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# Scaffolding learning for independence: clarifying teacher and teaching assistant roles for children with SEN

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## Abstract

Support for children with special educational needs (SEN) in inclusive classrooms, in many countries, continues to be provided by teaching assistants (TAs). Whilst they frequently take responsibility for instruction, they are rarely adequately trained and prepared. As TAs have ample opportunities for individualised and group interactions, this paper recommends scaffolding as the key theory to inform their practice. From a large dataset of interactions in mathematics and literacy lessons, episodes of TA scaffolding were selected. Using conversation analysis, three scaffolding roles emerged: 1) a support role that maintained learner engagement, on-task behaviour and motivation; 2) a repair function that focused on learning and fostered independence when children were in difficulty; and c) a heuristic role that encouraged students to use their own learning strategies. The paper concludes with implications for trainers and managers and how teachers can support TAs in implementing each role.

## Key words

classroom discourse; scaffolding; conversation analysis; instruction; teaching assistants

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## 1. INTRODUCTION

The main drive behind this paper is to positively influence how children with special educational needs (SEN) and disabilities are supported in the classroom. Educating children with SEN in the mainstream/general education classroom is an increasingly preferred option in many countries for reasons associated with equity; children with additional needs have an entitlement to the same high quality education, provided by appropriately trained teachers, as their peers (Giangreco et al., 2011). There has been a wealth of discussion around instruction in inclusive classes, notably exploring the concept of 'inclusive pedagogy'. The aim of inclusive pedagogy is to increase the participation of *all* learners in the class, as opposed to focusing on individual needs (Florian, 2009). A recent observational study examined how inclusive pedagogy operates in terms of teaching strategies for children in Scotland (Florian & Black-Hawkins, 2011).

A key issue in schools, worldwide, is that young people with special educational needs and disabilities are increasingly taught by non-teaching staff known as teaching assistants (TAs) or paraprofessionals in the USA (Blatchford et al., 2012; Giangreco et al., 2013). Indeed, Giangreco et al., (2011) report that up to three quarters of the instruction for children described as having SEN was provided by TAs. In the UK, one in five (19%) interactions involving pupils with high level SEN are one-to-one interactions with TAs (Webster & Blatchford, 2013). The main reason for the significant increase in TA numbers is because of the inclusion policies in many countries; headteachers report that they are essential for the implementation of inclusive practices and teachers say that they reduce stress and ease their workload (Blatchford & Webster., 2012).

Despite the benefits, there are several key reasons to be alarmed about the increase in TA support for learners with SEN. Results from the large scale, longitudinal Deployment and Impact of Support Staff (DISS) project showed that there is a negative relationship between the level of support provided by TAs and achievement in core academic subjects: English, mathematics and science (Blatchford et al.,

2012) and that this is not accounted for by pupil characteristics such as prior attainment and level of SEN. Further quantitative and qualitative research demonstrates, convincingly, that one of the reasons is lower quality interactions and TAs' lack of preparation for a pedagogical role: TAs are much more likely than teachers to ask lower quality questions and reduce pupils' independence through supplying answers; they are also prone to giving inaccurate or misleading information, albeit unintentionally (Radford et al., 2011; Rubie-Davies et al., 2010).

TAs are not to blame for this state of affairs because they are regularly expected to perform tasks for which they are not qualified or trained, such as planning instruction and adapting the tasks set by the teacher (Giangreco et al., 2013; Webster & Blatchford., 2013). Put briefly, it is the decisions made *about* TAs (by school leaders and teachers), not *by* TAs, that offer the most compelling explanation for why TA support has a negative impact on pupil outcomes. A continuing worry, however, is that the constant presence of the TA has a separation effect: it reduces students' opportunities for interaction with the teacher and nearly halves the number of interactions with their peers (Webster & Blatchford, 2013). In fact, Blatchford & Webster (in press) provide evidence to show that pupils without SEN have enjoyed an increase in the amount of peer interaction they experience in the classroom, yet, over the same period, there has been no change in the amount of peer interaction.

These problems have caused some to argue that it may be time to seek alternatives to TA support (Giangreco et al., 2013). Despite this, TAs are widely used. There has been a year-on-year increase in the number of TAs in English mainstream schools since the 1990s. TAs comprise a quarter of the school workforce, and a third of the primary school workforce (Department for Education, 2014).

The context within which the studies included in this analysis took place reflects a position in England where successive governments have avoided explicitly setting out in policy terms the role and purpose of TAs, relative to teachers; that is, what roles TAs should and should not undertake. The government, responding to media reports that TA jobs might be axed as part of on-going austerity measures, stated in March 2014 that it did not have 'any plans or powers to make that happen' (HC Deb, 2014). Employment and deployment decisions relating to TAs, it claimed, were best left to individual school leaders, not policymakers. This position is consistent with

contemporary approaches to devolving responsibility for developing educational practices from the centre by giving schools greater autonomy, Yet the effects of evolving TA practice in less systematic ways, and with little conceptual or evidential underpinning to decision-making, are writ large in the findings from the DISS project.

Headteachers, therefore, need to make informed decisions about how to prepare their TAs and use them to optimum effect in support of learning. Given the mounting evidence that interactions are at the heart of successful inclusion (Radford et al., 2011; Skidmore, 2004), what is now needed is further detail regarding the moment-by-moment experiences of the learners themselves when directly supported by an adult; crucially, this means further exploration of how TAs interact with pupils, and how this can be as effective as possible. This interaction role for TAs must be distinct from, but complementary to, the interaction role of the teacher.

