to ask higher order questions to develop higher level thinking amongst Key Stage 2 pupils, and evaluates whether this has any short-term impact on pupil progress.

Background

With the recent announcement from governors that the School Improvement Plan priority for the next year will be to enable better progress in reading, it seemed logical to evaluate and adapt practice in this area at my school. From overhearing my TAs, I was doubtful of the efficacy of their questioning when hearing pupils read. From this doubt stemmed this action research project into how TAs can ask more higher order questions to develop pupils' reading abilities.

Literature Review

It is widely acknowledged that questions, irrespective of their delivery, play a fundamental role in enabling learning in a classroom setting. Aschner (1961) 'claimed that the asking of questions is 'one of the basic ways by which the teacher stimulates student thinking and learning' (cited in Gall, 1970, p.707). This questioning reaches across the curriculum and from whole class to one-to-one learning, in attempts 'to develop critical thinking skills and inquiring attitudes' (Cotton, 2001, p.1). The current government claim to be 'consistently prioritis[ing] raising standards in reading' (Department for Education, 2015, p.4), which is only possible if practitioners can form effective questions. Indeed, Nick Gibb, Minister of State for School Reform, *opened* the foreword of the 2015 'Reading: The Next Steps' paper by criticising the questioning that he had observed occurring during a one-to-one reading session with a Key Stage 2 pupil (Department for Education, 2015). If this is a government priority, it needs to be a practitioner priority too.

Questions, when formed and delivered with consideration of their purpose, are effective as they require pupils to 'follow a series of steps ... to produce responses to the questions posed' (Cotton, 2001, p.2). Pupils are using a multitude of different skills including:

- 'Attending to the question'
- 'Deciphering the meaning of the question'
- 'Generating a covert response (i.e., formulating a response in one's mind)'
- 'Generating an overt response; and often'
- 'Revising the response (based on teacher probing or other feedback)' (Cotton, 2001, p.2)

Due to this complex process, practitioners can use questions to reliably assess and develop pupils' understanding of the text when hearing individual readers. If the teacher or TA (teaching assistant) is able to 'engage in a meaningful dialogue with their students about possible answers to these questions' (Byrd, 2002, pp.244-245), then they are developing the pupil's cognitive thinking skills, which are necessary for higher level thinking.

Citation

Creates, C. (2017) 'Can asking individual readers in key stage 2 higher order bloom's questions improve their progress in reading when applied by teaching assistants?', 4(3), pp. 17-24.

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However, Gall (1970) found that at the time of her study, only 20% of questions asked by practitioners 'require[d] students to think', compared to an enormous 60% which merely demanded pupils recall a fact without demonstrating any understanding of the meaning or implications of this fact, and a further 20% which were simply 'procedural' (Gall, 1970, p.713). Many similar findings from other research collectively demanded that a new approach to asking questions was found, so that practitioners can have guidance in how to form questions to enable dialogue requiring pupil thinking.

One approach that resurfaced as a result of this was originally suggested by Taba (1964-1966). He suggested that recall questions were not entirely redundant, and that teachers should 'start a discussion by asking recall questions to test students' knowledge of facts and then ask higher-cognitive questions that require[d] manipulation of these facts' (Gall, 1970, p.711). Taba argued that practitioners should use questions increasing in difficulty throughout a lesson, balancing lower and higher order cognitive questions.

'Lower cognitive questions are those which ask the student merely to recall verbatim or in his/her own words material previously read' (Cotton, 2001, p.3). They are questions based on fact with only one correct answer, and require pupils to use their memories rather than actively considering an answer. 'Higher cognitive questions are defined as those which ask the student to mentally manipulate bits of information previously learned to create an answer or to support an answer with logically reasoned evidence' (Cotton, 2001, p.4). They challenge the pupil to interpret information and use prior understanding, gathering this together to form a coherent answer. Whilst academia has made many attempts at classifying lower and higher order cognitive questions into a hierarchy that is accessible to practitioners, the most widely used, and assumed most effective (Bloom et al., 1956, cited in Winne, 1979), is Bloom's Taxonomy, which has six levels of sophistication. It is similar yet more detailed than the initial recommendations of Taba (1964). The 'levels, in ascending order of sophistication, are: (1) knowledge, (2) comprehension, (3) application, (4) analysis, (5) synthesis, and (6) evaluation' (Cotton, 2001, p.3). Lower order questions tend to fall into the knowledge and comprehension categories, whereas higher order questions warrant 'logically reasoned' responses (Winne, 1979, p.14) that require the 'speculative, inferential and evaluative thinking' of the latter four categories (Cotton, 2001, p.3). Practitioners should be able to use these levels to guide their questioning so that they are able to challenge their pupils where necessary.

