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Investigating the impact of Instructional Consultation on the practice of Teaching Assistants

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Abstract

A growing body of research investigating the role and impact of the Teaching Assistant (TA) has highlighted the possible detrimental impact that the quality of TA support may have on the academic outcomes of students (Blatchford, Russell, & Webster, 2011). Despite this, the literature offers few evidence-based, systematic suggestions of how the practice of TAs can be developed.

This study aimed to investigate the impact of Instructional Consultation (IC) on TA practice. IC is a collaborative, indirect approach to consultation, which seeks to address and develop the pedagogical approaches applied by adults (Rosenfield, 1995). As a secondary focus, the indirect impact on students supported by the TAs who received IC, was also explored.

IC was delivered to four TAs, who provided individual and class-wide support within a primary school. Using a Single Case Experimental Design, the impact of IC was assessed by collecting observational data on the strategies associated with the quality of TA practice, over a 3-month period before and after the delivery of IC. Additionally, TAs' views around identified targets for their practice and student outcomes were explored using a Target Monitoring and Evaluation (TME) and structured interview approach.

Visual analysis suggested a positive impact of one TA's use of two strategies; although an overall experimental impact across the cases was not evidenced. TAs reported through TME data that IC positively impacted their practice.

Repeated measures of students' specified learning behaviours and TME data indicated a positive indirect impact, however questions around causality and validity of the applied measures limited the conclusions drawn from these findings.

Nevertheless, this study highlights the importance of investing in the professional development of TAs in order to support their role and the outcomes of students they support.

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List of abbreviations and acronyms

BPS	British Psychological Society
CoP	Code of Practice
DfE	Department for Education
DfEH	Department for Education and Health
DISS	Deployment and Impact of Support Staff
DV	Dependent Variable
EDTA	Effective Deployment of Teaching Assistants
EHCP	Education and Health Care Plan
EP	Educational Psychologist
EPS	Educational Psychology Service
IC	Instructional Consultation
ICC	Intra-class coefficient
ICT	Instructional Consultation Teams
IV	Independent Variable
RQ	Research Question
SCED	Single-case experimental design
SEN	Special Educational Needs
SENCo	Special Educational Needs Coordinator
SEND	Special Educational Needs and Disability
SISR	Student Initiated Student Repair
SLR	Systematic Literature Review
TA	Teaching Assistant
TEP	Trainee Educational Psychologist
TISR – C	TA Initiated Student Repair – Closed question
TISR – O	TA Initiated Student Repair – Open question
ZPD	Zone of Proximal Development

Chapter 1: Introduction

1.1 Research focus

The current research broadly focused upon the Teaching Assistant (TA) role within mainstream educational settings, when employed to provide students with pedagogical support. Specifically, this research intended to investigate whether the delivery of Instructional Consultation (IC), a consultation approach, impacted TAs' practice, with 'practice' primarily concerning components associated with the TAs' verbal, pedagogical support. Impact upon the outcomes of students supported by TAs who received IC, was explored as a secondary focus.

The present study stemmed from existing research, which, as discussed in Chapter 2, has highlighted many of the potential educational risks that can result from inappropriate pedagogical support provided by TAs to students. Within the reviewed body of literature, suggestions have been made as to how these risks may be reduced. However, there has been relatively less recognition of evidence-based interventions which aim to develop the practice of TAs (Blatchford et al., 2011).

The researcher, also a Trainee Educational Psychologist (TEP), noted that approaches that seek to develop the practice of TAs were not available within three of the local authorities in which she had completed placements during her training.

The researcher considered a range of existing interventions that may be applied by Educational Psychologists (EPs) to develop the practice of TAs. IC, a collaborative, indirect consultation model, which targets the pedagogical support provided by professionals (Rosenfield, 1987), was selected due to the relevance of the consultation model's objectives. However, literature investigating the impact of IC has primarily targeted teachers within North-American schools (Rosenfield, Gravois, & Silva, 2015; Rosenfield, 2008). This study therefore seeks to address the gap in the literature by investigating the impact of IC on TA practice.

1.2 Researcher's professional and personal interests

The current research was also informed by the professional experiences of the researcher. During the researcher's practice as a TEP, the invaluable insight often provided by TAs into the needs of students, reinforced the researcher's appreciation of this role, as well as her interest in contributing towards the evidence-base around TA practice within schools.

The researcher's interest in the TA role stemmed from professional experiences prior to the doctorate training: The researcher had been employed as a TA within a range of settings, which heightened her awareness of the TA profession, including the range of possible responsibilities, expectations and systemic factors that could support and constrain the development of professional practice.

1.3 Structure of the thesis

Chapter 2 intends to provide a comprehensive review of relevant theory and research used to create the rationale of this study.

The aim of ***Chapter 3*** is to explore and evaluate the different methodological approaches employed within psychological and educational research. The rationale behind the methodological choices made within this study is detailed.

Chapter 4 presents the findings from the four cases within this study. Some commentary is also provided to determine the presence and significance of any experimental impact of the intervention.

The key outcomes from this study are discussed in depth in ***Chapter 5.*** The implications of this study are reflected upon with reference to, and consideration of, the existing theory and literature, as well as the limitations of the study. Avenues for potential future research are also explored.

Finally, an overall summary is provided in ***Chapter 6,*** highlighting the unique contributions and conclusions of this study.

Chapter 2: Literature Review

2.1 Aim and structure of the Literature Review

This literature review provides an overview of the research and theory pertinent to this study.

This chapter begins with a narrative review of the research and theory that has explored the role and impact of Teaching Assistants (TAs) employed to provide students with pedagogical support within mainstream settings. Particular attention will be paid to the verbal interactions that take place between TAs and students to support learning and how the effectiveness of the role may be supported.

This is followed by a narrative discussion around the role of consultation as an approach that Educational Psychologists (EPs) may employ to support the professional practice of school-based staff such as TAs. Various approaches and models of consultation will be explored and, in particular, the theoretical and evidence bases of Instructional Consultation (IC) will be discussed. The application of IC as an approach to support the TA role will then be considered in order to form the rationale for this study.

The research and theory considered within the narrative review was identified by completing a search of key terms, including “Teaching Assistants,” “Consultation” and “Instructional Consultation,” within the University of Nottingham library database as well as other online search engines, such as Google Scholar. References within identified sources were also located and considered. Accessible sources were then drawn together. Limits around dates and location were not imposed on the search.

The final section of this chapter presents a systematic review of the relevant research in order to guide the focus of this study, which is to investigate the impact of IC on TA practice.

2.2 Teaching Assistants

This section will focus on the role of classroom based support staff, often referred to as Teaching Assistants (TAs), Learning Support Assistants, Higher Level TAs and classroom assistants (hereon referred to as TAs), who occupy a pedagogical role within mainstream school settings.

2.2.1 Increase in TA employment

The growing presence of TAs within educational settings has caught the attention of researchers, particularly within the last fifteen years (Giangreco & Doyle, 2007; Webster & Blatchford, 2013; Giangreco, Yuan, Mackensie, Cameron, & Fialka, 2005; Higgins & Gulliford, 2014). Official statistics have indicated a yearly increase in the amount of TAs employed within mainstream state-funded English schools since 2000, with the most recent government statistics indicating that 26.4%, or 243,700 of the 921,800 full-time employed school staff are TAs, a 4.9% increase from 2013 (Department for Education, DfE, 2014). Although these figures to not include the growing number of academies within the UK, it indicates that TAs make up a large proportion of staff employed within mainstream schools.

There are many advantages of increasing the adult to student ratio within educational settings. For example, it allows duties and responsibilities to be shared amongst staff, possibly enabling teachers to spend greater time supporting more students, as found by Webster and Blatchford (2013).

2.2.1.1 Supporting students with Special Educational Needs

It has been suggested that the increased employment of TAs is in recognition of the large number of students with additional or special educational needs (SEN) included within mainstream schools (Webster & Blatchford, 2013). SEN is defined within the Special Educational Needs and Disability Code of Practice (Department for Education and Health, DfEH, 2015, p. 15) as being a, "learning difficulty or disability which calls for special educational provision to be made for him or her," with difficulty or disability being defined as:

> "A significantly greater difficulty in learning than the majority of others of the same age, or has a disability which prevents or hinders him or her from making

use of facilities of a kind generally provided for others of the same age in mainstream schools or mainstream post-16 institutions" (p. 16, 2015).

The DfEH guidance also indicates that, children and young people aged 0-25 judged as having more complex needs may require an Education and Health Care Plan (EHCP), formerly recognised as a Statement of SEN (DfEH, 2015). Statistics published by the DfE (2014) in January 2014 indicated that, of the 237,110 students with an EHCP (or unconverted Statement of SEN), 46.3% are educated within mainstream, state-funded schools. This figure, which does not include students educated within mainstream academies and free-schools or those with SEN but without an EHCP/Statement, suggests that a high number of students within mainstream schooling have additional needs.

To support students with additional needs, current legislation advises settings to adopt a graduated response, increasing the level of support in response to the difficulties that may be presented (DfE, 2015, p. 280). The legislation makes reference to TAs, commenting on the direct and regular support they provide to students with SEN (DfEH, 2015, p. 69, 99, 101), suggesting that TAs are deployed as part of the graduated response to support students with SEN. This has also been highlighted by research, for example, primary school head-teachers reported within Russell, Webster, and Blatchford's (2012) large scale Deployment and Impact of School Staff study (DISS, discussed in depth in section 2.2.2) that TA employment is essential to supporting inclusive practices that correspond to government policies.

However, what has not been specified within the current government guidance is *how* TAs can provide enhanced support for students with additional needs (Radford, Bosanquet, Webster, & Blatchford, 2015). Decisions are often left to school leaders, senior members of staff or even TAs themselves, which carries a weight of risk. Therefore, it could be argued that developing the evidence-base around the TA workforce is of high importance, particularly for researchers and practitioners within the educational field, such as school leaders and EPs.

2.2.2 Deployment and Impact of Support Staff project

Until recently, the use of TAs within educational settings had received little empirical attention, (Russell et al., 2012). This was addressed by the large-scale, government funded Deployment and Impact of Support Staff (DISS) study, that took place in the UK between 2003-2008 (Blatchford et al., 2008; Blatchford, Bassett, Brown, Koutsoubou, et al., 2009; Blatchford, Bassett, Brown, Martin, et al., 2009a). The project aimed to provide a detailed insight into the role of support staff including TAs, on aspects such as how they are deployed within school settings, their professional responsibilities and the impact of TA support on students and staff (Webster et al., 2011). The study employed both qualitative and quantitative data-collection approaches and was the first of its kind, with the outcomes attracting wide-scale attention to the TA role.

Many encouraging outcomes were identified, including the positive impact that TAs had on reducing students' off-task behaviours and that, when occupying a non-pedagogical role such as an administrative role, TAs indirectly supported students by freeing up teachers' time (Webster et al., 2011).

Critical to the study was the findings that TAs predominantly occupied a pedagogical role, in which they provided students support with learning. TA support was found to be directed particularly to low attaining students and/or those with SEN, on both an individual and group basis, inside and outside of the classroom (Blatchford, Bassett, Brown, & Webster, 2009; Blatchford, Bassett, Brown, Koutsoubou, et al., 2009).

One of the most notable findings from the DISS study concerned the impact of TA support on students' outcomes. The researchers collected data around pupil attainment across a school year, based upon within-school and national assessments. This was correlated with observational and self-report data, to capture the amount of time students were supported by TAs. A negative relationship was found between the amount of TA support that students received and academic outcomes in subjects such as English, Mathematics and Science, across school years 1 to 10, after controlling for factors including SEN status and prior attainment (Blatchford, Bassett, Brown, Koutsoubou, et al., 2009; Blatchford et al., 2011). Although the possibility of bias and inaccuracies may have confounded the self-report data and therefore constrained the

validity of the outcomes, a negative correlation was also evident based only upon the observational measures of TA support.