Our key argument is that, if schools continue to deploy TAs in a pedagogical role, TAs need an understanding of the importance of language for learning and, significantly, the theory of scaffolding which has its origins in the sociocultural theory of Vygotsky. The theory proposes that, through social interaction with others at the intermental level, young children develop higher mental functions such as thinking and reasoning (Vygotsky, 1981). To be effective, such social exchanges must lie within children's 'zone of proximal development' (ZPD), that is, the distance between what they can accomplish on their own as opposed to what they can do with the help of more capable others, such as parents (Vygotsky, 1978). The ZPD was developed further and taken from parent-child interaction and applied to educational contexts.

One of the strongest criticisms of scaffolding, as originally conceived, is that it represents an asymmetric view of adult-child interaction whereby the scaffolder constructs the scaffold alone and presents it to the child in the role of 'novice' (Daniels, 2001). Many have since argued that the child needs to be an active participant in the interaction; Newman, Griffiths and Cole (1989) made the case for a 'construction zone' that is created in the ZPD through negotiation between a more advanced partner and the learner. How the zone is created, through interaction, has been the topic of many studies across different domains of learning.

An extensive review of scaffolding research concluded that three fundamental principles were commonly found across studies (Van de Pol, Volman & Beishuizen,

2010). The key characteristics are contingency, fading and transfer of responsibility. The first concept, *contingency*, refers to how support is adjusted in the moment, either tailored to the learner's current level of performance or (ideally) to a slightly higher level. For a TA, an example of such a move would be to use a diagnostic question such as 'What do you think x means?' to ascertain the student's current level of understanding. After listening carefully to the child's response, if the TA pitches the next turn at a slightly higher level, it is possible to claim that she or he is interacting contingently. The other two principles of scaffolding, *fading* and *transfer of responsibility*, are closely interrelated. In the case of fading, the TA would gradually withdraw the scaffold by decreasing support for the student and withdrawing it altogether when it is no longer needed (Van de Pol et al., 2010). If fading is successful, responsibility will be transferred to the student.

Observational research has provided thick descriptions of the scaffolding process that are relevant to this study. An important distinction has been made between the intentions of scaffolding (their purpose) and the means by which they are accomplished (Rojas-Drummond et al., 2013; Van de Pol et al., 2010). In terms of intentions, these authors shows that adults can use scaffolds for contingency management/frustration control, cognitive structuring, reducing the degrees of freedom (by simplifying the task), recruitment (to get a student interested) and direction maintenance (to keep the child on task). A typical list of means (ie. oral strategies) includes: modelling, instructing, explaining, questioning, prompting and feeding back (Mercer et al., 2004; Meyer & Turner, 2002; Rojas-Drummond et al., 2013). It is clear that scaffolding is a sensitive process and constitutes much more than merely helping the learner.

There is already strong evidence, within a socio-cultural perspective, that peer group interactive approaches and peer tutoring benefit children with SEN both academically and socially (Nind et al., 2004; Nind & Wearmouth, 2006). Our paper aims to extend this work by examining detailed examples of dialogue between TAs and children to demonstrate possible scaffolding strategies that could be useful for teachers and others who train, guide and support the TA.

### 1.1 Which interactions best include pupils with special educational needs?

Discourse is central to what takes place in any learning context and teachers engage in hundreds of interactions a day, thousands a week and potentially millions in a career (Dillon, 1988). An extensive review of studies conducted in inclusive classrooms concluded that statements and questions that promote high level reasoning are associated with better social and academic outcomes (Rix et al., 2006). Yet, when learners with SEN are asked higher order questions, they frequently have difficulty responding successfully: they may not know the answer or answer inappropriately; research shows a variety of repair strategies that adults could use, some of which foster more independence for the learner (Radford., 2010a; Radford, 2010b).

However, support for children with SEN in inclusive classrooms has changed in recent years. Since the studies included in Rix's review were conducted between 1994 and 2005, they did not take account of the huge increase in TA numbers. The TA, rather than the teacher, is in a prime position to ask high level questions and tailor the support contingently if the child has difficulty with the response, thus operating as a 'scaffolder'. TAs, not to mention teachers and school leaders, tend to have an under-conceptualised view of their role. Webster and Blatchford (in prep) report that TAs assigned to support pupils with a significant needs were often unable to articulate their role in any meaningful detail, and simply describe their role as 'being there' for the pupil. This casts TAs in a 'standby' mode, ready to respond when a pupil signals difficulty, but not always effectively.

Remarkably, a high level of TA support is often justified in terms of being needed to help and encourage pupils to become more independent (Webster & Blatchford., 2013). Yet, a widely held concern that needs addressing is that the presence of the TA increases the learner's dependence on an adult (Webster et al., 2013). Consequently, a key principle of scaffolding, on which the TA's role should be based, is 'fading', to develop the independence of the learner by reducing support and hand over responsibility to the child (van de Pol et al., 2010).

Influenced by socio-cultural theory and the principles of scaffolding, we propose three key roles for SEN instruction. These roles have been purposefully and deliberately conceptualised in relation to TAs and not other school staff, such as the teacher or special educational needs coordinator/manager. Furthermore, they are

revealed moment-by-moment in the discourse during the learning experience, paying careful attention to how the TAs' turns are designed. To provide effective scaffolds, the turns need to be contingent and have the potential to lead the learner through the zone of proximal development. We now make the case, theoretically, for each of the three roles: a) repair, b) support and c) heuristic.