The influence of Bloom's Taxonomy on wider practice in schools is perhaps due to the quantity of research projects that have reached conclusions supportive of the hierarchy. Cotton (2001) found that 'increasing the use of higher cognitive questions [in line with the higher levels of the taxonomy] ... produces superior learning gains for students' (p.4). This is likely because of the greater demand placed on pupils to use higher level cognitive thinking skills. Furthermore, Hunkins (1967, 1968) 'found that [pupils from the group which had practiced] analysis-evaluation [questions] ... earned a significantly higher score on ... [the specially designed post-intervention] test than did students who [practised] ... questions that stressed knowledge' – not having prepared for the knowledge and comprehension questions did not disadvantage the analysis-evaluation group in terms of answering these correctly, and they scored similarly to the control group who had rehearsed these, but they were considerably more successful in answering the higher-level questions (cited in Gall, 1970, p.714). This is understandable as 'teaching students to draw inferences and giving them practice in doing so result[s] in higher cognitive responses and greater learning gains' for pupils (Cotton, 2001, p.4).

However, it is not universally accepted that asking higher order questions best supports pupils. Cotton (2001) comments on the numerous studies that have found lower order questions more effective for questioning primary pupils, and on those which have found no difference between the attainments of pupils asked higher order questions and that of pupils asked lower order questions. Furthermore, Bloom (1956) also proceeded to criticise his own taxonomy, highlighting the impossibility of knowing

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whether pupils were managing to answer higher order questions by relying on their lower order cognitive processing skills (Gall, 1970). Whilst it is impossible to address the second issue in this short-term project, I felt it worthwhile to analyse the effects of using the taxonomy with children in my own class, to establish whether higher order questioning, when delivered by a TA, can have a significant effect on pupil progress, settling, at least with regard to my pupils in my school, the ongoing debate.

Furthermore, as 'Bloom's Taxonomy ... [is] more useful than general question types in training teachers to improve their classroom instruction' (Gall, 1970, p.711), it was logical to use his principles to guide my TAs, over any other approach. The current national focus on reading (Department for Education, 2015) meant my school were keen to analyse and intervene in current practice, and so it was then reasonable to use Bloom's Taxonomy to do this. It is important that TAs are guided in their instruction, as 'training teachers in asking higher cognitive questions is positively related to the achievement of students' (Cotton, 2001, p.7). This indicates that when TAs are given a structured approach to follow, the outcomes will be better for pupil progress. Furthermore, clearly defining expectations for practice can help challenge unhelpful assumptions that TAs sometimes have, perceiving certain children as 'slow or poor learners' and subsequently asking them 'fewer higher cognitive questions than students perceived as more capable learners' damaging their potential to make significant progress (Cotton, 2001, p.4).

Methodology

An Interpretivist Approach

Underpinning this project is an interpretivist approach to the analysis of the data. Qualitative data demand this approach, despite criticisms that conclusions may be subject to researcher bias, particularly if this researcher lacks 'skill, vision or integrity' (Pope et al., 2000, p.114). It is important to acknowledge that my own predispositions may have caused bias in my assessment of the quality of questions and answers. However, this bias stemmed from my awareness of the outcomes of pre-existing research, and therefore it is likely that any inflated findings will only support current thinking. Furthermore, in order to usefully study the extent to which questioning scaffolds and challenges pupils, qualitative data collection is necessary. Quantitative data could not illustrate anything more than how many questions were asked, which sheds little light on how questioning, and in particular the language used when questioning, could effectively demand different cognitive skills.

Case Study

This project was a case study of two TAs and six pupils. Undertaking a case study provides opportunities for the collection of rich data which can be incredibly insightful. This is partly because case studies 'typically combine data collection methods', giving a broader picture (Eisenhardt, 1989, p.534). This project combined observation and discussion. The depth of the findings is also due to the small sample size, which compliments the nature of action research. This is because the researcher must be available to support participants when suggesting changes to their practice. Although the lack of generalisability with case studies is well acknowledged (Flyvbjerg, 2006), I found it useful acting as the point of reference for participants when they had queries. This meant that my recommendations were established as intended, and had the greatest influence on pupils. Of course, pilot studies with other Teaching Assistants may be required before the changes are implemented in a wider context, but a case study can certainly act as the foundation for justifying change.