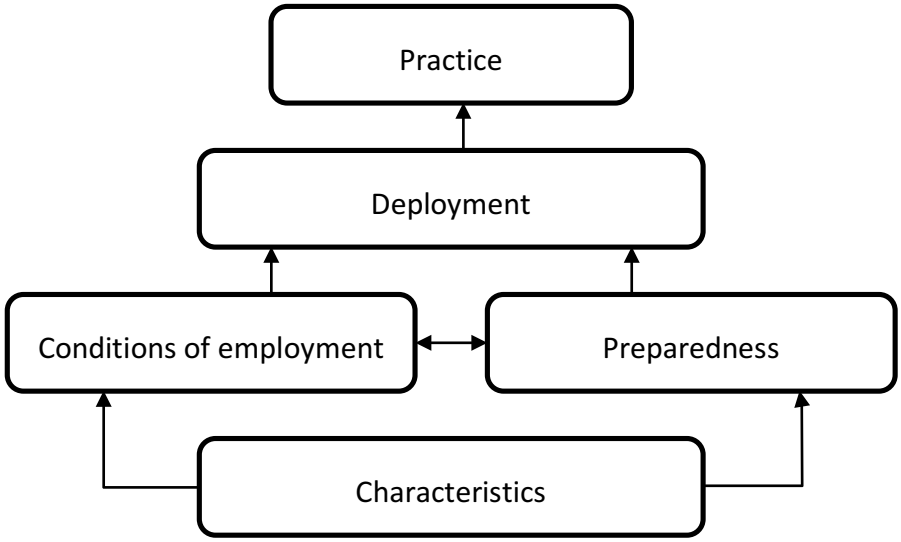
The negative correlation between TA support and student outcomes, as indicated from the DISS project, supports the conclusions drawn by Farrell, Alborz, Howes and Pearson (2010), who aimed to systematically review the available research on the impact of TA support. The research reviewed indicated a negative impact of *general* TA support on student outcomes. A positive impact on attainment was indicated when TAs delivered *targeted* interventions, which may be a reflection of the intervention's effectiveness, as opposed to the TA input. The conclusions drawn from the systematic review were based on four studies, two of which included only one school in the sample, potentially limiting the generalisability of the findings from the review.

Despite the possible methodological limitations of the research investigating the impact of TA support, there appears to be a possibility that TA support may not result in the expected impact on students' academic outcomes.

2.2.3 The Wider Pedagogical Model

Possible explanations for the negative outcomes indicated by the DISS study were explored, along with suggestions around how to enhance the effectiveness of the TA workforce, as part of the Effective Deployment of Teaching Assistants (EDTA) project (Blatchford et al., 2011; Russell et al., 2012; Webster, Blatchford, & Russell, 2013). Attention was particularly paid to the *preparedness, deployment* and *practice* of TAs, conceptualised by Webster et al., (2011) within the 'Wider Pedagogical Role' (WPR) model (see Figure 2-1).

Figure 2-1: Webster et al's., (2011) Wider Pedagogical Role (WPR) model, conceptualising concepts of TA employment argued as being fundamental to the effectiveness of TAs.



2.2.3.1 TA preparedness

The researchers highlighted the *preparedness* of TAs, which they classified as the amount of time protected for joint-planning and feedback between TAs and class teachers. Outcomes from the DISS study suggested that time allocated for TAs to prepare for their role with qualified class teachers was often minimal. This component also appeared to be infrequently factored into accounts of the TAs' time and responsibilities, and so typically relied on TAs' goodwill (Blatchford et al., 2011). The consequence of minimal preparation time was said to increase the chances of TAs reacting to, rather than planning for, the tasks presented and the students' needs (Russell et al., 2012). The researchers suggest that factoring preparation time into TAs' schedules could promote TAs' awareness of their responsibilities and support the effectiveness of their role (Russell et al., 2012).

2.2.3.2 TA deployment

TA preparedness is closely related to the second component of the WPR model: TA *deployment*. Observational data from the DISS project suggests that students with SEN and/or low attaining students are increasingly separated from their class teacher and receive alternative, as opposed to additional, support from less qualified staff such as

TAs (Webster & Blatchford, 2013). This finding was thought to be a core reason for the negative impact of increased TA support on students' outcomes (Blatchford et al., 2011). To address this, it was proposed that students with higher needs receive increased support from more qualified staff such as class teachers, whereas TAs should be deployed to work with more able students (Blatchford et al., 2011; Webster et al., 2011; Russell et al., 2012).

2.2.3.3 TA practice

The third factor highlighted within the WPR model refers to the *practice* of TAs, which concerns the direct interactions that take place between TAs and students. Within the DISS study, qualitative analyses compared the interactions between TAs and students, with those between teachers and students (Blatchford, Bassett, Brown, Koutsoubou, et al., 2009; Blatchford, Bassett, Brown, Martin, et al., 2009a; Radford, Blatchford, & Webster, 2011). Conversational analyses indicated that teachers, in comparison to TAs, were more likely to explain concepts and provide specific feedback linked to the students' prior knowledge. It was also indicated that, in comparison to TAs, teachers were more likely to use strategies such as modelling and asking higher order questions, that promote cognitive engagement and thinking.

Comparisons additionally suggested that TAs were more likely to 'close down' interactions linguistically and cognitively, by supplying answers and asking closed questions, which focused more upon task completion as opposed to promoting understanding. Furthermore, it was found that TAs would, at times, unintentionally provide inaccurate and misleading information (Blatchford, Bassett, Brown, Koutsoubou, et al., 2009; Radford et al., 2011).

The researchers concluded that the interactions between TAs and students could be considered of a lower quality and inhibited learning and student independence, in comparison to the interactions between teachers and students (Radford et al., 2011; Webster et al., 2011).

The researchers highlighted many reasons as to why the quality of TAs practice may be reduced in comparison to teachers practice (Blatchford et al., 2011). The authors predominantly point towards the differences in training received by teachers (who are

typically required to complete a post-graduate qualification) in comparison to TAs, who are not legally required to have any qualifications or experience to practice and instead may rely upon professional development through "on-the-job" experience. The DISS study revealed that, regardless of this, TAs are often expected to perform tasks, including providing instructional support to students with a range of needs and differentiating classroom tasks, with minimal support and/or training (Blatchford, Bassett, Brown, Koutsoubou, et al., 2009; Blatchford, Bassett, Brown, Martin, et al., 2009a, 2009b; Blatchford et al., 2011).

2.2.4 Components of TA practice

In recognition of the differences between the roles and expectations of teachers and TAs, Radford, Bosanquet, Webster, Blatchford and Rubie-Davies (2014) further examined transcripts from the DISS study and explored theories of teaching and learning most relevant to the TA role. Due to the extensive opportunities that TAs have to provide individualised support to students, Radford et al., (2015, 2014) primarily focused upon the theory of scaffolding and emphasised the importance of promoting TAs awareness of aspects of the theory, discussed below.

2.2.4.1 Scaffolding

Scaffolding, within educational and psychological research, generally refers to the metaphorical support structure that can be put in place to support cognitive development (Rodgers, 2004). Introduced by Wood, Bruner and Ross (1976), the theory suggests that in order to encourage independence and competence, structured support should be gradually reduced as skills are acquired (Frederickson & Cline, 2009). This is similar to Vygotsky's notion of the 'zone of proximal development,' (ZPD), which refers to the distance between what an individual can accomplish with or without mediation from a more advanced other (Vygotsky, 1978).

van de Pol, Volman and Beishuizen (2010) conducted a systematic review of the available research around scaffolding, and concluded that due to the dynamic and highly personalised nature of scaffolding, which depends on factors such as students' prior knowledge and task difficulty, there is no universal application. However, they

concluded that there were key concepts common across the studies of scaffolding, including *contingency, fading* and the *transfer of responsibility:*

Contingency refers to the reactive and interactive nature of scaffolding, which requires both individuals in a dyad to be active participants. Contingent support is provided when the more-able partner adapts their support after determining the learner's current level of understanding. The support is then gradually withdrawn from the student *(fading)* which, if successful, *transfers the responsibility* and control of learning onto the student (van de Pol et al., 2010). This approach theoretically increases students' motivation and ownership of their learning (van de Pol et al., 2010).

The literature considered by van de Pol et al., (2010) found scaffolding to be an effective instructional approach due to its potential to go beyond supporting task completion to providing students with tools to apply in their independent learning. Many of these studies did not include a control group and comparisons against alternative approaches were not made, adding caution to this conclusion.

2.2.4.2 Scaffolding provided by TAs

Drawing upon theories of scaffolding and the outcomes from the DISS project, Radford et al., (2015) proposed that TA practice is characterised by three roles: a *heuristic, repairing* and *supportive* role. Each of these roles incorporate strategies associated with scaffolding, discussed. Essentially, the researchers argue that, if TAs continue to occupy a pedagogical role in the current education system, support targeting these three roles is essential (Radford et al., 2015).

2.2.4.2.1 Heuristic role

The term *heuristic* is defined as being the instructional methods that support and encourage learners to problem-solve and identify solutions independently, by gradually removing support provided in order to transfer responsibility of learning on to the learner (Radford et al., 2015, 2014). Radford et al., (2015) argued that the level of scaffolding provided should be adjusted in accordance to the individual's needs and should initially encourage maximum responsibility.

The heuristic strategies employed by TAs may include modelling of strategies for students to later internalise (suggested as being a form of high support); prompting

students to consider prior learning and successful strategies; asking cognitively demanding questions (including open questions) and providing feedback that reinforces the students' successful use of a strategy (Radford et al., 2015, 2014).

This contrasts with less desirable strategies that may discourage students from identifying solutions independently, such as providing instructions and answers and asking lower-order questions, such as closed questions (Blatchford et al., 2011).

Heuristic strategies are argued to be associated with increased academic outcomes, as students are likely to internalise strategies and learning that they have been able supported to discover themselves (Radford et al., 2015, 2014).

2.2.4.2.2 Repairing role

The *repairing* role associated with TA practice refers to the support that may be provided when a student fails to answer a question, or responds incorrectly. According to Radford et al., (2015), there are a number of repair strategies that may be adopted, which can impact on the promotion of learner independence:

Firstly, Radford et al., (2015) propose that the student may be corrected, in which they are made aware by someone in a supportive role that a repair is required and they may follow this by providing the repair. Corrections were found to be adopted by TAs more so than qualified teachers within the DISS research (Blatchford et al., 2011). This was argued to have negative implications on the development of learning as well as learner independence, as it discourages cognitive exploration (Radford et al., 2015).

Alternatively, the student can be prompted by another person to make the repair themselves (other-initiated self-repair). This is argued to be more desirable than corrections as it places some responsibility onto the student and encourages cognitive exploration (Radford et al., 2015).

Lastly, students may repair themselves without prompt (referred to as self-initiated self-repair) which depends on the students' ability to identify a repair is needed, a skill which takes on maximum responsibility (Radford et al., 2015).

Radford et al., (2015) further argue that self-repair (whether initiated by the student or another person) transfers responsibility to the individual by encouraging them to 'explore' within their ZPD. The level of assistance provided by the TA may vary, from

being very open (with increased responsibility on the student), to providing a more specific hint, for example with the use of a closed question. It is argued that the assistance provided should be adjusted in accordance to the individual's needs and should initially encourage maximum responsibility (for example, by providing the student with the opportunity to self-initiate a repair), as this ensures the learner is provided with an opportunity for independent cognitive exploration (Radford et al., 2015).

2.2.4.2.3 Supportive role

Finally, Radford et al., (2015) state that TAs may occupy a supportive role, which refers to recruiting, maintaining and directing student engagement within their practice. Radford et al., (2015) argue that the supportive role is based upon affective aspects considered as being central to learning, such as managing motivation and frustration.

2.2.5 Supporting TA practice

Within the EDTA project, Webster et al., (2013) provided and trialled strategies that were suggested to target and support aspects of the TA role.