### 1.2 Repair role

Our first scaffolding role, repair, is very important because of its high frequency in inclusive classrooms (Bosanquet, 2012; Radford et al., 2012). Repair in an interaction means anything that the participants treat as problematic (Schegloff, 2007). In mundane talk there are three main types of repair: self-initiated self-repair where speakers correct their own error in the same turn, other-initiated other-repair (OIOR) which is similar to correction and other-initiated self-repair where the other person prompts the speaker to repair (OISR) (Schegloff, Jefferson & Sacks,1977). In the case of both OISRs and corrections, a speaker needs to have identified the error or trouble (Jefferson, 1987). Other-initiated repairs (OIRs) are preferred over corrections in everyday talk because they give speakers an opportunity to carry out the repair themselves and are therefore more polite (Levinson, 1983).

In classrooms, repairs are needed in contexts where learners fail to answer the teacher's question (e.g. a silence) or respond with an incorrect word or idea (McHoul, 1990; MacBeth, 2004; Radford, 2010a). Repairs are therefore frequent because children who present with any kind of learning challenge require a response from the teacher or TA in the next turn. For example, in the case of off-task behaviour, an OIR in the form of a prompt could be used to re-direct the child back to the task; in the case of searching for a word, an OIR such as a clue or hint could encourage the child to find the word for themselves (Radford, 2009). Repair turns are very important for learning because, consistent with socio-cultural theory, they potentially 'roam' in the child's zone of proximal development, both cognitively and linguistically (Radford et al, 2006).

Repairs can be helpful or unhelpful to the learner, however, depending on their design. OIRs are the most effective, as a first strategy after a problem, because they transfer responsibility to the learner (Radford, 2010a). They operate on a continuum of authority: for example, specific repair initiators such as *'Do you mean an eel?*'

offer a much higher level of assistance, because they give a hint, than those with a general design e.g. *'Say that again'* (author, 2010b). Crucially, to fulfil the requirements of scaffolding, a sequence of repair turns needs to be contingently adjusted so that the pupil takes maximum responsibility.

Corrections, by contrast, by giving children the answer do not encourage them to think for themselves (Bosanquet., 2012; Radford., 2010). A study of mathematics lessons showed that, when students have difficulty finding answers, teachers used other-initiated repairs (prompts and hints) whereas TAs readily used corrections (Radford., et al., 2011). The paper concluded that outright corrections should be withheld, in favour of other-initiations. Our scaffolding model must therefore reflect the important distinction between prompting and correction, in order to ensure that the learner is not overly dependent on adult support, whilst guided contingently to success.

### 1.3 Support role

Our second candidate for a scaffolding model includes the 'supportive' aspects of the role that are crucial for many students. These duties are especially important for children with attention, language, learning, emotional and/or behavioural difficulties. Whilst teachers clearly have overall responsibility, it could be argued that TAs are very well placed to perform such a role on a moment-by-moment basis, owing to their close relationship with the student and the fact that TA support is essential for ensuring that students with such difficulties engage with teaching and stay focussed and on-task.

What, then, should be included under the 'support' umbrella? We propose three functions adapted from the models of scaffolding described earlier: a) recruitment, b) direction maintenance and c) contingency management/frustration control (Rojas-Drummond et al., 2013; Van de Pol et al., 2010). 'Recruitment' is fundamentally important because it means getting the child involved and enthusiastic and interested in the learning experience. 'Direction maintenance' entails gaining the child's attention when off-task and ensuring that they remain on-task. 'Contingency management/ frustration control', means an affective role which could help to reduce the learner's anxiety during a task or presentation of new material.

There is good evidence that TAs are already performing these roles successfully. As sustained interactions are much more common with TAs than with teachers, improvements in individual attention and student engagement have been observed (Blatchford et al, 2009). In terms of student attitudes, TAs also play a vital role in fostering positive approaches to the learning experience (Blatchford et al., 2011). In addition, a recent study shows that the presence of the TA helps children with significant needs to increase the amount of time that they are on-task (Webster & Blatchfoord., 2013). These positive results are encouraging and now need to be formalised into a model of instruction for trainers and managers of TAs.

### 1.4 Heuristic role

Giving pupils with SEN opportunities for problem-solving is associated with better learning and social outcomes in inclusive classrooms (Rix et al., 2006). We therefore propose a new 'heuristic' role for talk that includes strategies for solving problems. Heuristic is defined as "using a method of teaching that encourages learners to discover solutions for themselves" (Cambridge Dictionaries Online, 2012). The purpose is to empower students by encouraging them to develop their own approaches to problem-solving (Holton & Clarke, 2006). The ultimate aim of heuristic scaffolding is internalisation which is manifest when pupils are able to 'self-scaffold' (Radford et al., 2014).

As TAs have less awareness of learning strategies than teachers, they can benefit from teachers' knowledge, either in pre-lesson preparation or from listening to them in the early stages of the lesson. There is evidence, through a purposive 'listening to the teacher' method, that TAs can build and use a repertoire of heuristic scaffolding questions in mathematics lessons (Radford et al., 2014). Webster et al (2013a) demonstrate how informal training and on-going support from teachers are essential components of enabling TAs' to develop their questioning skills. The aim, for both the teacher and the TA, is to engage in high level discussions around relevant strategies. The scaffolding means of modelling, prompting and providing hinting help to transfer responsibility to the learner so that they can use them independently when an adult is not present.

