

NICE AND EASY DOES IT: PUPIL RESPONSES TO NON-CHALLENGING TASKS

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The work reported below is based on participant observation research carried out with a Year 5 bottom mathematics set. The focus is on a group of children who respond positively in class discussion but do less well on apparently easier written tasks. This raises the question of why the tasks were not completed correctly. It is argued that for some children with non-mathematical difficulties, making the mathematics easy does not help. It is further argued that for some children, being asked to do work which is too easy may actually have a negative effect on performance. This raises questions about assessment and about setting.

BACKGROUND

This work focuses on a mathematics set in a primary school, something which has become more common in recent years. Sukhnandan and Lee (1998) note an apparent reintroduction of ability grouping in Britain in recent years which, in primary schools has tended to take the form of setting for particular subjects. OFSTED (1998) confirm that setting in primary schools has increased, with schools most likely to set for mathematics. This report endorses what it describes as the government's view that "setting is well worth considering by schools of all types". The Framework for Teaching Mathematics gives a much more neutral view of setting (DfEE, 1999).

Setting raises the associated issue of assessment, both in assigning children to sets initially and in deciding whether they need to move between sets. OFSTED (1998) acknowledges that schools allocate pupils to sets in a variety of ways, but say that most use assessment data such as Key Stage 1 test results or the scores of standardised tests. Although the occasional need for pupils to move between sets is mentioned, there is little suggestion that allocation can be problematic. However there is research which suggests that National Curriculum tests do not give us the whole picture of what a child can do and may disadvantage particular groups (Cooper and Dunne, 2000). Other assessment methods are not without their problems. For example, Watson (1997) points to some of the difficulties in implementing informal teacher assessment.

Research on tasks in primary schools confirms the problems involved in matching the level of difficulty of work to the children it is given to (Bennet, Desforges, Cockburn and Wilkinson, 1984). The researchers also found that although teachers sometimes talked about work being too difficult for children, they did not talk about the possibility of it being too easy. Level of difficulty of a task is also considered to be a factor worth considering when trying to identify the root of children's mathematical errors (Cockburn, 1999). The author suggests that errors may result if

a task is too challenging for a child, though she does not discuss what might happen if it is not challenging enough. If professionals are loath to talk about work being too easy, this is not necessarily the case for the pupils. Wiliam, Boaler and Brown (1999) report on interviews with bottom set pupils from secondary schools, many of whom talked about the work being too easy.

THE RESEARCH

The research reported here was carried out as part of a wider project on mathematical tasks at Key Stage 2. This strand of work involved participant observation in a Year 5 bottom mathematics set (nine and ten year olds), with the researcher taking a role similar to that of the Learning Support Assistants who worked in the classroom. Data was collected via field notes with use made of additional written information including children's work.

The focus of the research was on the tasks the children were given and how different children responded to them. As well as responses to formal written tasks, notes were made of children's oral responses. These included responses to the teacher's questions, more extended discussions arising from these questions and comments made as asides.

The work reported here is drawn from a block of lessons on fractions. The teacher was concerned that many of the children were not completing fraction tasks correctly. He therefore spent longer than intended on fractions, reinforcing some of the basic concepts and putting less emphasis on some of the harder ideas which he had originally hoped to cover.

FINDINGS

Overview

The teacher used a variety of questions, some closed and merely involving recall, others requiring explanations and reasons. The majority of the class showed enthusiasm for answering the closed questions. The accuracy of answers varied and the teacher dealt sensitively with incorrect answers. There was lower participation when the questions became more demanding. During the fractions block there were some occasions when the teacher's questions were about ordering, equivalence and simple addition. These themes were not covered by the written tasks, nor explicitly taught to the class. These questions often also required the children to explain their reasoning. Participation in these discussions was confined to about six children.