With regards to TA practice, it was recommended that TAs should be provided with opportunities to reflect upon their practice and to share, problem-solve and create models of best practice (Russell et al., 2012). It was also emphasised by the researchers that time should be allowed for changes of practice to occur, due to the ingrained nature of professional practice. Within the EDTA project, participating schools developed their own trials based upon these recommendations. The in-school evaluations highlighted that TA-student interactions improved over the course of a school term. However, the researchers acknowledged that the results were more impressionistic than systematic, as the data used included staff self-evaluations and qualitative observations (Blatchford et al., 2011; Webster et al., 2013). It was also unclear as to whether the trials examined TA strategies suggested to be associated with effective practice, such as their heuristic, repairing and supportive role (as discussed within section 2.2.4.2).

Specific approaches which can be used to support and develop TA practice will be considered within the next section. Particular attention is given to how different forms of consultation can be used to support professional practice.

2.3 Consultation

Consultation is described by Conoley & Conoley (1990) as being a, “problem solving relationship between professionals of differing fields” (pp.84), in which the consultant supports the consultee with their professional responsibilities, which has the purpose of “enhance(ing) the problem solving capacity of a consultee” and providing them with, “new knowledge, new skills, a greater sense of self-efficacy and a more perfectly developed level of objectivity,” (pp.85).

With consideration of the professional support services within education, consultation is argued to be instrumental to the EP role. For example, Wagner (2000) stated that, “Everything we do is consultation. Consultation is not a discrete item on a menu. All intentional interactions with others are consultation…” (pp. 12), implying that consultation has a fundamental and implicit role, underlying EP practice.

The following section explores the different approaches to consultation and models adopted by professionals such as by EPs.

2.3.1 The consultant-consultee relationship

There has been a debate around the approaches that should be employed by consultants within school-based consultation (discussed in detail by Gutkin, 1999). Traditional models of consultation typically employ an expert approach (Rosenfield et al., 2015). This is often characterised by the consultant being directive, in which they would, “overtly employ their professional expertise to influence problem-solving during consultation” (Gutkin, 1999, p. 180). Traditional approaches to consultation are also often more coercive in nature: consultants characteristically provide advice and recommendations without the active participation or negotiation with consultees (West & Idol, 1987; Gutkin, 1999).

Expert consultation approaches contrast with more collaborative approaches, in which consultants and consultees work together to problem-solve (Gutkin, 1999). This is similar, although distinct, to non-directive approaches, where the consultant, “restricts the overt expression of their unique professional knowledge” (Gutkin, 1999, p. 180). This enables consultee(s) to actively engage and participate within the problem-solving

and decision making process and feel empowered to formulate solutions (Gibson, Stephan, Brandt, & Lever, 2014).

With regards to EP approaches to consultation, although the evidence is currently inconclusive (Gutkin, 1999; Rosenfield et al., 2015) it is typically considered that collaborative approaches are most likely to support changes in consultee(s) behaviour and thinking (Conoley & Conoley, 1990; Wagner, 2000; Rosenfield et al., 2015). Conoley and Conoley (1990) emphasise that this cannot be achieved if the consultant provides the consultee with answers and advice (as may be demonstrated within directive approaches) as this may lead to an over-reliance on the consultant, which may hinder or even reverse the consultees' potential professional growth.

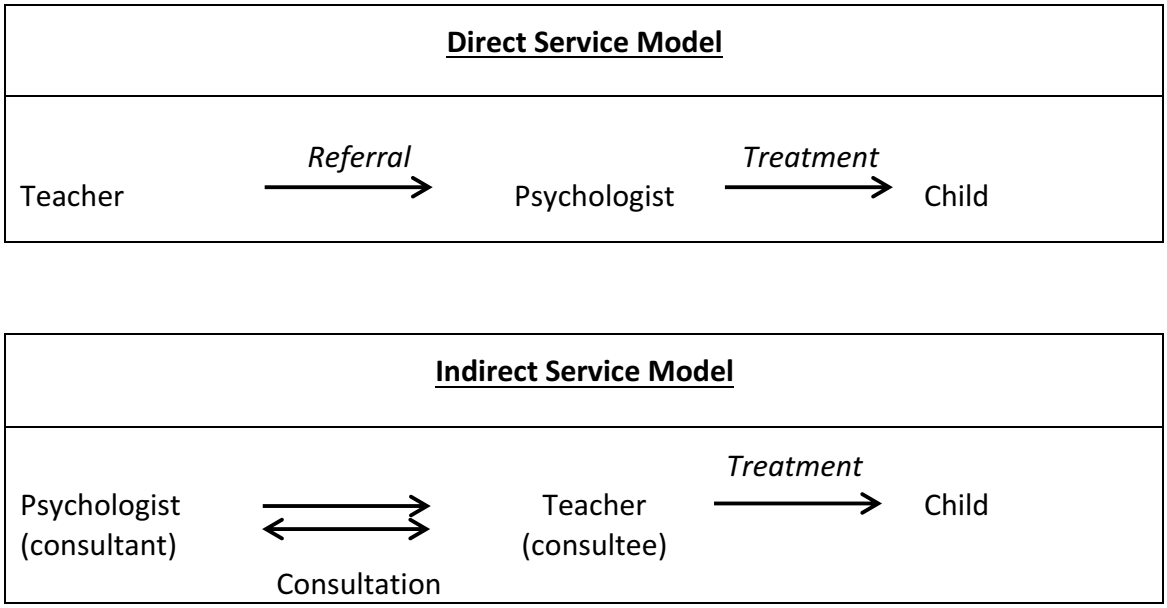
J. Meyers (2002) draws attention to the specific skills required by the consultant to maintain a collaborative relationship with the consultee(s). This includes emphasising the association between contributions made by consultees to the outcomes of the consultation, maintaining a collaborative interchange between those who may or may not have equal status and ensuring that the consultee understands that they have the freedom to accept or reject recommendations made.

The benefits of collaborative practice within consultation are described by Rosenfield et al., (2015) to include maximising the consultant and consultees' resources and providing both with the opportunity to develop their skills and knowledge from one another. Collaborative practice is also said to encourage the implementation of interventions, due to the consultees' investment of time and energy in problem-solving, as well as increase the consultee(s) competencies in addressing similar issues within future practice (Rosenfield et al., 2015).

2.3.2 Consultee and client centred consultation

Within an educational context, Conoley and Conoley (1990) discussed the different ways in which psychological services can be provided through consultation, as conceptualised in Figure 2-2.

Figure 2-2: Direct and Indirect Model of Service Delivery (Conoley & Conoley, 1990, pp. 85)



Consultation may be either on a direct basis, in which support is delivered directly to the child/young person *(client-centred consultation),* for example through observing the student or consulting with them on an individual basis (Rosenfield et al., 2015). This may be employed if an aspect of the child/young person, such as their learning or behaviour, is specifically being targeted (Gibson et al., 2014).

In contrast, consultation may be delivered indirectly to the child, by supporting the adult(s) who regularly work with them *(consultee-centred consultation*), placing responsibility of service delivery for the child on the consultee (J. Meyers, 2002). Consultee-centred consultation within educational settings aims to support the professional practice of school staff by enhancing their problem-solving capacity, which may not only support the consultee with the specific case that may be discussed within consultation, but also allows new skills and knowledge to be applied to a wider range of students who may present similar concerns (Babinski & Rogers, 1998; Rosenfield & Humphrey, 2012). This suggests that indirect-consultation can potentially have a wider impact, moving from an individual, to a group-based level, broadening the number of students who may reap the benefit of consultative support (J. Meyers, 2002; Miller & Leyden, 1999).

Although the literature appears to strongly advocate the application of indirect-consultation by EPs (Meyers, 1973; Miller & Leyden, 1999; Wagner, 2000), it has been argued that the triadic nature of indirect consultation can create complexities around measuring any impact of the consultation at the level of the student (Kennedy, Cameron, & Monsen, 2009). Research has suggested that the student level impact of consultation is dependent on the integrity of the treatment delivered by the consultee to the student, (Gresham, Gansle, Noelle, & Cohen, 1993) however further research is required as the current evidence is inconclusive (Sterling-Turner, Watson, Wildmon, Watkins, & Little, 2001).

2.3.3 Models of consultation

When considering the consultation process, established models of consultation are often referred to, typically providing guidance around the processes that occur throughout consultation (Bozic & Carter, 2002). Three prominent models are typically referred to when considering EP practice, each deriving from differing theoretical perspectives. These are mental health consultation, behavioural consultation and process consultation (Conoley & Conoley, 1990). An additional model, Instructional Consultation, has also received some attention within the literature.

2.3.3.1 Mental Health Consultation

Deriving from mental-health practice, this model of consultation primarily targets consultees who occupy a caregiving role (e.g. teachers, support staff) and seeks to support them to identify the non-observable reasons that could be hindering progress (Conoley & Conoley, 1990). Strategies typically have a psychodynamic basis and come with an ethical caution, as there is a requirement for the consultee to confront their contribution towards the concerns raised (Conoley & Conoley, 1990). This model also places little emphasis on the wider systems that the consultee and child belongs to and so arguably might be considered a reductionist approach.

2.3.3.2 Behavioural consultation

In contrast, behavioural consultation adopts a client-centred approach by primarily focusing on the student. The aim of behavioural consultation is to identify the observable, environmental variables that may be contributing towards the concerning

behaviours (Conoley & Conoley, 1990). Strategies typically draw upon social-learning approaches such as behaviour modification, as the consultee is supported in considering their responses to a student's positive and negative behaviours and possible changes that can be made to alter the sequence and occurrence of events (Conoley & Conoley, 1990). This direct model of consultation limits the possibility for a wider impact and omits consideration of unobservable contributions to behaviour, limiting the potential impact of the approach.

2.3.3.3 Process consultation

Adopting a consultee-centred approach, process consultation aims to raise the consultees' awareness of the processes or events in a relevant environment and the impact these may have in relation to the concerns articulated (Schein, 1969). Typically applied to groups of consultees, process consultation is based upon organisational and social psychology theories. A process consultant may target the dynamics within a group and draw attention to the way in which decisions are made, in order to support the productivity and the morale of a group (Schein, 1969).

2.3.3.4 Instructional Consultation

Instructional Consultation (IC), has also received attention as an approach towards consultation within educational settings. Rosenfield, (1987) defines IC as being a collaborative, consultee-centred approach, joined with the knowledge domain of instructional psychology (Rosenfield, 1987, 1995, 2002). IC specifically focuses on supporting the competencies and skills of professionals, in order to improve the services they provide to clients (Gravois & Rosenfield, 2006; Rosenfield et al., 2015). Bergan & Schnaps (1983) state that, "this model can be applied in situations in which the purpose of consultation is to modify teacher behaviour to enhance the learning of all students in a class" (p. 109).

As described by Conoley and Conoley, (1990) and Gravois and Rosenfield (2002), IC was originally developed as a synthesis of consultation techniques, including those evident within existing consultation models, such as mental-health and behavioural models (as detailed within Table 2-1).

Table 2-1: *A table summarising the similarities and differences between the Instructional Consultation model and existing models of consultation*

Consultation Model	**Components applied within IC**	**Differences with IC**
Mental-Health	Collaborative and consultee-centred approach	IC also considers observable behaviours and components within the wider learning environment that the student is a part of.
Behavioural	Considers environmental influences on learning Considers observable and measurable behaviours, both prior to and following the application of an intervention	IC also considers non-observable factors such as the student's entry level skills and rate of learning; IC is a consultee-centred, as opposed to client-centred approach
Process	Considers the processes that occur between individuals within the relevant context	Within IC, the focus is on the processes that occur between the consultant and consultee and the consultee and the student, not those between groups of consultees

IC approaches are argued to bring domain specific strategies and insights (often referred to as *Knowledge Base 2,* West & Idol, 1987), which support the effective learning of students in the classroom (Rosenfield, 1987), in addition to knowledge and understanding of the processes that occur within consultation (referred to as *Knowledge Base 1*). The collaboration of the two knowledge bases is a practice advocated within the literature, in order to support the effectiveness of school-based consultation (Miller, 2003; West & Idol, 1987).