The key purpose of this paper is to develop a theoretical model of scaffolding for TAs. Previous scaffolding studies have not explicitly taken into account children with

SEN (and have been with teachers not TAs) and therefore scaffolding theory needs to be developed more fully. In addition, research generally focuses on the adults' strategies and not how they are influenced by what the learner does. The study aims to extend scaffolding theory by taking account of local issues within scaffolding interactions that interfere with learning; examples include difficulties with attention, listening, failure to answer questions, errors and misunderstandings. A more complete theory of scaffolding is urgently needed to inform the professional development of teachers, school managers and TAs. The research questions are:

1. What do support, repair and heuristic practices look like, on a moment-by-moment basis?
2. In what ways do the scaffolding strategies increase participation and support transfer of responsibility to the learner?
3. What are the implications of the scaffolding model for the professional development of teachers and TAs?

In order to ensure ecological validity, naturalistic extracts of TA interactions are used to illustrate effective deployment of the three roles: support, repair and heuristic. Question 1 will be answered through detailed line-by-line analysis of examples in inclusive classrooms. Question 2 will be addressed through interpretation of each illustrative extract in relation to the effect of TA strategies on students' active participation bearing in mind the principles of contingency, fading and transfer of responsibility. The implications of each role for the professional development of teachers and TAs will be explored in the final discussion.

## 2. METHODS

This is a qualitative study of classroom discourse which is informed by both socio-cultural theory (owing to its focus on learning) and conversation analysis (CA) (owing to its detailed insights about interactions). Whilst such an eclectic approach is unusual, we feel that such flexibility is warranted. The selection of extracts was purposefully influenced by the conceptual models of scaffolding outlined earlier. These models also influenced the analysis, particularly with respect to interpreting the support role examples. The procedures used by CA were adopted for the analysis of the data. CA has its origins in Garfinkel's ethnomethodology which is concerned with documenting the systematic practices within everyday activities

(Heritage, 1991). A CA perspective represents 'how participants themselves produce and interpret each other's actions' (Pomerantz, 1988; 361) and is therefore suited to a sequential analysis of the turns of both the scaffolder and the learner. CA theory about other-initiated repairs was also important for explicating the repair role (Schegloff et al., 1977).

The data on TA-pupil interactions were taken from an extensive dataset of audio and video recordings of mathematics and literacy lessons. Three large projects were scrutinised by the first two authors for examples of scaffolding.

A. The DISS project

Audio recordings of adult-pupil interactions were collected in 2007/2008. Forty-two recordings were made in 15 schools (8 primary, 7 secondary) of the teacher and the TA during the same lessons. 16 teacher-TA pairs were chosen for transcription and selected for further study (Radford et al, 2011; Rubie-Davies et al., 2010). The selection was purposive in so far as there were two primary (year 5) and two secondary classes (year 8) but, otherwise, it was random. The schools were spread geographically within England and were diverse in terms of their student intake. Most of the TAs were supporting in class rather than doing interventions.

B. The Effective Deployment of Teaching Assistants (EDTA) project

This study was conducted over 2010/2011. The project involved ten schools (six primary, four secondary) in two local authorities in England. Eight audio recordings were made in order to evaluate the extent to which key features of TA-to-pupil talk had improved as a result of involvement in the project. The situation regarding the training and preparation for TAs in the EDTA project was consistent with the picture described in the earlier DISS study. For more information, see Webster et al (2012).

C. The Interactions of Teaching Assistants in Primary (ITAP) schools project

Twenty-two video-recordings were made of small group literacy intervention sessions with 5-6 and 7-8 year-olds (Bosanquet, 2012). The TA leading each of these groups used materials provided by either the local authority or national Early Literacy Support materials (DCSF, 2007) or national Additional Literacy Support materials (DfEE, 1999). The materials were designed to develop the reading, writing

and spelling skills of pupils who were at risk of falling behind their peers. All the TAs involved had attended between one and two days training in relation to the intervention materials.

Details about the children, lessons and schools used in the current study are presented in Table 1.

Table 1

Digital recordings of every lesson in the dataset were made and fully transcribed by transcribers. As experts in CA, the first two authors examined, repeatedly, all of the recordings and transcripts. The initial selection of extracts was motivated by searching for sequences of TA-child talk that involved scaffolding. In this way, theoretical sampling was used to select suitable extracts, allowing a new theoretical model of scaffolding to be generated from a small number of cases (Corbin & Strauss, 2008). The final choice of extracts was influenced by: a) the principles of scaffolding, including the need to foster the independence of the learner and transfer responsibility; b) previous studies of repair and heuristics in inclusive classrooms.

Conversation analysis informed the analytical process of the selected extracts. The analysis was unmotivated in so far as the discourse patterns and themes emerged from the data. Additional extracts were sought to verify and cross-check emergent ideas. Using constant comparison (Silverman, 2006), the emergent themes were re-worked according to new examples and in discussion with members of the team. Line-by-line linguistic analysis was conducted to uncover detail and establish the perspective of the participants (Schegloff, 2007). Consistent with CA principles, questions used to interrogate the data included: 'How is that turn/phrase designed?'; 'Why does X use that turn/phrase now (in relation to the prior turn/s)?'; 'What work does that turn/phrase accomplish (in terms of what happens next)?'

## 3. RESULTS

The results are presented in three sections to explicate each scaffolding role: repair, support and heuristic. To help generalisation, examples are shown from both mathematics and literacy lessons, for pupils of different ages and also involving children with a wide range of needs. For each extract, interpretations are drawn out in terms of their relevance for SEN instruction. Given the explicit focus on

scaffolding, this will pay particular attention to the following features: a) the extent to which the adult uses contingent strategies b) how the adult provides opportunities for learners to take responsibility for thinking about their learning and c) ways in which TAs fade their support in order to transfer responsibility for their learning. The aim is to illustrate potential practice for TAs and teachers rather than exactly represent the current situation in schools.

