

Teaching Assistants and intervention programmes in primary mathematics

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This paper explores the experiences and views of Teaching Assistants in mainstream primary schools who are assigned to work with individuals or small groups using structured mathematics interventions. The use of such programmes is seen here as an aspect of curriculum implementation and comparison is made with literature concerning implementation of curriculum materials by teachers. The focus is mainly on whether assistants report the need to adapt the programmes, using the notion of fidelity and the categories of offloading, adapting and improvising (Brown 2009). The key finding is that most assistants can be seen as adapters, with variation in the type and extent of adaptation.

Keywords: Intervention programmes, primary mathematics, teaching assistants.

Introduction

Teaching Assistant (TA) is one of the terms commonly used for paraprofessionals who work alongside teachers in classrooms. There has been a large increase in the numbers of TAs working in schools in England and they have increasing involvement with mathematics lessons. At the same time there has been a growth in the use of structured intervention programmes which are designed to help small groups or individuals who appear to need particular support with mathematics. Doubts about whether the support of TAs in lessons raises pupil attainment has led to the suggestion that they might be best deployed on structured intervention programmes. This paper explores the view of TAs who implement such programmes.

Background

Teaching Assistants

Recent research has established that there are a large number of TAs in primary classrooms in England and that much of their time is spent interacting directly with children (Blatchford et al. 2009). The growing pedagogic role of TAs is also a theme of smaller qualitative studies. For example Barkham (2008) who carried out a case study in a school for 4-7 year olds links the changing role of TAs to the advent of the numeracy and literacy strategies. Hancock et al. (2010), reporting on interviews with Higher Level Teaching Assistants, state that all those interviewed have substantial involvement in English and mathematics. TAs are also increasingly mentioned in reports and reviews concerned with primary mathematics, with positive messages about their impact in mathematics lessons included in reports by OFSTED (2002) and Williams (2008). Despite this, quantitative studies have raised doubt about whether support from TAs has a positive impact on pupils' attainment in mathematics (Blatchford et al. 2001, Muijs and Reynolds 2003). This has led to the suggestion that the best way to deploy TAs is on structured intervention programmes (Alborz et al. 2009, Webster et al. 2011).

Intervention Programmes in Mathematics

For the purpose of this paper, an intervention programme is taken to mean a programme designed specifically for those children perceived to have difficulties. Such programmes are normally designed for individuals or small groups. There is a debate about whether intervention programmes should be delivered by teachers or TAs (Williams 2008) but the focus here will be on those programmes designed to be delivered by TAs. There are a range of mathematics interventions available and these are reviewed by Dowker (2004, 2009). The reviews confirm a growth in mathematics interventions between these dates. The more recent review concludes that interventions are viewed positively by schools and local authorities, though with an acknowledgement that the review was less likely to hear from those dissatisfied with schemes.

Implementation of Curriculum Materials

The use of intervention programmes may be regarded as curriculum implementation, albeit on a modest scale. The curriculum studies literature accepts (e.g. Kelly 2009, Marsh 2009) that the curriculum as designed, for example by materials producers, will differ from the curriculum as implemented and that the same materials can lead to markedly different implemented curricula across settings. The assumption in the literature is that curriculum implementation will be by teachers and a range of models have been put forward to represent the way this might happen. Some of these are discussed in relation to mathematics materials by Remillard (2009) who identifies one research approach as the examination of curriculum fidelity, which refers to the match between the curriculum as presented in materials and as enacted in classrooms.

The model that will be used for this paper is put forward by Brown (2009, 24) who identifies three ways of using curriculum materials: offloading, adapting and improvising. Offloading describes use of materials in a literal manner, following them as closely as possible. Improvising consists of use of the teacher's own strategies with minimal reference to the materials and adapting is where some changes are made as the materials are implemented. Brown states (2009, 25) that one type of use should not be considered as superior to others.

Method

As part of a wider project, semi-structured interviews were carried out with TAs about their work, with particular reference to how they support children in mathematics and English. Interviews were carried out with 24 TAs from mainstream primary schools. The interviews often developed into interview conversations as discussed by Kvale (1996), lasting up to an hour. The analysis that follows is based mainly on those extracts from the transcripts that discuss intervention programmes, arrived at by initial coding. Further coding was used to obtain a more detailed picture of TAs' views on interventions and a particular category of use here concerned the extent to which TAs say they make alterations to programmes during implementation. Occasionally, extracts from elsewhere in the interviews are drawn on in order to acknowledge themes across the interviews which may indicate the beliefs and priorities of TAs.

Findings

Summary of Findings

Almost all of the TAs had some contact with intervention programmes, and for some it was a key part of their work. Several suggested that school policies and practices regarding intervention were evolving, and the programmes used were sometimes under review. Some of the TAs used Springboard material (DfES 2000) or more recent alternatives which are closely scripted materials available free to all schools as part of Primary Strategy materials. Also mentioned by several TAs was Catch Up Numeracy, a programme based on research which identifies different components of arithmetic. A key feature of this programme is that children are assessed individually and the activities to be used are then selected according to their needs (Catch Up 2009; Evans 2008). Another programme frequently mentioned was the Number Box, also sometimes referred to as the five-minute maths box. These materials are said by those who develop them to be aimed at children whose mathematical difficulties might be due to dyslexia, receptive and expressive language difficulties or dyscalculia (Five-Minute Box, nd). TAs could be seen as on a continuum between offloading and improvising, with the majority adapting to some extent.

Offloading

It was rare for TAs to say that they carried out the programme without any changes, though one TA, Barbara, explicitly stated that this was what she did.