The written tasks on fractions showed less variety. The children were given eighteen worksheets on fractions. These mostly required them to colour in a given fraction of a shape, to say what fraction was coloured or to label sections of a shape with the correct fraction. One sheet on equivalence was given out with other sheets during the last lesson on fractions. However, this work was not explained and the children were told to leave that sheet. Occasionally during the time spent on the fraction topic, they did other work, usually revision of basic computation such as tables. They also

sometimes worked in their maths books rather than writing directly on the sheets. At the end of the topic, I had access to the folders for the eight children I had worked with on one or more occasions. Three of these were children who made positive contributions to discussion and were able to answer harder questions. In all three cases the apparent understanding shown in oral sessions was not reflected in the written work. The work of these three boys is discussed in more detail in the following sections.

Sean, oral responses

Sean responded well in sessions which required mental calculation. In a lesson about finding half of numbers the teacher was stressing the need for particular methods on the grounds that they would be needed when large numbers were involved. To prove his point the teacher said "What would you do if it was 286?" This was probably a rhetorical question, but Sean answered "take away". "Take away what?" asked the teacher, to which Sean responded, "One hundred ... and forty ... three."

Sean also responded well when the teacher used the plenary session to extend the ideas covered in the lesson. At the end of a lesson on halves and quarters for example the teacher asked, "Could I add fractions up?" This was apparently too hard for many of the class, but Sean was one of a small group who participated, sometimes being chosen to answer and whispering the answers to me when he wasn't chosen. When another child completed $\frac{1}{2} + \frac{1}{2} = \frac{2}{4}$, Sean whispered to me "You'll get a half". Finally he correctly answered $\frac{1}{4} + \frac{1}{4} + \frac{1}{2}$ and was asked to explain his answer. He said "Two quarters is a half, so another half is a whole".

Observing Sean working

Sometimes, particularly in the earlier weeks of the topic, Sean showed a determination to get on with his work as quickly as possible. For example, when doing a worksheet on halves and quarters was being explained, he ignored the teacher's instruction "... no pencil in anyone's hand." Sean started work without the teacher's explanation. He had more difficulty when work had to be copied into his book, which was the case with the sheet about finding half of numbers. When this was given out, Sean said "Oh no, not easy work again". However, he needed my help in writing out the titles and he took some time in writing each calculation out in three different ways as requested by the teacher. As the topic progressed, Sean showed less urgency in completing work. In the final session on fractions, I observed him for some time apparently doing nothing.

Sean's folder

The fraction work in Sean's folder was sometimes incorrect because he had mis-directed himself. This was true, for example, of the sheet on halves and quarters mentioned above, where Sean had not coloured the shapes as required. Towards the end of the topic some work was not finished, including the sheet he was supposed to be working on when I observed him doing nothing. The work on finding half of numbers in Sean's book was incomplete with only 5 questions done in about 25

minutes. One of these, 20/2 was initially completed incorrectly, despite Sean's ability to halve a much larger number in the oral session.

Wesley, oral responses

In the plenary following a practical session involving folding into eighths, Wesley was one of the few children who responded to the teacher's questions about equivalence. He knew that $\frac{4}{8}$ was equal to $\frac{1}{2}$ and, given time, also worked out that $\frac{2}{8}$ was equal to $\frac{1}{4}$.

Wesley also tried to introduce new ideas into the discussion. For example, when the teacher showed how quarters could be made by halving halves, Wesley tried to open a discussion on whether thirds could be made from halves and quarters. He made a similar attempt to discuss the relationship between different fractions when fifths were introduced.

Observing Wesley working

There were times when Wesley was not on task. These included occasions when he was sharpening his pencil or finding equipment as well as times when he was openly doing other things, for example covering his hands with chalk or playing with cards. Both of these examples occurred when the teacher was going through pieces of work slowly and in detail because of his concern that children were completing tasks incorrectly. When I reminded Wesley, who was working next to me, about what he would need for homework, he told me he was not going to do it. Once when they had been given several sheets but told which one to work on, Wesley and his friend Darren were admonished by the teacher for doing the wrong sheet with the words, "If this was your test, you've failed."