### 3.1 Repair role: other initiated repair

Repairs are abundant in TA-student discourse; multiple troubles within a minute of interaction can be common, especially in lessons that place high conceptual demands on the learner. Our first example demonstrates that other-initiated repairs (OIRs) satisfy the scaffolding principle of contingency and give responsibility to the learner for thinking of the answer: the TA withholds giving the answer when the student fails to respond correctly to a question. She uses a specific OIR through the means of hinting, as opposed to a general OIR such as 'What did you say?' which would not have been contingent.

(1) Other-initiated repair (specific)

*(18 minutes into a mathematics lesson, talking about the concepts: mode, median and range. Bryn (aged 13) has support for learning difficulties.)*

| | | | |
|---|---|---|---|
| | 1 | TA | So what's the mode then? |
| | 2 | Bryn | That one. |
| | 3 | TA | Well done. Very good. Why have you divided by that? |
| T | 4 | Bryn | I dunno. |
| → | 5 | TA | **What should you divide by?** |
| SR | 6 | Bryn | Nine. |
| | 7 | TA | Yeah. So that's Ok. Let me do that with that. |
| | 8 | | It is right. So what's the mode there Bryn? |
| | 9 | Bryn | (****) |
| | 10 | TA | Ok. What do you think the mode is then? |
| | 11 | Bryn | Five? |

12 TA Yep, well done.

T = trouble or difficulty → significant turn SR = self-repair (***) = unclear turn

The extract starts with the TA asking about 'the mode'. Bryn treats this, not as an open conceptual question, but as a request to give the answer. His presumed gesture at his workbook is greeted at first with praise (line 3) but then the TA pushes for justification of this answer (a recommended, higher-order question). However, Bryn is unable to offer justification, displaying difficulty with 'I dunno'. The next adult turn offers a crucial opportunity for a contingent question. Here the TA could have told him the answer but that would not have been contingent have meant low-level engagement on Bryn's part. Her OIR, 'What should you divide by?' explores his understanding and leads to Bryn offering an answer this time. He says 'nine' (a self-repair), which is a successful outcome, accepted by the TA. He was a much more active participant as a result of the specific OIR than he would have been if she had told him the answer.

The following extract is from a literacy lesson during which the TA has been leading a discussion about a book, reading each page aloud and asking questions to generate talk. The group is now reading each page aloud together. The TA notes an incorrect response from Mike during the choral reading of a sentence, leading to a specific OIR (the provision of the beginning of the incorrect word which prompts Mike to self repair). The OIR gives Mike a clue (what the word starts with) as opposed to a more general initiator (for example 'What does it say?').

(2) Other initiated repair (specific)

*(20 minutes into a literacy intervention lesson. Mike (aged 6) has been identified as falling behind his peers in both reading and writing).*

| | | | |
|---|---|---|---|
| | 1 | TA | Now with your pointy fingers (.)<br>Ok we're going to read together<br>t[ime (.) for (.) all (.) the (.) dirty (.) clothes so |
| | 2 | Group | [ime (.) for (.) all (.) the °°(inaudible) [clothes °° |
| T | 3 | Mike | [washing |
| → | 4 | TA | not washing it begins with a cl so its (.) [clothes |

SR 5 Mike [clothes

T = trouble or difficulty SR = self-repair [ = overlapped speech °° = quieter talk

Having been reminded by the TA in line 1 to use their 'pointy fingers' and 'read together', all members of the group are able to read the first part of the sentence aloud, the pauses between words keeping the responses together. Following the word 'dirty' which causes difficulties for all pupils, most of the children read the word clothes correctly. Mike, however, says the word 'washing'. Although this would be a plausible word to complete the oral sentence, (since the word washing appears a number of times in the book), it is not correct in terms of reading the printed word. The TA uses the scaffolding strategy of feeding back about his answer ('not washing') followed by hinting, which draws Mike's attention to the beginning of the word as printed ('it begins with a cl') and provides a lead in for Mike to complete the repair himself, indicated by a pause following the words 'so its'. This type of lead-in is useful as it prompts self-repair (Mike correctly provides the word clothes) whilst also allowing the TA to complete the repair if no response is forthcoming. The length of the pause is relevant; a longer pause would allow the child thinking time, which is important for pupils with SEN.

### 3.2 Support role

Children with high level needs in inclusive classrooms present the teacher with many decisions about how to manage their support in order to keep them on-task, motivated and reduce their frustration. Extract (3) illustrates effective use of several contingent strategies in a mathematics lesson about rounding up numbers (to the nearest 100). The episode starts 10 minutes into the lesson when the TA is sitting next to Tom and the teacher (T) asks questions directed at the whole class. In line 1 the TA uses direction maintenance, through an instruction, to tell Tom to sit and listen so that he can engage with the teacher's question. Later, she directs his attention to the teacher and the board (lines 6-7). She also supports him through contingency management and frustration control; extensive encouragement is given

('come on', 'well done') and she gives clear feedback about his behaviour ('good all morning').