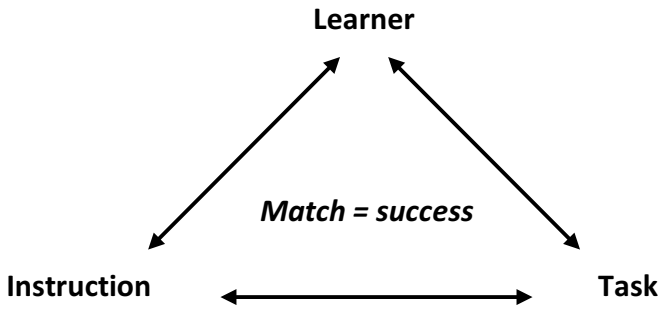
2.3.3.4.1 Underlying assumptions of IC

Rosenfield (1995, 2008) argues that a student's ability is typically ascertained by considering their performance in relation to tasks that correspond with the objectives of an incremental curriculum and that, failure to successfully meet objectives flags a child up as being 'at risk.' Rosenfield (2008) further states that it is often assumed by professionals that the difficulties experienced are due to factors within the child, such as a possible cognitive deficit, and that an adequate level of instruction has been provided to support the individual. In contrast, the central tenet of IC is that when quality *instruction* is applied to a task within a managed *teaching programme* that matches the *students' entry skills*, this can result in successful learning and an increase in student achievement. These components are depicted within the instructional triangle presented in Figure 2-3.

Therefore, the IC approach encourages factors beyond the individual student to be considered when exploring reasons for difficulties in learning, including what is to be learned (the task) and the "treatment, or the instructional and management strategies" (Rosenfield, 1995, p. 305). The student component within the triangle is based upon 'fluid' traits, such as learning, rather than 'fixed' ones, such as intelligence (Rosenfield, 2002).

Theoretically, IC therefore moves away from more traditional, medical approaches of identifying and treating any deficits within the child, such as poor cognitive proficiencies. The IC approach also distances itself from purely behavioural models of consultation as here, although observable and environmental factors are acknowledged, students' skills and abilities are also considered.

Figure 2-3: The Instructional Triangle, conceptualising the components of Instructional Consultation, as described by Rosenfield (1987, 2002).



2.3.3.4.2 Focus of IC: Academic concerns

The application of IC within educational settings specifically targets academic progress. This does not disregard challenging behaviours that may be presented by those who demonstrate difficulties with academic tasks as it is argued that behavioural difficulties may be due to a failure to effectively engage the student with the presented task Rosenfield (2002) i.e. a direct result of a mismatch between the elements of the instructional triangle (Figure 2-3).

2.3.3.4.3 A systemic approach

Rosenfield (2008) argues that, as IC adopts a consultee-centred approach by targeting instructional practice, learning may be supported across the school system. This draws upon features of successful consultation, as stated by Conoley and Conoley (1990):

> *The key to the success of consultation is an awareness by those working with children that problems are at least partially maintained by the environment and their actions. If childrens' difficulties are seen as a sign of individual pathology, then consultation is of limited usefulness. In contrast, if adults believe that settings are part of the problem, then consultative work is the most-valued service* (Conoley & Conoley, 1990, p. 100).

2.3.3.4.4 Socio-cultural and developmental theories

IC draws upon Vygotsky's socio-cultural and development beliefs, discussed earlier within section 2.2.4.1: The IC approach places value upon providing tasks within the

students' ZPD and using instruction (mediation) that can support growth and development (Rosenfield, Gravois & Silva, 2015).

The IC approach also encourages consultees to explore and develop their own ZPD, as emphasis is placed upon raising the consultees' awareness of the instructional triangle (Figure 2-3) and where any mismatches may lie.

2.3.3.4.5 Consultant and consultee relationship within IC

IC emphasises the importance of the consultant and consultee(s) building and maintaining a collaborative, working relationship, in which a safe space is created for consultees to honestly reflect upon and examine his or her instructional practice, a requirement that is fundamental in order to reach the desired outcomes of the approach (Rosenfield, 2002, 2008). The assumption underpinning the central importance of a collaborative relationship in IC is that it will enable and support changes in behaviour (Rosenfield, 1987, 1995, 2002). As argued by B. Meyers (2002), active involvement of consultees within problem-solving stages of consultation allows them to create practical and personal strategies, which have high level of acceptability due to the personal investment of time and effort required.

2.3.3.4.6 IC: Skills of the consultant

With regards to the specific interpersonal skills that the consultant requires to implement IC collaboratively, the literature draws attention to the language used within the consultation process (Rosenfield, 2002; Rosenfield et al., 2015). Rosenfield describes consultation as a linguistic event, which supports the creation of a safe space to allow for the co-construction of new understanding around a situation to be formed (Rosenfield, 2002). To enable this, a high level of awareness around language is required, to support consultees in shifting their constructs of the concern from being a within-child deficit, to an appreciation of any instructional mismatch. This is said to be supported by avoiding the use of diagnostic, deficit-heavy clinical jargon and instead defining the concerns in behavioural terms (discussed further in section 2.3.3.4.7.2), supporting consultee(s) to view the concern as manageable (Rosenfield, 2008).

The importance of listening skills are also highlighted: techniques such as paraphrasing, checking and clarifying the consultee(s) views are seen as crucial to

maintain a collaborative relationship between the consultant and consultee and to reduce the possibility of the consultant drawing upon their own hypotheses around the concern (Rosenfield, 2002).

It is also emphasised that instructional assessments and interventions should be collaboratively devised to maintain the non-hierarchical consultant-consultee relationship (see Rosenfield, 1987; 2002).

2.3.3.4.7 IC approach

As discussed previously, IC approaches incorporate a knowledge base 2 around the *content* of IC, with a knowledge base 1 around the *processes* that occur during consultation (Rosenfield et al., 2015).

With regards to *content* of IC, a focus is placed upon understanding the interactions between the instructional triangles' components (Figure 2-3) This includes: a) the students' entry level skills, including-prior knowledge, skill development and learning rate; b) the design of the instructional strategies being provided to the student; and c) the requirements of the task (Rosenfield, 2008; Rosenfield et al., 2015). By gaining this information, any possible mismatches between the components that may be inhibiting effective learning, can be identified. It is argued that particular attention should be paid to the instructional component, with the appreciation that this relies upon the support provided by the adult, which may be more adaptable than the other two components (Rosenfield, 1987; Gravois, Gickling, & Rosenfield, 2007). Comparisons can then be made between the student's current functioning in response to the existing instruction, with any changes to instruction made (Rosenfield, 2008).

With regards to the IC *process*, a formalised, problem-solving approach is advocated that draws upon many steps included within existing models of consultation (Bergan & Schnaps, 1983; Rosenfield, 1987, 2002, 2008). The IC models presented within the literature, although varying slightly, typically consist of the following stages: entry and contracting; problem identification and analysis; intervention/implementation and evaluation (Bergan & Schnaps, 1983; Rosenfield, 1987, 2008; Rosenfield et al., 2015). The effectiveness of consultation approaches that employ this kind of problem-solving approach is substantially supported within the research (J. Meyers, 2002).

Rosenfield (1987, 2002) argues that, by adopting the above process, the effectiveness of the consultation is supported, as decisions are based upon systematically collected measures of the expressed concerns. Measures are continuously taken throughout the implementation of an intervention in order to provide feedback around its effectiveness, a component argued to be essential to IC, and consultation in general, if change is to be sustained (Gravois & Rosenfield, 2002).

The specific actions completed at each of these stages, as proposed by Rosenfield (2008) are detailed below:

2.3.3.4.7.1 Stage 1: Entry/Contracting

The entry stage requires the consultant to gain verbal, informed consent from the consultees. Information regarding the IC process is shared, including aims, expectations, the collaborative approach, time-lines and requirements of participants. The instructional triangle is also shared to ensure that consultees are aware that the nature of their practice with the students will be examined (Rosenfield, 2008).

2.3.3.4.7.2 Stage 2: Problem identification and analysis

This stage aims to specify any discrepancies between current classroom functioning and desired classroom functioning (Bergan and Schnaps (1983). A picture should be built around what is currently happening for the student, what the desired goal is and what variables, particularly related to instruction, may be hindering progress.

Bergan and Schnaps (1983) identified the types of statements that consultants may use within this stage. This includes '*goal level eliciting'*, in which the consultant requests information from the consultee. This may be done by asking the consultee to evaluate the current situation (e.g. "how do you feel about Jimmy's performance during numeracy?"); asking for this goal level to be validated (e.g. "is this level acceptable?") and to specify an ideal goal level (e.g. "what would you consider to be an acceptable level of understanding?").

Bergan and Schnaps (1983) state that '*goal level emitting*' statements may then be applied, in which the consultant presents data concerning the goal. This may include, for example, how the student responds to the task, and whether the consultee believes the observed responses observed are desirable. Bergan and Schnaps (1983)

found that these supported consultees in identifying discrepancies, selecting goals and identifying what is or isn't acceptable levels of performance.

Assessments and data collection methods to measure the target behaviours, such as a learning outcome, are identified at this point, drawing upon behavioural consultation approaches (Kaiser, Rosenfield, & Gravois, 2009).

It is advised that time is dedicated to this stage, as an accurate identification of the concern is thought to be pivotal in determining goal categories and effective problem solving strategies (Bergan & Schnaps, 1983; J. Meyers, 2002).

2.3.3.4.7.3 Stage 3: Intervention design

Using the information from Stage 2, the consultant and consultee collaboratively develop and/or identify strategies to address the identified problem, which are feasible and have an evidence-base. It is advised that any interventions formed should be described and formulated in depth, clarifying details including who would be responsible for delivering the intervention, when and where (Rosenfield, 1987, 2008).

2.3.3.4.7.4 Stage 4: Intervention implementation and evaluation

The intervention is then implemented and the impact on the identified behaviour is recorded and charted on a logarithmic graph at consistent intervals. This is predominantly the responsibility of the consultee, although regular meetings with the consultant may support the integrity of the intervention as well as its appropriateness, by considering any progress made in respect to the baseline data and towards the established short and long term goals. The model is reflexive and therefore changes can be made if the desired outcomes have not been attained and stages 2-4 can then be repeated (Rosenfield, 1987, 2008).

2.3.3.4.7.5 Stage 5: Closure

Within the final stage, the maintenance of the achieved progress is discussed and, if the initial concerns have been met, involvement is concluded (Rosenfield, 1987, 2008).

2.3.3.4.8 IC Research

Empirical investigation and evaluation of IC has typically been based within the United States of America (USA) and has focused on the use of 'Instructional Consultation

Teams' (ICT), a model of IC that can be embedded within the school for internal, senior school-staff to deliver, with the intention of supporting early intervention, prevention and the empowerment of school staff (Gravois & Rosenfield, 2002).

Kaiser et al., (2009) explored teachers' perceptions of satisfaction and skill development after participating in an ICT. Survey and interview data was collected from 247 teachers across 27 USA based primary schools in the. The researchers concluded that participants typically reported high satisfaction with IC: findings indicated that 86.1% of the participants felt that the IC outcomes met or exceeded their expectations and 96% of participants felt 'very confident' (55.9%) or 'somewhat confident' (40.1%) about addressing similar problems in future, suggesting a development in their problem-solving capacity. However, the use of only post-test data in this study and the lack of a comparison group limits the reliability of the outcomes.

Although much research claims the effectiveness of ICT, few details are made available around the IC process employed within such studies which in turn, raises questions about the integrity or fidelity of the intervention as well as the validity and reliability of reported results.

2.4 Interim summary

The previous sections provided a narrative review of the available research and theoretical claims in respect of the role of the TA, with a particular focus on their direct interactions with students to support educational outcomes. In response to the research that suggested that the quality of TAs' practice may have negative consequences on students' attainment (Blatchford, Bassett, Brown, Koutsoubou, et al., 2009; Blatchford et al., 2011; Radford et al., 2011), it has been suggested that TA practice may be supported by providing opportunities for TAs to reflect on their practice and develop models of good-practice (Russell et al., 2012). The outcomes from the narrative review indicates that a systematic approach to enable this has not, however, been suggested within previous research.

Consultative approaches that may be applied within educational settings were explored, with specific interest being paid to IC. Typically used in educational contexts, IC is referred to as an approach that aims to enhance and develop the instructional practice and capacity of professionals in order to indirectly enhance and develop the attainment of students (Bergan & Schnaps, 1983; Gravois & Rosenfield, 2006). The goals of IC appear to coincide with the suggestions made around how to support and develop TA practice. This underpins the rationale and aim of the present study, which is to investigate the impact of IC on the instructional practice of TAs.