Participants

a) School

This research was undertaken in my training school. The school was rated as 'Good' in its last Ofsted inspection in 2011. It is a three-form entry community school with a mixed demographic of pupils, including higher than average numbers of pupils with Education, Health and Care Plans and eligible for Free School Meals, but lower than average with English as an Additional

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Language and from minority ethnic backgrounds (Department for Education, 2015b). The children who participated in this research represented the cross-nature of this context.

b) Teaching Assistants

I observed two Teaching Assistants as part of the project. They have both held positions at the school for over five years and are familiar with school policies. They understand their responsibilities to hear pupils read and question them twice a week and communicate with the class teacher successes and concerns. They agreed to participate in the project to support their professional development.

c) Children

The six children selected to participate in the project were all from Year 4, where I teach, to avoid pupils who I do not teach feeling intimidated by my presence. The individuals were chosen to represent both sexes and a range of reading abilities. One pupil had statement for Dyslexia and one pupil had a statement for ADD, ADHD and ASD. This was intentional to enable me to observe how TAs might differentiate their questions.

Observations and Discussions

In order to most reliably identify the questions asked of pupils, I first observed the TAs listening to individual readers. Observation by the researcher allows the collection of data relevant to the research question and often, regardless of its intended purpose, leads to 'constructive critical feedback aimed at improving ... instructional techniques' (The Glossary of Education Reform, 2013), so was an ideal methodology choice for this project. Furthermore, because reading routines had previously been established, TAs and pupils were less likely to act differently, increasing the validity of the research. To secure this further, I observed from afar, sitting at the next table so that I was distanced from the interaction. Interactions were audio recorded to make analysis easier. The questions asked were transcribed. Audio recordings were deleted after analysis to protect participant's anonymity.

On completing these observations, I immediately introduced the TAs to a set of questions I wanted them to ask of pupils. I guided them through the questions, ensuring they understood the language, knew the expectations for pupil answers and understood the basic theory underpinning the style of question. This gave them the opportunity to ask questions and me the reassurance that they understood the required changes to their practice.

I then observed the same TAs with the same children to collect data on whether the TAs were confidently and accurately using the questions provided to scaffold and challenge pupils where appropriate and whether pupil answers were more developed. I followed the same procedure to maintain consistency.

Ethical Considerations

To guide my consideration of ethical issues in this study, I formed the following five areas. These were based on the most relevant of Bryman and Bell's (2007) ten key principles for ethical research.

a) Protection of Participants

i. TAs

It was important for both their psychological wellbeing and the validity of the research that the TAs did not feel humiliated or under pressure during the observations. In order to reassure participants, I explained that I was trialling a new scheme of questions based on current research.

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ii. Children

Equally, it was crucial that the children did not experience embarrassment, humiliation or feel under pressure by my presence in their reading session. In order to avoid this, pupils were made aware that I was observing the TA and was not there to assess them.

b) *Confidentiality*

My training school was promised anonymity to protect their identification as participants in this research. This is important in order to protect their rights and to prevent scrutiny of their practice. Audio recordings were deleted to prevent voice and name recognition.

c) *Informed consent*

The Headteacher gave permission for and even encouraged the research to be carried out within the school. As the researcher, I organised a meeting with the TAs to explain the project before they agreed to participate. Informed consent was not required from the parents/guardians of the pupils, as reading to an adult is not outside the realms of everyday routine.

d) *The right to withdraw*

When giving fully informed consent, participants were made aware of their right to withdraw from the research at any point, without consequence.

e) *Debrief*

The TAs were 'debriefed' following the research project. This involved an informal meeting to discuss the findings of the research and for them to question how the conclusions reached might and should influence their practice.

Data Presentation and Analysis

Whilst it may seem unusual to present and analyse data simultaneously, this is common practice in qualitative research as it 'allows questions to be refined and new avenues of inquiry to develop' (Pope et al., 2000, p.114).

Quality of Questions

There was a greater variety and quantity of higher order questions asked post-intervention (see Table 1. below). The majority of questions asked before intervention were knowledge and comprehension based questions, whereas when the TAs used my guidance, the majority of questions, as intended, were from the latter four stages of the taxonomy. This will support pupils' cognitive development and challenge them effectively (Cotton, 2001; Winnie, 1979). Furthermore, post-intervention there was a great variety of skills required of pupils in order to answer the questions.

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Table 1. A table to show the actions required of the key questions asked by TAs.

Before intervention		After intervention		Key
Action required	No. of questions	Action required	No. of questions	
Recall	8	Describe	1	Knowledge based questions
Define	3	Predict	2	
Change	1	Locate	2	Comprehension based questions
Predict	2	List	1	
Relate	2	Change	1	Application based questions
Justify	1	Dramatize	1	
Infer	1	Compare	3	Analysis based questions
		Solve	2	
		Breakdown	1	Synthesis based questions
		Relate	3	
		Justify	1	Evaluation based questions
Total	18	Total	18	

This table shows the nature of the three key questions asked in each child's individual reading session pre and post intervention, which is why both columns total 18 questions despite the greater number asked overall pre-intervention.