I did the Springboard, actually, and did it basically as it sets it out. Teachers nominated children to go into it from their class, and we did it exactly as the Spring plan... We did it in the weeks it was meant to. We didn't... No, I suppose there were one or two children who had to come off because they weren't coping with it, but then they really shouldn't have been put on it in the first place.
(Barbara)

Barbara's account is striking in that it suggests if children do not cope with a programme as delivered then it is a case of the wrong children rather than a problem with the programme. However, this can be seen as in line with the instructions accompanying some programmes which identify precisely those children they are designed for, often in terms of National Curriculum levels and often in the hopes of moving children to particular levels in end of key stage tests. Looking at Barbara's interview as a whole, what she says about intervention programmes is consistent with her apparent overall philosophy. For example, she talks several times about the importance of detailed planning that is then adhered to. She also talks about doing things in the way required or expected.

Adapting

The majority of TAs adapted the materials at least to some extent. Their stated reasons for doing this differed, though were often connected to the perceived needs of the children as explained by Ruby below.

If they tell me they're stuck or that they're not comfortable doing something, I'll take that on board. I don't say, 'Well, okay, but the programme says we have to do this. It's Tuesday, it's 2.00, and the programme says we have to do this, this and this.' I'm not like that. I don't like that. I think they're children, they're human beings, we're all different and we need to support that and value it. (Ruby)

Materials were adapted in several ways, with a common way being to rephrase or simplify language if children did not understand.

Sometimes you have to adapt it... If they say, for example, 'Find half of a number', the language 'half', sometimes the children don't understand, so we can use concepts like 'divide it by two' and things like that. (Lola)

Another way of adapting was to try to increase children's motivation and interest.

...They had these little butterfly things, and we replaced the counters with those, and the children loved them... I had to try and make it as fun as possible... and I made up certificates for them, you know, and we've got a star chart going on... and they love it. Otherwise, I think, if it isn't fun I can't get them to engage. (Rita)

The theme of motivation and interest that Rita mentions in connection with the intervention programme also arose at other points in the interview when she talked about the importance of engaging children and making activities fun. In this case she did not appear to change the mathematics itself, but some TAs indicated that they included additional mathematical activities in the intervention programmes.

Things like times tables, we can put that in so to help the children. (Lola)

...and they're supposed to be five minutes out of the classroom doing a little bit of something... Then I'd say, especially if somebody wasn't getting anything, then I'd say... 'Let's go outside and let's measure' and they found it far easier to measure a bigger object with their big tape because they understood. 'Why have I got this long tape?'... Because getting out in the playground was so exciting. (Pauline)

In both the cases above, the extra activities that the TAs introduced into the intervention programmes matched the aspects of mathematics that they appeared to value as evidenced in other parts of their interviews. For example, Lola was concerned about children meeting targets and about learning number bonds. Pauline was very enthusiastic about mathematics in the environment and elsewhere in the interview talked about how she had worked with children on maths trails. It is also interesting that Pauline talks about the intervention she was using, the number box, as being 'a little bit of something'. She did not appear to see it as having precise mathematical aims tailored to individual children. Pauline's account suggests that her implementation of the programme was an extreme case of adapting which was near to improvising.

Improvising

The strongest case of improvising came from Sheena, who talked about what she termed her 'after-school club'. She started talking about this, describing it as a 'less able numeracy group' that she runs after school. She explained that parents had to give permission, but usually did so. She went on to talk in detail about an activity she had carried out with the group the previous day. This involved them bringing in money and budgeting before they visited the sweet shop. She was then asked if these ideas were her own and she responded as follows:

Completely. My teacher has her own afterschool club, so I won't even bother pestering her with that. I mean, there's a support book in every class that you can use for afterschool groups... It's something they got from, I don't know, a programme or a strategy... It's fine, but, to me, if I'm going to stay, as a child, after school, I want to be having some fun, I don't want to be doing more, like, written work. (Sheena)

Sheena is classed as an extreme example of improvising as her account suggests she ignored the programme provided completely and did something else. Like other TAs, she talked about fun and motivation as key themes. Also relevant is that she had received no training in the programme, which had simply been placed in the classroom. It also appeared that she was under no pressure from school staff to run the programme in a particular way.

Discussion and conclusions

Some patterns emerge from this data, though further research would be required to explore them further. The two extreme examples, Barbara and Sheena, received no training on the programmes they were expected to run, both of these were official programmes where the materials were provided free to all schools. All those TAs who had received training appeared to be adapters to some extent. A tentative explanation for this could be that they were sufficiently aware of the principles behind the programme, both to try to present the main features of the programme as intended but also to be confident enough to adapt it if they felt that would help them meet the needs of the children.

Where TAs did adapt programmes, this was done to different degrees in a range of ways. Sometimes small changes, such as re-phrasing were made in response to the perceived needs of pupils. TAs also reported the view that it was part of their role to make programmes interesting and to motivate children, and changes were sometimes made with this aim in mind. Thirdly, TAs sometimes carried out activities they designed themselves in addition to, or occasionally instead of, those provided as part of programmes. For most TAs this style of working, with the emphasis on adapting, mirrored what was expected of them in their work outside of the programmes where they were generally expected to exercise initiative. Some also reported that they had observed excellent teachers who were expert at responding to the needs of children and this was something they tried to emulate. The statements TAs made about additions they made to programmes suggested that this depended on what they felt was important in the teaching and learning of mathematics as evidenced elsewhere in their interviews.

The findings suggest that we cannot assume that TAs will implement materials exactly as envisaged, any more than teachers do. Adapting can be seen as positive and a natural part of working with children, though the type and extent of adaptations raises issues and merits further investigation.

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