Within the narrative literature review, it appears that IC has almost exclusively been investigated when embedded within schools in the USA, to target the practice of teachers, without suggestion of the application of the approach to wider audiences, including TAs. The approach employed to identify sources for the narrative review may not have exhaustively located all pertinent and available sources. In order to identify any further relevant literature, as well as to support the objectivity of this literature review and the rationale for this study, a systematic review of the research will now be presented.

2.5 Systematic literature review

Petticrew and Roberts (2007) define a systematic literature review (SLR) as being a, "method of making sense of large bodies of information and a means of contributing to the answers to questions about what works and what does not – and many other types of questions," (Petticrew & Roberts, 2007, p.2). What makes a review "systematic" is an endeavour to limit bias, by applying a formal set of procedures to collate and provide scientific summaries relevant to the question(s) being asked (Gough, 2007). Explicit and transparent details of the processes used should be specified to support the reliability of the search. This ensures that the audience is presented with a review that is comprehensive and objective, with minimal risk of systematic error, for example by only presenting a partial sample of literature that may be favourable to the author (Petticrew & Roberts, 2007).

2.5.1 Aim of this systematic literature review

The purpose of this SLR is to systematically search for, and synthesise, any evidence related to the following question:

1) *What does research tell us about the impact of Instructional Consultation (IC), when applied to support the practice of Teaching Assistants (TAs)?*

Within this, a number of subsidiary questions were examined, including:

a) *Who participated within the IC process?*
b) *What research designs were employed to assess this impact?*
c) *What did the IC intervention comprise of?*
d) *What tools were used to measure impact?*
e) *What are outcomes when IC is applied to support TA practice?*

2.5.2 Existing Systematic Literature Reviews

As advised by Petticrew and Roberts (2007), the relevance of this SLR was considered by conducting an initial search for existing SLRs around the question being asked. Databases including The Campbell Collaboration's Campbell Library and the Research Evidence in Education Library (located at the Centre for Evidence-Informed Policy and Practice in Education) were referred to, as these both contain systematic literature

reviews in education. After searching for the term “Instructional consulta*” AND “Teaching Assistant” (and the various synonyms of TAs, including support staff, Learning Support Assistants, classroom support and special needs support) no existing SLRs attempting to answer the questions stated above was found, suggesting a relevance for this SLR.

2.5.3 Databases and search terminology

Electronic databases were searched to identify literature relevant to the main research question. This included PsychINFO (Ovid), ProQuest and Web of Science (which includes 38 databases such as Education Resources Information Centre, or ERIC).

The search terms used the following key words stemming from the SLR’s question:

> ((“Teaching assistant*” OR “Learning Support Assistant*” OR “Support Staff” OR "Special Needs Assistant" OR "SEN assistant" OR "Classroom Assistant") AND “Instructional Consulta*”)

At this point, search terms regarding the methodology were not included, as the narrative examination of the literature suggested that there would be a relatively small body of research concerning the SLR question.

Additional search terms that drew specific attention to TAs’ practice was not included at this point, due to the ambiguity around the terminology and definition of this term. This was later added within the inclusion criteria (Table 2-2).

2.5.4 Inclusion criteria

In order to meet the objectives of the SLR, the inclusion criteria specified in Table 2-2 were applied. Articles had to meet all criteria to be included within the review. This was determined by examining the abstracts of articles. If this did not provide the sufficient information, the full article was then sought. Peer reviewed articles that were excluded after applying the inclusion criteria, along with the reasons for exclusion, are included in Appendix i. Additional filters regarding the dates and locations of the studies were not applied, as the narrative literature review indicated that that there would only be a relatively small body of research into this topic.

Table 2-2: *Inclusion criteria applied to the searches completed for the SLR.*

Inclusion criteria

• The research must be published within a peer-reviewed journal.
  - For the PsychINFO (Ovid) database, this meant that only documents indexed from published journals were retrieved; books, chapters, reports and dissertations were removed.
  - Similar procedures are employed by ProQuest, who refer to Ulrichsweb as a primary reference to determine whether the source is from a peer-reviewed publication.
  - Web of Science outcomes were hand-sorted to exclude non-peer reviewed articles, using Ulrichsweb as a primary reference for this.
• The article had to refer to the implementation of an IC based approach within an educational setting, delivered to support staff.
• Measures had to include impact on the support staff following the implementation of an instructional approach.

2.5.5 Search outcomes

The outcomes from this initial search are provided in Table 2-3 (see Appendix ii for a breakdown of search process and outcomes). As discussed by Petticrew and Roberts (2007), the search and selection process ideally should be carried out by two or more reviewers, in order to minimise bias and ensure that the specified criteria is applied correctly. For practical reasons, this was not possible, which may impact upon the credibility of the findings.

Only four papers met the inclusion criteria for the SLR. The majority of papers that did not meet the inclusion criteria were studies that targeted teachers, as opposed to support staff. The search parameters were not widened to include teachers, as this was not central to the SLR question.

Table 2-3: *Number of articles initially presented by each database and the number of articles that remained after the application of the inclusion criteria.*

	PsychINFO (Ovid)	**Proquest**	**Web of Science**
Initial search	0	438	17
After applying inclusion criteria	0	0	4

2.5.6 Description of studies

Descriptions of the four studies are provided in Table 2-4 in accordance to the SLR's question, including each study's aim, participants (Pts), design, what was measured (Dependent Variables, DVs), what was changed (Independent Variables, IVs) and the outcomes.

Table 2-4: *Details of studies included within the SLR*

Study	Description	
Hampton and Reiser (2004)	**Aim**	To examine how student ratings provided to TAs, plus consultation on instructional practices, impacted teaching practices, ratings of teaching effectiveness and student outcomes and motivation.
	Pts	37 volunteer TAs; 1,610 first and second year University students from the USA.
	Design	Randomly allocated, pre/post-test, between and within control group design.
	DV(s)	Student's views of TA's instructional practice and student motivation were collected using Hampton's (2001) Instructional Activities Feedback Form (IAFF); observations of TAs' instructional approaches; TAs views on process collected at post-test.
	IV(s)	Access to the IAFF outcomes.
	Outcomes	TAs in the experimental condition identified instructional approaches statistically more often than control condition (p<0.1); Students' views on TA teaching effectiveness was statistically higher in the experimental group (p<0.1); Students of TAs in experimental condition scored higher in the end of term assessment and motivation measures but this was not statistically significant; statistically significant positive correlations between the use of instructional activities and student outcomes. Views collected at post-intervention indicated that TAs believed consultation was more helpful than feedback.

Yurick, Cartledge, Kourea and Keyes (2012)	**Aim**	To assess the impact of the instructional intervention on student attainment and whether this was influenced by the duration of participation.
	Pts	6 primary school-based instructional assistants and 38 pre-school aged students from 3 USA schools.
	Design	Correlational, pre/post-test, non-equivalent control group.
	DV(s)	Phonological skills assessment outcomes, plus staff and students' views of the intervention.
	IV(s)	Literacy based instructional intervention.
	Outcomes	Students who received the intervention improved in their outcomes from the skills assessment the longer they participated in the intervention condition, although this was not significantly statistically. Instructional assistants reported that their future practice would be positively impacted through participation. Students reported positive responses to the instructional games.
Glang, Tyler, Pearson, Todis and Morvant (2004)	**Aim**	To evaluate the impact of a consultant training service model, created and designed to support schools in their instructional provision for students with traumatic brain injury (TBI).
	Pts	197 educators and parents from the USA. Number of consultants working with the school not specified.
	Design	Pre/post-test, non-control group design.
	DV(s)	Measure of consultants' knowledge and perceived competence; educators and parents' satisfaction and perceived impact of consultants' work.
	IV(s)	TBI training model.
	Outcomes	Statistically significant increase in consultants' knowledge and perceived competence following year-long training ($p<0.05$); educators and parents gave an overall high rating of training received; positive feedback from administrators, teachers and parents on impact on students, families and school staff was indicated.

Sawka, McCurdy and Mannella (2002)	**Aim**	To assess the impact of the Strengthening Emotional Support Services (SESS) training model, designed to build the capacity of staff working with students with emotional and behavioural difficulties.
	Pts	15 emotional support teachers, 22 learning support teachers, 17 TAs, 3 school counsellors and 7 special education supervisors, from 30 primary schools across the USA.
	Design	Pre/post-test, control group design.
	DV(s)	Questionnaires and observations to assess staff knowledge; implementation of instructional procedures; student classroom behaviour and academic engagement.
	IV(s)	Participation in a 1 day SESS training, which included training around ecological behaviour and academic management, intervention and assessment.
	Outcomes	Participants' knowledge improved from an average of 36% at pre-test, to 84% average at post-test. Instructional delivery was at 43% at pre-test and 87% average at post-test comparisons. Disruptive Classroom behaviour declined from an average of 70% to 37% between pre and post-test; academic engagement appeared to grow from 47% at pre-test to 70% at post-test (statistical comparisons were not made).

2.5.7 Evaluation of studies

In order evaluate the identified studies, Gough's 'Weight of Evidence' (WoE) framework (Gough, 2007) was used. This approach provides a structure to evaluate a number of factors (or 'WoEs') around the evidence, with particular attention being paid to the methodology applied (as detailed in Table 2-5). The studies included within the SLR detailed in Table 2-4 will be discussed in relation to this structure.

Table 2-5: *Gough's Weight of Evidence framework*

WoE A	The coherence and integrity of the evidence, based upon the *methodological quality*
WoE B	The *methodological relevance* with regards to answering the SLR question
WoE C	The *relevance of the focus* of evidence with regards to the SLR question
WoE D	An *overall assessment*, formulated by combining the judgements made around WoEs A, B and C

2.5.7.1 Weight of evidence A: Methodological quality

2.5.7.1.1 Sample of participants

The number of TAs (or other support staff) who participated within these studies ranged from 6 to 166. Yurick et al., (2012) specified that participants had been nominated by their employer. The basis of participation may have influenced the participants' engagement and investment in the application of the instructional intervention, limiting the validity of the outcomes.

When considering the studies that included a measure of impact on students, the sample sizes of students ranged from 38 to 1610 and included participants between pre-school and University age. A larger sample may strengthen the reliability and ability to generalise the findings, as any observed impact may be relevant to a wider range of students. However, a larger sample also creates difficulty in capturing any individual factors/variation that may impact on the effectiveness of the intervention.

All studies were set in the USA, limiting the external validity and ability to generalise the outcomes to alternative populations such as the UK.

2.5.7.1.2 Research design and quality

All four studies took place within educational settings relevant to the aims of the studies, which strengthens the ecological validity of the outcomes. A shortfall of conducting research within 'real world' settings as opposed to more controlled, laboratory settings is that control over extraneous variables is limited, threatening the ability to associate changes in behaviour to the interventions applied.

Three of the studies included control groups (excluding Glang et al., 2004), which allowed the impact to be compared against those not receiving the treatment. However, it was not specified that participants were randomly allocated into experimental and control conditions with the studies by Hampton and Reiser's (2004) Sawka et al., (2002) and Yurick et al., (2012). This limits the ability to assume that extraneous variables are evenly distributed between control and experimental conditions, limiting the validity of the outcomes.

2.5.7.1.3 Outcome measures and analysis

There are a number of limitations to the outcome measures applied within the studies. Firstly, possible bias may have occurred within all of the studies discussed. For example, observations of TAs within Hampton and Reiser's (2004) study were completed by two members of the research team who had an investment in the outcomes, which may have led to bias. This study also depended upon TA self-report and students' feedback of the instructional support received, as measures of instructional practice, which, may have allowed for an insight into the experiences of the participants, but may have been susceptible to participants' bias, possibly limiting the reliability of the outcomes.