(3) Direction maintenance, recruitment and frustration control
(to support attention, behaviour and motivation)

*(Tom -9 years- has support for learning difficulties)*

| | | | |
|---|---|---|---|
| → | 1 | TA | Sit on your chair properly please and listen. |
| | 2 | T | What do you think Tom? |
| | 3 | Tom | uhhm uhhm uhhm |
| → | 4 | TA | Come on. What do you think? 1,302. Sorry? |
| | 5 | Tom | (****) |
| → | 6 | TA | You need to pay attention darling. Look at the board darling. |
| | 7 | | Come on. What have you got? Pay attention darling please. Look, |
| → | 8 | | you've been really good all the morning. Come on then. |
| | 9 | | *(a few seconds later)* |
| → | 10 | TA | See if you can do this next one. What do you think? Did you |
| | 11 | | understand that? Yes? |
| | 12 | Sam | Tom knows it. |
| | 13 | Tom | I know it. Two hundred. |
| → | 14 | TA | Well done darling. |
| | 15 | Teacher | Well done Tom. |

(****) = unclear turn

Video data would have enabled us to tell if the TA's prompts and encouragement enabled Tom to sit up more attentively (or not). The example does, however, show convincingly how she engages him actively in the task because he is guided towards a correct response, receiving positive feedback from both the teacher and the TA. The example also shows the importance of peer scaffolding since Tom might not have been able to offer the correct answer without Sam's use of a recruitment strategy ('Tom knows it').

Extract 4 shows the TA's strategies for contingency management and frustration control while two pupils are actively engaged in paired work. The extract occurs 5 minutes into a literacy intervention lesson. Pupils have been asked to work in pairs to decide if the statements said by a character are true or false. The statement being discussed is 'In the playground I saw a little girl'.

(4) Supporting motivation and on-task behaviour

*(Sharon (aged 6) is falling behind her peers in literacy. Sharon is working with one pupil and Martin with another.)*

| | | | |
|---|---|---|---|
| | 1 | Sharon | She didn't see because she was inside yeah. |
| | 2 | Martin | She didn't see she was inside yes. Was inside that's why. |
| | 3 | Sharon | He was copying me Miss. |
| → | 4 | TA | Yes that's ok you're going to discuss it together as a group so |
| | 5 | | don't [worry about it. I'm going to change those two words again. |
| | 6 | Sharon | [(*tapping on table*). Fact T T T. |
| → | 7 | TA | Sharon remember be sensible ok. |
| | 8 | Sharon | Fact. Ok. |
| → | 9 | TA | You have to be listening and paying attention otherwise you won't |
| | 10 | | remember what we're talking about ok. |
| | 11 | Sharon | Ok:: (1.3) Miss Rainer. |

[ = overlapped speech

In line 2 Martin agrees with Sharon's response to the statement (that the little girl could not be seen because she was inside) by repeating her reasoning. However, it is clear from Sharon's turn in line 3 that she does not expect the other pair to engage with her responses. She therefore complains to the TA ('He was copying me miss'). The TA attempts to reduce frustration by explaining that this is not a problem ('that's ok' and 'don't worry about it') and explains that they will later be expected to reach a consensus ('you're going to discuss it together as a group'). Later, when Sharon begins to tap on the table and loudly repeats the letter T, the TA aims to keep her

on-target by reminding her to ‘be sensible’ adding the reason (‘You have to be listening and paying attention otherwise you won’t remember what we’re talking about’). The scaffolding support strategies used by the TA, by offering reassurance and direction maintenance, lead Sharon to re-engage with the task.

### 3.3 Heuristic role

The heuristic examples show the teacher and then the TA discussing learning strategies for the students to use in order to solve problems independently. The first extract (5), takes place in a mathematics lesson for 13-year-olds, and shows the teacher exploring the main concepts of the lesson: mode, median, mean and range. As this is early in the lesson, the teacher models the key strategies for working out the median (by putting the numbers in order), the mean (by adding them up and dividing by the number total) and the range (by taking away the smallest number from the largest). The TA is listening to this part of the lesson and therefore hears the teacher model the language that the children will need in order to internalise the learning strategies. These phrases will be key to the children for self-scaffolding when the teacher and TA are no longer present.

(5) Teacher (T) modelling heuristic strategies

| | | | |
|---|---|---|---|
| | 1 | T | What is the mode, Aaron? |
| | 2 | Aaron | Most common. |
| | 3 | T | What is a median, Suna? |
| | 4 | Suna | Middle number. |
| → | 5 | T | Once you’ve **put them in order.** Right. So middle number once |
| → | 6 | | you’ve **put them in order**. What is a mean Suna? |
| | 7 | Suna | Add them up and divide by how many numbers you’ve got. |
| → | 8 | T | Right, **add them up and divide** by how many numbers you’ve got. |
| | 9 | | So what’s the range Josh? |
| | 10 | Josh | I know it. Is it like smallest to largest? |
| | 11 | T | It is. |
| | 12 | Josh | But like how you, I don’t know how to explain it. |
| → | 13 | T | It is **smallest to largest** but there is a way to calculate it. |
| | 14 | Josh | Take away the lowest from the highest? |

| | | | |
|---|---|---|---|
| → | 15 | T | Begin by **taking away the smallest**. Ok, so with that in mind, I'll |
| | 16 | | put the reminders on the board. Can you work out the mode, |
| | 17 | | median, mean and range of this data? Thank you. |

(bold text denotes talk about learning strategies)

Extract (6) takes place a few minutes later in the same lesson. The TA makes direct use of the teacher's models to guide the children in the use of strategies to solve the maths problems set by the teacher. The TA's use of questioning is also notable: rather than asking 'What is X?', at lines 2 and 11 the TA asks cognitively demanding questions beginning with 'How?'. The first question elicits from Cam the working out strategy of putting the numbers 'in order'. The TA feeds back with 'really important', thus marking his answer as significant and then models the strategy again with repetition (lines 6 and 8). The TA then proceeds to the next task by asking a further cognitively demanding question about the finding the range (line 11).