Quantity of Questions

When conducting the observations, it immediately became apparent to me that post-intervention, TAs were asking less questions. This is demonstrated in Table 2. below:

Table 2. A table to show the number of questions asked by TAs.

Before intervention		After intervention	
Total No.	56	Total No.	41
Average	9.3	Average	6.8

Clearly TAs were now asking fewer questions of the pupils. This is likely to be beneficial to pupils' reading abilities. Asking more questions wastes valuable reading time and means that the pupil is less likely to get into the flow of the story, limiting their understanding and therefore performance when answering questions, painting an invalid picture of their abilities; the pupil may be capable of appropriately answering questions on the text should they have been allowed time to 'get into' the story. Furthermore, having to answer a large number of probing questions instead of simply reading aloud can reduce the enjoyment of reading – which in turn inhibits pupil progress. Given the

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government focus on the 'enjoyment' of reading currently (Department for Education, 2015), this is unlikely to demonstrate good practice should OFSTED observe.

Quality of Answers

Progress in reading at the school is tracked through statements which indicate whether a pupil is below, working towards, expected or secure in their reading ability, based on National Curriculum expectations. Ideally, this research project would have been carried out over a longer period of time in order to track progress statistically using this approach. However, time constraints have prevented this, so evidence of improvement in pupil answers can only be established through quotes from the audio recordings.

Before intervention, pupil answers were very limited. TAs often asked closed, lower order questions (Cotton, 2001), meaning pupils could respond with a simple yes or no, or at most, a one or two word answer, often to a knowledge based question. However, post-intervention, pupil answers were considerably more comprehensive, as the question allowed, and even demanded, the pupil to elaborate and explain their answer to the higher order question.

It is obvious from the increased length of the answers and from the complexity of the statements that the questions had required pupils to respond with reference to the story, rather than recall a fact from memory. They related the story to their previous experiences with fiction and their own lives to predict the storyline and relate to characters, demonstrating higher level thinking (Gall, 1970; Cotton, 2001). The pupils tended to use adverbs such as 'maybe' and 'probably', indicating doubt. This is perhaps as they are unused to being asked questions relating to the story to which there is no 'right' answer. With regular questioning, these may disappear.

Changes to TA Performance

I recognise the importance of acknowledging that this data is not substantial enough to draw reliable conclusions. Nevertheless, in attempts to increase the validity of the findings, I discussed with the Deputy Headteacher, who assumes the roles of Literacy Leader and Head of Teaching Assistants, her perceptions of the effectiveness of the intervention.

She was definitely supportive of research with TAs, commenting that often they feel overlooked: *'It has definitely meant they [the TAs] have felt really involved in your teaching and more valued as, you know, as people who know what they're doing.'*

The research project meant the TAs felt involved in the practice of 'teaching' and valued as colleagues who have the same vested interest in pupil progress. For a trainee teacher, this is particularly useful to know, given that the eighth Teaching Standard, to 'fulfil wider professional responsibilities' requires me to 'develop effective professional relationships' and 'deploy support staff effectively' (Department for Education, 2011, p.13). The Deputy Headteacher's comments have highlighted how communicating with TAs can ensure they understand the expectations for their practice and the reasoning behind this; by involving them in the project, they knew exactly what was required and were able to use this knowledge to support individual pupils:

'I think it has helped them understand the types of questions they should ask and just reminded them of why we ask questions.'

This supports Gall's (1970) remark discussed earlier that Bloom's Taxonomy is effective in guiding practitioners towards better practice. Therefore, this project has highlighted not only that TAs should use higher order questions when hearing individual readers, but also that the practice and evidence

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behind it should be shared with them before implementation to ensure that everybody is supportive and understands the change.

Conclusion

Implications

Although this has only been a small-scale project, it is clear that in order to advance the reading ability of pupils, teachers and **TAs must ask higher order questions to develop higher level thinking**. This is only possible if schools take responsibility for explaining to TAs how to deliver questions requiring a variety of cognitive actions for higher level thinking and the reasoning behind why this is a preferential approach.

As a teacher, this is an important finding. It defines the requirement to clearly explain the approach and to justify why it is favoured over current practice. With these open levels of communication should come improved TA performance, leading to greater pupil progress. It is impossible for a TA to successfully support pupil learning if they are not provided with the understanding or the resources to do so.

Further Actions

Action research is a cyclical process; having observed TAs, I implemented a change and explored how this influenced pupil progress. To continue this cycle, I need to evaluate the intervention and its influence, and implement the next change to develop TA's practice and pupils' higher level thinking further.

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