Furthermore, Yurick et al's., (2012) study collected the views of the instructional assistants using a scaled items questionnaire at post-test only. The researchers reported that the majority of the participants gave positive feedback, however specific statistics around these ratings (including the average and range of scores) were not reported, again limiting the reliability of this outcome. The outcomes on students were also based upon an assessment, with little information around the validity of the tool, adding question to conclusions drawn.

Additionally, the outcomes from Glang et al., (2004) to assess the impact on students was not collected systematically and the positive conclusions reported were based upon feedback and comments provided by educators and parents, limiting the reliability and validity of the outcomes. The impact of the intervention on TAs were based upon systematic comparisons of self-reported measures of knowledge and perceptions of competence collected at baseline and after a year of training. The possible bias that may incur from self-reported data may have confounded the validity of the outcomes.

Finally, Sawka et al., (2002) measured changes to instructional practice through observations completed by a professional independent to the researcher team, limiting possible bias. However, a large range of occurrence of preferable instructional methods was reported at pre-test (20-80%) and at post-test (70-100%). These outcomes may have included participants who made no improvement or whose instructional delivery declined, however, by reporting average performance across the groups, it is not possible for this to be reflected in the outcomes.

2.5.7.2 Weight of evidence B: Appropriateness of method

The research designs employed within these studies aimed to assess the impact of an intervention on a variety of instructional approaches. Studies by Sawka et al. (2002) and Hampton and Reiser (2004) primarily captured this by comparing measures of instructional practice before and after the implementation of an intervention, allowing for quantitative, statistical analysis to be completed to ascertain any significant change over time.

The impact of the intervention was alternatively captured by Glang et al. (2004) and Yurick et al. (2012) by collecting the views of staff at post-test only. This allows for more qualitative and reflective data to be collected, however it limits the ability of these studies to make comparisons before and after the intervention, potentially impacting on the validity of the results.

2.5.7.3 Weight of evidence C: Relevance of the focus of evidence included in the SLR, in relation to the review question

When considering the relevance of the studies in relation to the SLR's questions, it can be argued that all four of the studies have limited relevance. The studies do implement interventions that draw attention towards the instructional practice of the participating support staff. However, the term "Instructional Consultation" and the principles of IC as discussed within previous sections (2.3.3.4), were not referred to in any of the papers. Instead, the papers detailed comparatively more directive consultation and training approaches, although this cannot be assumed within Glang et al's., (2004) study as little detail around the consultation approach applied is provided. This reduces the possible relevance of the studies to the SLR's questions.

Furthermore, within Sawka et al's., (2002); Hampton & Reiser's (2004) and Yurick et al's., (2012) studies, instructional practices were targeted along with the application of particular academic interventions. It is possible that the positive outcomes reported on student attainment were a result of the academic interventions, rather than the instructional approaches used by the adults, limiting the relevance of these studies to the SLR's questions.

2.5.7.4 Weight of Evidence D: An overall judgement of how the research contributes towards answering the review question

As stated by Gough (2007) the considerations around WoEs A, B, and C support a judgment to be made around the overall relevance of each paper in answering the SLR's question. This is supported by rating each study's three Weights of Evidence's (A-C) with a low, medium or high rating (Table 2-6). It should be noted there is no guidance around how each judgement should be made and so a level of subjectivity limits the synthesis of the research.

Table 2-6: *Rating of each article selected for the SLR, in line with Gough's (2007) Weight of Evidence model*

Study	**WoE A**	**WoE B**	**WoE C**	**WoE D**
Hampton and Reiser (2004)	Medium	Medium	Low	Medium
Yurick et al., (2012)	Low	Low	Low	Low
Glang et al., (2004)	Low	Low	Low	Low
Sawka et al., (2002)	Low	Medium	Low	Low

As indicated within Table 2-6, the overall relevance of one paper was classified as being medium and the remaining three papers were classified as being low, suggesting that none of the papers identified within the SLR had a high relevance to the SLR's question, which queried the impact of the application of IC on TA practice.

2.5.8 Summary of SLR finding and identification of future research

The studies examined within the SLR were all USA based, all applied an instructional approach to support-staff and attempted to measure any impact on staff performance. Assessment of the impact on the 'client' (the student) in addition to the consultee (the TA) appears to complement the understanding that can be gained from applying instructional interventions.

The overall outcomes of the SLR appear to suggest that the application and impact of the IC approach, as described within section 2.3.3.4.7, when applied to target the practice of TAs has received very little empirical attention and therefore warrants further investigation.

2.6 Introduction to the current research

2.6.1 Rationale for the focus of the research and its unique contribution

The outcomes from the SLR, supported by the narrative review around the TA role and the IC approach, indicate a number of gaps within the literature, which has informed the rationale for this research.

The narrative review suggested that, when TAs occupy pedagogical position, their practice comprises of a heuristic, repair and support role. The application of approaches associated with scaffolding are thought to underpin each role (2.2.4.2) and may influence the impact that students' outcomes (Blatchford et al., 2011; Russell et al., 2012; Radford et al., 2015, 2014). Previous research did not, however, specify a systematic, evidence-based intervention that supports the development of the strategies associated with TA practice, despite them occupying a key pedagogical role (Blatchford et al., 2011).

Gaps were also presented within the evidence base for IC, described as an approach that theoretically supports the development of the instructional practice, the capacity of professionals and student attainment (Bergan & Schnaps, 1983; Gravois & Rosenfield, 2006). Much of the available research that follows the IC approach (described in section 2.3.3.4.7), is based within the USA and appeared to comment on the application of an in-house IC approach, completed by senior school staff to teachers. Empirical understanding of the impact of IC on wider populations, such as TAs in the UK, and when delivered by external professionals, such as EPs, is therefore restricted.

As IC seeks to develop the instructional practice of those within educational settings delivering pedagogical support to students, it was posited that the practice of TAs may be supported by its use. As previously highlighted within section 2.5.8, a systematic investigation into the application of IC to support the development of TAs' practice, was not located.

This study therefore proposes to systematically investigate the impact of IC on the practice of TAs employed within a pedagogical role, with practice comprising of the

strategies associated with heuristic and repair roles, which have been suggested within previous research to be core within TAs' practice (see section 2.2.4.2).

The SLR also highlighted that research investigating the impact of instructional interventions when applied through support staff such as TAs, considered the impact upon student outcomes, as well as staff. The student-level impact of IC is therefore acknowledged within this study, as a secondary focus.

2.6.2 Research questions

In order to fulfil the aims outlined above the following research questions (RQ) were identified:

RQ1: Does IC impact on the pedagogical strategies associated with TA practice?

With 'practice' referring to the TAs' use of:

a) *Instructional strategies to introduce tasks*
b) *Repair strategies*
c) *Strategies to check understanding*
d) *Feedback strategies*

RQ2: Does conducting IC with TAs impact on targeted learning behaviours of students they support?

The primary focus of this study is upon RQ1 and a subsidiary focus is placed upon RQ2.

Chapter 3: Methodology

3.1 Introduction to Chapter 3

According to the British Psychological Society (BPS, 2014), research should be transparent, context-appropriate and, "conducted in a way that ensures its quality, integrity and contribution to the development of knowledge and understanding" (pp. 9). In adherence to BPS guidelines, this chapter intends to detail the rationale and processes underlying the methodological decisions made to address the current research questions (RQs).

Epistemological and methodological considerations, relevant to the current study are presented. Following this are details relating to stakeholders, participant selection, study procedures and measures developed. The chapter ends with a discussion of the potential risks to reliability and validity, and presents actions to address ethical concerns.

3.2 Paradigms, ontological and epistemological considerations

A paradigm is defined by Morgan (2007) as being, "shared belief systems that influence the kinds of knowledge researchers seek and how they interpret the evidence they collect" (pp. 50). This, in essence, refers to the ontological, epistemological and methodological assumptions made by the researcher (Guba & Lincoln, 1994). Ontology concerns the assumptions made around the nature of the paradigm being investigated (Cohen, Manion, & Morrison, 2011). This, in turn, guides epistemological approaches, understood as being the relationship between the researcher and reality being explored. The ontological and epistemological choices made subsequently guide the methodological approaches adopted by the researcher in their pursuit of capturing knowledge around a question (Guba & Lincoln, 1994).

Two contrasting and dominant paradigms prevalent within social science research include positivism and constructivism. These paradoxical stances are separated by contrasting ontological beliefs and overlapping epistemological and methodological stances.

3.2.1 Positivism

From a positivist stance, realist ontological assumptions are made around the nature of the paradigm, as it is advocated that there is a single, objective reality that exists externally to the individual (Cohen et al., 2011). Epistemologically, positivists believe that an independent and objective relationship exists between the researcher and the 'truth,' which is methodologically explored using experimental and manipulative approaches. These are typically quantitative in nature and conducted within settings that promote high control over all possible variables, in order to attempt to verify a causal hypothesis (Guba & Lincoln, 1994; Coll & Chapman, 2000).

Positivist approaches have been criticised for being reductionist however, due to their limited consideration of contextual factors (Guba & Lincoln, 1994). With regards to educational research, for example, it has been argued that quantitative methodologies adopted within positivist approaches may not fully capture the social and dynamic nature of educational contexts (Guba & Lincoln, 1994).

3.2.2 Constructivism

Constructivism in contrast advocates that the world is a product of each individual's subjective constructs and personal experiences within different social contexts, therefore multiple realities exist (Cohen et al., 2011). Constructivists typically adopt qualitative, interpretative methodologies such as unstructured observations or interviews, in order to inform or develop a theory, by considering how the multiple perspectives of the participants and the researchers may interact with one another, in order to form or develop a theory (Coll & Chapman, 2000).

3.2.3 Post-positivism

Post-positivism, born from the criticisms of positivist approaches, adopts a critical realist ontology, by acknowledging that a single reality exists, but can only ever be imperfectly understood as a 'probability' as opposed to a 'fact' (Guba & Lincoln, 1994). Epistemologically, post-positivists attempt to maintain objectivity whilst acknowledging the influences of unobservable factors including the researcher's knowledge, values, beliefs and hypotheses (Mertens, 2010). Methodologically, the ecological validity of post-positivist approaches is strengthened by allowing for 'real-world' inquiry by considering situational information including viewpoints, in addition to observable data, to gain confidence around a posed theory or hypotheses (Guba & Lincoln, 1994).

3.2.4 Pragmatism

Pragmatists adopt a realist ontology by advocating that, although a single reality may exist, this can be interpreted in multiple ways. Pragmatic approaches therefore reject the need to locate oneself either as a constructivist or positivist and instead, epistemologically states that the relationship between the researcher and the 'truth' is dependent on the research's purpose, context and questions (Mertens, 2010). Pragmatic approaches recognise the existence and relevance of both external worlds and social, internal constructed world and therefore allows multiple realities to be empirically explored using a 'mixed methods' methodologies, utilising both quantitative and qualitative apparatus where necessary (Mertens, 2010).

3.2.5 Application to the current research

As discussed within Chapter 2, this study intended to investigate the impact of Instructional Consultation (IC) upon the practice of Teaching Assistants (TAs). Positivist approaches were therefore deemed as unsuitable due to the relevance of the real-world, educational context of this study. The proposal in this study, to examine and attempt to establish whether there is a causal relationship between the IC intervention and TAs' practice as specified within the RQs, also locates the research away from purely constructivist paradigms.

The researcher acknowledges that, although a single reality may exist, this can only every be imperfectly captured and, although attempts were made to objectively control for any bias exerted from the researcher, the possible influence of this upon the quest for a 'probable truth' is acknowledged. Therefore, ontologically, a critical-realist stance, located within a post-positivist paradigm, was adopted for the purposes of this research.

3.3 Research design considerations

The following section outlines the range of possible research designs that were considered to ensure that the most appropriate design was selected for this study. This is not an exhaustive exploration, however the designs deemed as being dominant within real-world research with an educational focus are discussed, followed by the rationale behind the decisions made for the design of this study.

3.3.1 Fixed, flexible and mixed methods designs

As described by Robson (2011), the sequence and relationship between the different aspects involved in a research study may vary. Three broad design options that may be considered to help guide this process include fixed, flexible or mixed-methods designs:

3.3.1.1 Fixed designs: experimental and non-experimental

Research that adopts a fixed design typically draw upon theories relevant to the research question in order to prescribe all decisions around the design, including methods of data collection (which are typically quantitative in nature), possible outcomes and data analyses, before any data is collected (Cohen et al., 2011).