(6) TAs' use of questions and models to elicit and reinforce heuristic strategies

| | | | |
|---|---|---|---|
| | 1 | TA | So you need to have a look and also do each one, don't you? |
| → | 2 | | How do you do the median? |
| | 3 | Cam | When they're in order. |
| → | 4 | TA | Yes that's really important. |
| | 5 | Cam | It is, it is. |
| → | 6 | TA | Have you **put them in order** then? |
| | 7 | Cam | Yeah but I know what it is anyway. |
| → | 8 | TA | Right ok, so you thought about them **in order** then obviously. |
| | 9 | Dev | What's the median? |
| | 10 | TA | Right, so the middle value from that is five. Ok. Well done. |
| → | 11 | | The range. How do you find the range? |
| | 12 | Dev | Biggest minus the littlest. What, this one here? |
| | 13 | TA | Yes, this one here you said didn't you? |

(bold text denotes talk about learning strategies)

This example demonstrates how TAs can benefit from clear and explicit modelling of learning strategies by the teacher, within the same lesson, in terms of cognitively demanding scaffolding questions and heuristic explanations. For a fuller analysis of possible heuristic strategies for TAs (models, questions and prompts) and their relative strength to assist the learner contingently, see Radford et al., (2014).

Example 7 demonstrates that using a questioning strategy to query the previous turn for sense can be an effective heuristic prompt. In this way the TA encourages independence, as it requires the children to draw entirely on their own resources to rethink the learning strategy that they used.

(7) Prompting rethinking

*(Clare (aged 7) is falling behind her peers in literacy. The extract occurs 11 minutes into a literacy intervention session focused on reading and spelling words with the phoneme /o/ spelt in different ways. The sentence being read is 'He croaked and groaned')*

| | | | |
|---|---|---|---|
| T | 1 | Clare | He crocked |
| → | 2 | TA | Crocked do you think that makes sense? |
| | 3 | | N[o |
| | 4 | Clare | [Oh croaked |
| | 5 | TA | He **cr**oaked good |
| | 6 | Clare | He croaked and growled |

T = trouble

[ = square bracket denotes overlap

In line 2 the TA repeats the incorrect word ('crocked') and queries the sense of this ('do you think that makes sense '). This strategy requires Clare to draw entirely on her vocabulary and sense making skills to repair the trouble, which she does in line 4 (correcting the word to 'croaked'). This is a very relevant strategy first scaffolding strategy for TAs to use with pupils with SEN because it provides maximum opportunity for the child to draw on their own resources. If this fails, the TA could

then reduce the degrees of freedom by eliciting or modelling further strategies for repairing the error.

## 4. DISCUSSION

This paper offers a unique framework for understanding how learners with SEN can be directly supported, through interaction, in inclusive classrooms. Figure 1 sets out the three roles and makes suggestions regarding who should take responsibility, to clarify how teachers can offer support to the TA. Our discourse roles are distinct from each other and help to clarify the pedagogical and non-pedagogical responsibilities of the TA or paraprofessional. As a result, we believe that the model will be highly valuable for school leaders and teachers to make decisions about the deployment of TAs on a day-to-day basis, and the types of support that they should provide for groups and individuals.

Figure 1 here

Importantly, the roles of the paraprofessional should be seen as flexible according to the learning objective, the type of task and the needs of the individual. For example during a whole class teacher exposition, TAs may be focused on the support role, whereas when working with an individual, they may incorporate all three roles whilst prioritising one area according to the needs of the learner. It is essential that pedagogical decisions are grounded in a robust theory of instruction so that teachers make best use of support opportunities. It is also important that there is regular sharing of information between the teacher and the TA about developing the strengths and needs of individuals in relation to the respective domains of each role.

In terms of professional development, TAs and teachers being trained together has been strongly recommended (Giangreco et al., in press). More widely, the twin issues of meeting the needs of pupils with SEN and managing and working effectively with additional adults in the classroom – for too long overlooked – must be more rigorously addressed in initial teacher education and continuing professional development (Hodkinson, 2009; Blatchford et al., 2012).

Professional development programmes for TAs must be theoretically informed and we have some suggestions that are consistent with the scaffolding model. The role of language for learning and the how this relates to the principles of scaffolding need

to be understood (Mercer & Littleton, 2007). This means fostering student independence through the use of contingent scaffolding strategies and adjusting support in the moment so that fading and transfer of responsibility for learning takes place (van de Pol, 2010). If TAs are to benefit from such rigorous professional development, there are implications for their qualifications on recruitment and for their induction training.

We know that for talk to promote pupil learning and conceptual understanding actively, effective teachers clearly articulate concepts and ideas, and skillfully scaffold pupil learning. For understandable reasons connected to the inclusion agenda, TAs have become a regular fixture in the classroom and, in particular, in the lives of students with learning difficulties. With this has come a drift towards TAs taking on a frontline pedagogical role, but the nature of the talk that takes place between pupils and TAs has not been given any meaningful consideration. This presents a dilemma, which is important to bring out: is it realistic to expect TAs to talk to pupils in the same way as teachers, and to achieve the similar rates of progress with supported pupils, given that they have not had the same degree of training in subject and pedagogical knowledge? If not, then we need to properly calibrate our expectations of what TAs can achieve with pupils in terms of outcomes, or we place upon them unreasonable demands that they are unable to fulfill through no fault of their own.