Wesley's folder

The main problem with Wesley's folder was that work was missing, with only 10 out of a possible 18 sheets in place. There were a few mistakes caused by doing the wrong thing (such as drawing the wrong shape, or colouring in the wrong colour). Most of the work was quite untidy so it was difficult to see which parts of shapes were coloured in. Some of the numbers were written upside down. There were two other items of interest in Wesley's folder. One was work on the 4x table, done during the fraction block on a day I wasn't present. All the work was correct and the teacher had written 'Good work, better concentration and effort'. Also in Wesley's folder, mixed up with the work on measuring, was the harder fraction sheet, which the teacher had given out but later told the children not to do. This was about equivalence of fifths and tenths, which had been briefly mentioned but not explicitly explained. It seems likely that Wesley was working on this sheet when he was told off for doing the wrong thing. All but one of the examples were correct.

Darren's oral responses

Darren responded well to the teacher's questions, sometimes adding comments of his own. For example, he was confident in answering questions involving ordering

fractions. When the teacher asked “Would a third be bigger than a quarter?” Darren replied “A third’s bigger because the denominator’s smaller” He then added under his breath “A quarter’s smaller because the denominator’s bigger.” In the same lesson he responded to questions about putting fractions in order of size and saying which were missing.

Observing Darren working

During the one lesson when Darren worked on my table his pencil was broken. The only writing involved in this session was writing fractions on cut up shapes, but I noticed that Darren formed numbers very slowly. The following week he was asked to read out a question from one of the work sheets and had difficulty in doing this, saying “take” instead of “tick”. At the end of this lesson Darren couldn’t find his folder.

Darren’s folder

Despite searching by Darren and several adults his folder was never found, so there is no written record of this part of his work.

DISCUSSION

In their discussion and answers to questions, all three boys showed an understanding of equivalent fractions and simple addition of fractions. They also showed a desire to explore harder ideas such as whether thirds could be made from halves or quarters. The written tasks were not designed to show evidence of these things, but to show understanding of simple fractions, especially as represented by parts of shapes. For this reason, the written work of these boys did not show evidence of understanding in advance of the rest of the class. In fact, their work was less successful than many of the other children, due to things like not following instructions, completing work apparently without care, or failing to do work or losing it. Sean also showed an ability to calculate mentally and explain his methods orally, which was in advance of his calculations on paper.

Their difficulties raise two main issues. The first is whether sufficient attention is paid to non-mathematical difficulties. The second is whether the fact that that the material was apparently easy for these boys to understand had a negative effect on their performance.

The boys showed evidence of a range of non-mathematical difficulties, which hampered their ability to provide evidence of their attainment on paper. Both Sean and Darren were slowed down by the reading requirements and all three had difficulty with recording. Darren had a particular problem in organising himself and his materials.

It is harder to be sure that the fact that the material was ‘too easy’ had an effect, but there is some evidence for this. For example it is possible that Sean’s mistakes with the half and quarter sheet stemmed from not reading the instructions properly, mainly because he felt he already understood the work, but influenced by the fact

that he found reading difficult. Wesley's off task behaviour could be attributed to boredom and frustration as he was asked to spend a long period of time on work he had already understood, while his attempts to shift the discussion to harder ideas usually met with resistance from the teacher. There is some evidence for this in his much more positive response to work not on fractions and in his success with the 'harder' sheet, which the children were not supposed to do.

CONCLUSION

Setting carries with it the assumption that it is easy to put children into categories. If setting is based on performance on tests or written tasks, there is a clear danger that children may end up in the bottom set because they have problems with reading, with recording, or with organising their work. The research reported above suggests that these children will not necessarily perform well if in a set where the work given does not match their level of understanding. Thus they are trapped in a vicious circle where they will not be exposed to harder ideas because they are apparently not coping with the easy ones.

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