Fixed design strategies may be experimental or non-experimental: Within non-experimental fixed designs the researcher does not manipulate change, for example by purposefully introducing an intervention (Robson, 2011).

In contrast, within experimental fixed designs, the researcher introduces change (an independent variable, IV) that may influence possible dependent variables (DVs), such as behaviours, in order to establish a causal relationship between a DV and IV (Kratochwill et al., 2010). Within experimental fixed designs, participants, typically selected from a population relevant to the research question, are allocated to different experimental conditions, in which they are either subjected to the IV or not (Robson, 2011).

This may be implemented within a laboratory setting, which may enable high control over extraneous variables (drawing upon pure positivist stances), however this may compromise the applicability of any findings outside of a highly controlled environment, such as a school or classroom.

Alternatively, experimental fixed designs can take place in naturalistic settings (referred to as field experiments) applicable to the research question(s), such as a classroom, making findings more relevant to the setting in question (Robson, 2011). However, difficulties around controlling extraneous variables within naturalistic settings can compromise the ability to isolate any causal impact of the IV on the target behaviours.

3.3.1.1.1 True and quasi experimental fixed designs

There are a number of different experimental fixed designs that may be considered, including true experiments, in which participants are randomly allocated to different experimental groups (for example, treatment or control conditions), allowing for comparisons of outcomes to be made between groups.

Alternatively, a quasi-design may be opted for if participants cannot be randomly allocated to different experimental groups, for example, if a control condition, or pre-testing cannot be included (Cohen et al., 2011).

3.3.1.1.2 Group and single participant experimental fixed designs

The designs described above typically assess the outcomes of a treatment by comparing a DV before, after and sometimes as a follow up to the IV. This allows for comparisons of the DV to be made and for researchers to draw conclusions around the impact of an intervention (Barlow, Nock, & Hersen, 2009).

Group designs draw upon average measurements of the DV across a group of participants (Barlow et al., 2009). Critiques of group designs argue that group averages may not represent the range of outcomes by single participants, limiting the ability to draw conclusions around the impact of an IV (Kratochwill et al., 2010).

Alternatively, the impact of an intervention at the level of the individual may be assessed for within single-participant experimental designs (Horner et al., 2005). Although outcomes may only be applicable to the single participants employed, this approach allows for a detailed analysis of the impact of an intervention on each individual participant to be made (Horner et al., 2005), arguably adding a greater understanding of the circumstances in which a treatment may have an effect.

3.3.1.2 Flexible designs

In contrast to fixed designs, flexible designs instead are shaped and influenced by the data collected, which is typically qualitative in nature (Robson, 2011). Characteristically driven by constructivist beliefs, flexible designs may include a case-study approach, in which one or a small number of similar cases are examined in context, in great detail, typically with the use of qualitative instruments (Robson, 2011).

3.3.1.3 Mixed method design

A mixed-method design may alternatively be adopted, if aspects of fixed and flexible designs are relevant to the research (Cohen et al., 2011).

3.3.2 Application to the current research

This research intended to assess the impact of IC on components of TA practice. Prior to data collection, existing available research and theory were drawn upon to guide and establish approaches towards data collection and possible outcomes. Additionally, there was an intentional introduction of IC, therefore lending itself to an experimental, fixed design.

The outcomes of the literature review (Chapter 2) indicated that research investigating the impact of IC has not been conducted. It therefore felt important for this study to closely capture any impact of IC on the various aspects of TA practice, including the circumstances in which a possible effect was more or less evident, on an individual level. Therefore, a single-case experimental design was opted for.

The following section discusses specific details around this design.

3.4 Single-Case Experimental Designs

Derived from the pioneering work by Skinner (1974), Single Case Experimental Designs (SCEDs) are described as being a, "rigorous, scientific methodology used to define basic principles of behaviour and establish evidence-based practices… particularly relevant for defining educational practices at the level of the individual learner." (pp. 165-166, Horner et al., 2005).

SCEDs intend to experimentally establish a causal relationship between a DV and an IV, separating it from a case-study approach, which in contrast typically employs qualitative approaches to create an understanding around a situation (Robson, 2011).

A number of features distinguish SCEDs from other research designs, which are considered to make the design particularly appropriate for research in special education (Horner et al., 2005; Kratochwill et al., 2010). These defining features are discussed below:

3.4.1 Individual participants

SCEDs closely analyse individual participants who act as a unit of analysis, therefore making the approach suitable for individuals within low-incidence populations. Although only one participant is required, researchers typically recruit at least three, allowing for between-subject analyses to explore the replicability of outcomes (Horner et al., 2005).

3.4.2 Repeated measurement

Time-series are formed within SCED approaches, by collecting observational measurements of the DV (typically an observable behaviour) continuously and sequentially, before, during and/or after an IV (e.g. an intervention) is intentionally introduced. Therefore, each participant serves as his/her own control, as a participant's behaviour can be compared across time to assess whether, how, why and when any variables, particularly those deliberately manipulated, impact the behaviour being measured (Horner et al., 2005; Barlow et al., 2009; Kratochwill et al., 2010).

3.4.3 SCED variations

There are a range of designs that may be adopted within single-case experiments. Terminology used within the literature typically makes reference to phase 'A,' (a baseline, or treatment-as-usual phase) and phase 'B,' referring to the delivery of the treatment (Horner et al., 2005).

3.4.3.1 A-B design

Within A-B SCEDs, measures of the DV are taken repeatedly during the baseline and intervention phase, allowing for the researcher to examine any differences of the patterns of measures taken between the two phases.

3.4.3.2 A-B-A/A-B-A-B designs

The A-B design can be elaborated to include a phase in which the treatment is implemented and then removed (A-B-A) and reintroduced within a fourth phase (A-B-A-B). These extra phases arguably strengthen the ability to infer evidence of a causal relationship between the IV and DV (Horner et al., 2005; Kratochwill et al., 2010).

3.4.3.3 Multiple-baseline designs

Within multiple-baseline SCEDs, the intervention may be delivered at different, staggered points of the baseline phase, either across multiple participants, multiple behaviours or multiple settings (Horner et al., 2005; Kratochwill et al., 2010). If a corresponding change is observed across the multiple-baselines, this supports the ability to draw causal inferences between the IV and DV, strengthening the external validity of the research (Horner et al., 2005; Robson, 2011).

3.4.4 Analysis of SCED data

What is unique to the SCED approach is that results can be analysed visually by 'eyeballing' graphically presented, although, as discussed below, statistical approaches may also be applied (Gibson & Ottenbacher, 1988; Barlow et al., 2009).

3.4.4.1 Visual analysis

Traditionally, SCED data is visually analysed, by graphically presenting the data and comparing the baseline and intervention phase(s). A specific pattern in the data is required in order to indicate a causal relationship between the treatment on the

measured behaviour(s) (Horner et al., 2005; Kratochwill et al., 2010). Judgements are aided by the calculations described in Table 3-1, which may also be presented graphically (Horner et al., 2005; Kratochwill et al., 2010).

Table 3-1: *Description of the calculations that may support visual analysis of SCED data, as described by Horner et al., (2005) and Kratochwill et al., (2010)*

Calculation	**Description**
Level	Mean performance during a condition. A change in level between phases indicates an experimental effect.
Trend	Rate of increase/decrease of the straight line of best-fit of data points in each phase. An effect is evident if the trend conforms to that predicted following the introduction of the IV.
Variability	Degree of which data points fluctuate around a slope within each phase. Small variability indicates a consistent pattern.
Degree of overlap	Proportion of data that overlaps from one phase, with a previous phase. A smaller overlap indicates a larger effect.
Consistency of data across phases	Consistency between all similar phases, for example all baseline phases. A greater consistency indicates a larger causal relationship between the IV and DV.
Observed and projected pattern comparison	Whether the patterns of behaviour coincide with hypothesised patterns.
Examination of anomalies	The examination of any sudden changes of level within phases

Kratochwill et al., (2010) advise that the following procedure is applied to visually analyse SCED data:

1) For each outcome variable, a stable baseline is established, in which there are no unpredicted spikes in the behaviour being measured. This is to clearly understand the typical behaviour pattern, without experimental manipulation. An unstable baseline limits the ability to make comparisons after the treatment is introduced.
2) Data points *within* phases are analysed for any patterns, specifically concerning calculations of the level, trend and variability (described in Table 3-1).
3) *Between* phase comparisons are then made of the calculations described in Table 3-1 to ascertain whether any predicted changes coincide with the treatment manipulation.
4) Information from all phases and data series are then integrated to establish whether an experimental effect has been demonstrated on three occasions.

Kratochwill et al., (2010) states that the application of these calculations on each outcome variable aids the process of determining whether the research provides either no, moderate or strong evidence of a causal relation:

- *Strong evidence:* At least two analysers verify a causal relation between IV on the DVs on three occasions, with no demonstrations of a non-effect.
- *Moderate evidence:* At least three demonstrations of an effect and one demonstration of a non-effect
- *No evidence:* Data does not provide three demonstrations of an effect

3.4.4.1.1 Advantages and disadvantages of visual analysis

The potential for visual representations of SCED data to display sequences in behaviour, time spent in each phase and the relationship between the introduction of the IV on the DVs is argued to allow for the outcomes to be comprehensively understood (Gibson & Ottenbacher, 1988). Additionally, the presence of an experimental effect when displayed visually must be unambiguous and large enough to be undisputed, which arguably would be evident if statistical analysis were

employed, reducing the relevance of statistical approaches (Gibson & Ottenbacher, 1988).

Difficulty with visual analysis arises however when a causal impact is less obvious, which is argued to lead to data being interpreted differently between researchers (Gibson & Ottenbacher, 1988; Barlow et al., 2009), possibly resulting in Type I (a "false positive") and/or Type II (a "false negative") errors being made (Barlow et al., 2009).

Furthermore, although widely-accepted guidance and standards may aid the establishment of an effect through visual analysis, there is a reduced consensus around establishing and estimating the size of an effect using visual approaches within SCED research (Kratochwill et al., 2010). This reduces the validity and reliability of any estimations of effect-size estimations.

3.4.4.2 Statistical analysis

Statistical approaches may be applied to analyse SCED data, which is arguably advantageous due to the reduced possible subjectivity, in comparison to visual approaches. However, there is a lack of consensus around the most appropriate statistical approach to apply within SCED research (Barlow et al., 2009; Kratochwill et al., 2010). Statistical approaches also typically depend on parametric data, in which data is normally distributed; participants to be randomly assigned to treatment conditions or require a large number of cases, which is not always possible within SCED research (Barlow et al., 2009; Kratochwill et al., 2010).

3.4.5 Limitations of SCEDs

Limitations of the SCED approach particularly refer to the validity of the data that may be obtained. This is discussed further within section 3.10, along with the steps taken to reduce these pre-empted limitations.

3.4.6 Application to current research

Within this study, the intervention intended to support sustained changes to professional practice, therefore it could not be removed. For this reason, an A-B design was chosen to address RQ 1, with phase A (the baseline phase) consisting of weekly measures of existing TA practice and phase B (the intervention phase), consisting of measures of TA practice following the delivery of the IC intervention.

A multiple-baseline design would have required the intervention to have been introduced in successive weeks. Due to time constraints as well as the ethical implications of asking some TAs to wait for a number of months to receive the treatment and to address the student's difficulties, a multiple-baseline design was not selected.

A visual approach was applied to analyse the data, discussed further in section 4.2.

3.5 Additional data

As a subsidiary focus, the impact on the learning behaviours of the students supported by the TAs who received IC, was also considered (RQ2). Additionally, the observational data was complemented by the use of a Target Monitoring and Evaluation (TME) system and a structured, post-intervention interview, to gain the TAs' perceptions around the impact of IC on their practice and on student outcomes.