Elsewhere, we have set out some practical ideas in terms of how TAs might develop skills in terms of questioning and developing pupils' independent working skills (Russell et al, 2013), but it is the more general solutions to the appropriate role of TAs in interactions with pupils that is still in need of attention, which has provided the focus of this paper.

We now consider each component of the model and its implications for professional development. First, the repair role requires the teacher and the TA to be able to identify when children are in difficulty, either because they do not know the answer to a question, cannot find a word, are not familiar with a learning strategy or need time to process the adult's language (Radford, 2009; Radford, 2010a). Next, adults must have a full grasp of the consequences of outright correction ('giving the answer') on closing down the student's thinking and involvement (Radford et al., 2011). When

these principles are understood, a range of other-initiated repair (OIR) strategies can be modelled by the teacher or TA. Prompt cards could be given, that include clear examples suited to the needs of the learners that the TA is supporting. For example, when children are likely to produce unclear turns, the card could include general OIRs such as *'What do you mean?'* (for low support and high student responsibility) and specific OIRs that reduce the degrees of freedom *'Do you mean X or Y?'* when higher support is needed. It is also important that pupils are provided with sufficient time to process and respond to scaffolding questions, hints and prompts.

Secondly, the support role is especially important because it includes features associated with how to keep children on task, motivated and with reduced frustration. As most tasks involve language (e.g. explanations, instructions and questions), the student's attention needs to be gained and sustained and good listening practised. The support role also includes affective dimensions associated with how learners feel about themselves and the task. For TAs, these aspects of the role demand many skills: they need to be able to identify the signs of children losing attention and going off-task. In order to reduce frustration, they should give students reassurance, encouragement and direction so that they engage and persevere with tasks. Whilst our data show that the TAs use a range of helpful strategies, children with SEN have individualised needs and the teacher must direct the TA accordingly. This does not mean that the TA should be routinely deployed to work with struggling pupils in place of teachers; strategies must be adopted whereby the TA can be used to 'free up' time for them (as the trained pedagogue) to spend quality time with these pupils. In addition, TAs need to know how to support pupils in developing self-supporting strategies in relation to maintaining direction and persevering with challenging tasks in order to prevent over dependence on adult support.

Finally, in terms of the heuristic role, the teacher needs to instruct the TA so that s/he knows both the end result of the problem as well as how to work it out. The strategies must be relevant to the particular task, as well as within the grasp of the learner. Teachers should not under-estimate the level of skill required to use strategies that transfer responsibility to the learner. Modelling of learning strategies by the teacher could take place in the early phase of a lesson so that the techniques can be copied by the TA. Following this, the TA would be in a position to model and prompt the student to use heuristic strategies via a) modelling, b) prompting recall of

strategies and c) through the use of scaffolding questions such as *'What strategy could you use to help?'*. Encouraging the child to verbalise as they are working through a problem is particularly valuable as it provides information for the adult about the strategies currently being used by the child, and this could be easily adopted by TAs. Furthermore, as the ultimate aim of heuristic scaffolding is for learners to be able to self-scaffold, TAs could model self-directed questions such as *'Have I checked this?*' or *'Have I done one like this before?'* (Holton & Clarke, 2006; Radford et al., 2014).

Best practice will clearly be associated with the teacher and TA working as partners in the classroom: they could plan together by sharing how their roles will vary according to the dimensions of instruction in relation to different lesson objectives and goals for individual learners. As an illustration, to avoid pupils becoming over-reliant on adult support, the TA might use the heuristic role to encourage the child to seek help from the teacher since this is an important strategy that supports independence. For this to work, it would require liaison between the teacher and TA before the session so that they are both clear of their respective, but complementary, contributions.

To conclude, our scaffolding model is unique in so far as it differs from previous conceptual frameworks. The three key dimensions of the model (repair, support and heuristic) are warranted by the moment-by-moment needs of children with SEN. The repair and heuristic aspects of scaffolding, in particular, go beyond our current understanding and offer new areas for others to consider in inclusive classrooms. The methods used in this study, through close examination of the child's involvement in scaffolding sequences, have been key to developing the framework. Future research in this area will benefit from paying fuller attention to the contributions by learners during interactions.

We have proposed a repertoire of potential responsibilities to clarify the different roles of the teacher and TA, although it is clear that there is potential 'role creep'. Teachers might understandably be cautious about being complicit in developing approaches that mean unqualified people encroach on their professional jurisdiction and identity, especially where the capability or willingness of individual TAs to engage in new forms of working might be in doubt. This is why we are clear that

more fundamental work on rethinking the TA role is required at the school level (see Russell et al, 2013). School managers need to take important decisions about the qualifications and job descriptions of support staff. If they are to fulfil both the pedagogical and non-pedagogical aspects of the roles described, managers should have the highest expectations at the recruitment stage. In addition, the training, preparation and monitoring must reflect this and the model set out here will help teachers and special educational needs coordinators/managers to think about the precise discourse strategies that can be modelled in the context of the classroom.

From a discourse perspective, this framework is in the early stages of development. There are other aspects of the learning context that are crucial within a theory of scaffolding that we have not yet included. For example, peer scaffolding is very important for children with SEN and needs to be explored more thoroughly in future work.

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Figure 1: Scaffolding roles and responsibilities of the teacher and the TA