3.5.1 RQ2: Student outcomes

To gain a greater insight into the impact of IC, the learning outcomes of the students was assessed. Following the IC session with the TA, measures of the students' performance against learning targets identified within the IC session, were repeatedly measured in order gain insight into the students' progress over time.

A SCED approach was considered to compare any changes in the students' performance against learning targets before and following the delivery of the IC session. However, as the students' learning targets were identified as part of the IC session, accurate baseline measures prior to the intervention could not be collected. As part of the IC process (described in 2.3.3.4.7), in order to gain an insight into the students' existing performance around the learning behaviour, data was retrospectively collected to form an indicative 'baseline' performance. The unsystematic nature of the indicative 'baseline' data restricted the ability to draw reliable comparisons before and following the IC intervention and to therefore apply a SCED approach. Therefore, in accordance to the IC process, repeated measures of the students' response against learning targets following the delivery of the IC session to the TA, was assessed.

3.5.2 Target Monitoring and Evaluation (TME)

TME, an approach developed by Dunsmuir, Brown, Iyadurai and Monsen (2009), intends to evaluate the outcomes of interventions that may be proposed from the work completed by professionals, including Educational Psychologists (EPs), to encourage evidence-based practice. Using this approach, target behaviours associated with intervention plans are identified, which may refer to observable behaviours, and/or possibly underpinning emotions (Dunsmuir et al., 2009). A 10-point Likert-type

scale, in which a range of numerical options separate two polarised views, is applied within TME approaches: clients are asked to rate their belief around the functioning of a target at 'baseline' before any change is introduced, as well as the 'expected' response to the intervention. The targets are reviewed after a period of time following the implementation of the intervention and the client is asked to plot the 'achieved' level, allowing for direct comparisons to be made between the ratings (Dunsmuir et al., 2009).

The use of a non-standardised scale, with numerical options defined by the client, does however expose the approach to subjectivity, limiting the external reliability of the outcomes. Nevertheless, TME is proposed to easily support with the evaluation of targets (Dunsmuir et al., 2009).

Within this study, the TME approach was applied by asking the TA to evaluate targets set within the IC session around their practice and the learning outcomes of a target student.

3.5.3 Post-intervention structured interview

Approximately one month following the cessation of the intervention phase, a structured, evaluative interview was completed with each participating TA. This was in order to capture the TAs' perceptions of the utility of IC in improving their professional practice and students' outcomes.

3.6 Stakeholders

The following stakeholders were considered throughout the planning of this study:

- The University of Nottingham
- The Educational Psychology Service (EPS), in which the researcher was practicing as a Trainee Educational Psychologist (TEP) throughout the study's duration
- The participating school, staff and students
- The wider community of educational and psychological research
- The researcher, a TEP and Doctoral student at the University of Nottingham

3.6.1 The University of Nottingham

This research contributes towards the University of Nottingham's training requirements for the Doctorate in Applied Educational Psychology. This study had to therefore commensurate with the research and ethical guidelines provided by the institution.

3.6.2 The Educational Psychology Service (EPS)

Throughout the duration of the research, the researcher was completing a bursary placement with a Local Authority EPS. The senior managers were interested in the outcomes of the study and the potential for it to be included within the offerings of the service.

3.6.3 Participating school, staff and students

The volunteer school and TAs were happy to participate with the requirements of this study. An important consideration whilst planning the research was to ensure that the participating school, staff and students would be able to commit to the study's requirements. Timescales and requirements of the research was communicated when schools were contacted for possible participation (discussed further in section 3.7).

3.7 Participant selection

3.7.1 Selection of participating school

All five schools that the researcher was assigned to work with as a TEP were initially approached for participation within the study. This initially involved a verbal consultation with the school's Special Educational Needs Coordinator (SENCo), during which the aims, commitment and proposed timeline of the research were shared. This was also provided in written form (Appendix iii).

3.7.1.1 Description of participating school

Only one of the five schools contacted expressed an interest in participating. The participating primary school, which admits students aged 3-11, had approximately 455 students on roll during involvement.

3.7.2 Selection of participating TAs and students

A meeting with the school's 28 TAs was organised to seek volunteer participants. A verbal presentation was delivered, during which the aims of the study and commitment required were shared. It was also specified that participants must occupy a pedagogical role within the school, as opposed to a care role or a clerical role.

It was also stated that a range of students supported by the TA would need to be considered and one would be randomly selected for participation. The students considered would need to be identified on the basis that the TA had concerns around an aspect of their learning that may have not typically met the threshold for support from an external agency. It was shared that the TA would need to work with the student at least on a weekly basis, supporting them pedagogically with the subject in which the difficulties are presented. Details of the research were also provided in written form (Appendix iv).

A follow-up meeting was organised with seven TAs who expressed an interest in participating. This was to reiterate the information provided within the initial meeting, as well as to answer any questions. As advised by Rosenfield (2008), the assumptions of instructional psychology and the IC approach were also shared (Appendix v). Each TA referred one student each to participate within the study.

All TAs were provided with information letters, consent letters, an audit to capture their roles responsibilities and training (see Appendix iv, Appendix vi and Appendix vii, as well as information and consent letters to provide to parents/guardians of prospective participating students (see Appendix viii).

Although seven TAs agreed to participate, participation from three TAs was ceased. This was because three or more consecutive data points were missed within the baseline phase (not including the scheduled two-week school holidays), for reasons including student and/or TA absences and the schedules of either the TA or the student being unexpectedly reorganised (see Appendix x for the schedule of measures completed with all seven TAs). Due to the impact of missing data on the stability of the data, as well as the repercussions of this on the study's timeline, it was agreed for participation within the study to cease, but for the intervention to still be received within the Summer term of 2016.

3.7.2.1 Description of participating TAs and students

The four participating TAs were all British, white females, employed as Higher Level TAs within a pedagogical role. All participating students were white British. Further information regarding the participating TAs and their paired students, are detailed in Table 3-2.

Table 3-2: *Details of the participating TAs and paired, participating students*

TA	TA experience	Deployment of TA within the school	Paired student	Gender, Age	Concerns raised
Rachel	25 years within 3 primary schools	Provides 1:1 30min literacy support for KS3 students	***Jacob***	Male, 10 years old	Progress with reading and spelling
Sarah	8 years within current primary school	Provides classroom based support for low attaining students within a year 1 class	***Tom***	Male, 5 years old	Progress with handwriting abilities
Caroline	4 years within current school	Provides classroom based support for low attaining students within a year 1 class 3 days a week; Nurture group support 2 days a week	***Daisy***	Female, 5 years old	Over dependence on adult support within numeracy lessons
Sharon	17 years within 2 primary schools	Provides 15 min, 1:1 literacy support for KS2 students 2 days a week; Classroom based support for year 5 class 3 days a week	***Lloyd***	Male, 9 years old	Progress with reading

3.8 Procedure outline

The following section will detail the procedure followed by the researcher, following the recruitment of participants. The timeline for the research implementation is included in Appendix ix.

3.8.1 Short consultation with each TA

A short consultation was organised with each participating TA. General information around the selected student was shared, including the concern held by the TA around their learning and the times and days that the TA supported the student. A 30-minute period for observations to be made by the researcher on a weekly basis was agreed upon. It was clarified that this must be a period in which the TA provides the referred student with support around the concerns raised. The importance of ensuring that these observations took place during consistent times, days and settings were shared.

3.8.2 Baseline phase

The baseline phase consisted of weekly, 30 minute observations during November 2015, of the TA supporting the target student, during which components of TA practice were measured.

As advised within the SCED literature, at least three measures of TA practice were taken to form the baseline phase (Kratochwill et al., 2010; Robson, 2011). The literature also advises that a stable baseline, in which there is minimal trend and variability between measures over time, should be established before implementing the treatment phase (Robson, 2011). Although this was sought, due to time constraints, this was not ensured for each participating TA.

3.8.3 Intervention: Instructional Consultation session

An hour-long, individual IC session with each TA was organised following the baseline phase. As advised by Rosenfield (2008), these sessions were not scripted in order to retain the collaborative relationship between the consultant and consultee, essential within IC. However, in order to maximise the integrity and fidelity of the intervention, a guide was created and followed, based upon the literature detailed within section 2.3.3.4 (Appendix xi).

This included the following stages:

- *Problem definition*, in which the concerns around the student were defined using behavioural terms, including an exploration of the student's abilities and expectations of the task and whether there were discrepancies between the two. The student's workbooks and assessments were referred to in order to collect measurements around the student's performance around the tasks set. These were mapped onto a logarithmic graph as an 'indicative baseline.'
- Exploration of *past and present instructional procedures and strategies*, employed by the TA and/or other staff members, drawing attention to the theory of scaffolding and instructional, repair and feedback approaches as well as how understanding is checked.
- *Hypotheses formation*, based upon any discrepancies between the student's abilities, expectations of the task and support being provided by the TA.
- Identification of possible *changes* to the instructional support that may be provided by the TA to support the student in meeting the task requirements, in addition to changes to the task to ensure it appropriately met the student's abilities.
- Identification of *targets* for the student and consideration around how any impact of the changes on the student's outcomes would be measured and monitored using a logarithmic graph.

Additionally, targets were defined for the TAs' practice. For both these and the students' targets, the TME process was followed (see section 3.5.2), which required the TA to plot on a scale ranging from 1-10 the baseline level of the target, with 1 defined as 'not at all,' and 10 defined as 'consistently observed.' The TA was also required to rate the expected progress of each target following the intervention, on the scale.

The outcomes from the IC session were provided in written form to each TA (see Appendix xxi for a sample) for them to refer to.

3.8.4 Intervention phase

Weekly observations of the participating TAs' practice with the student continued until February 2016 to form the intervention phase data.

Following each of the observational measures taken in the intervention phase, a short questionnaire was completed with the TAs as a fidelity check, to remind them of the targets agreed upon during the IC session (Appendix xiii).

Student-level data was also collected during the weekly observations, by collecting measures of the students' performance against the target(s) identified during the IC session.

3.8.5 Post-intervention structured interview

As detailed in section 3.5.3, a structured interview was completed with each of the four participating TAs one month after the intervention phase had ceased (Appendix xiv).

3.8.6 Debrief

It was organised for the participating school, TAs and parents of participating students to be debriefed in July, 2016. A written report, detailing the general outcomes of the research was provided and an informal meeting was also offered to staff and parents/guardians. Participating students were debriefed verbally, by detailing the purpose and outcomes from the research.

3.9 Measuring TA practice

A tool was devised by the researcher to measure the components of TA practice, based upon the existing research investigating the practice of TAs (Russell et al., 2012; Radford et al., 2015). This referred to behaviours associated with the heuristic and repair roles that TAs occupy (see section 2.2.4). These were incorporated within an initial tool (Appendix xv), which was piloted and amended in response to the challenges that arose, such as the clarity and exclusiveness of the behaviour descriptors (see Appendix xvi for the final observation schedule). The behaviours that were observed and measured concerning how TAs provide instruction, their repair strategies, feedback strategies and how understanding may be checked, along with the desirability of the strategies, are detailed in Table 3-3.

Table 3-3: *Least and more desirable practices associated with components of TA practice, as described by (Russell et al., 2012; Radford et al., 2015).*

	Heuristic role			**Repair role**
	Strategies to introduce tasks	***Feedback strategies***	***Checking understanding***	***Repair strategies***
Most desirable	Open question	Links to previous learning	Open question	Student initiated – student repair
	Modelling	Specific praise		TA initiated Student repair – Open question
	Closed question			TA initiated Student repair – Closed question
Least desirable	Provides instruction	Non-specific praise	Closed question	Correction

3.10 Data quality: Validity and reliability

The following section explores the possible threats to the quality of this research, which were considered prior to its implementation. The steps taken to limit these threats are detailed where possible. Any restrictions to this were considered when analysing and drawing conclusions from the outcomes of this study.

3.10.1 Validity

Validity is defined by Robson to concern, "whether the findings are 'really' about what they appear to be about" (Robson, 2011, p. 77). Validity is described to consist of construct, internal and external validity, each of which are described below, along with information around the relevance to this research.

3.10.1.1 Construct validity

Construct validity concerns whether the measure used captures what it is set out to measure (Cohen et al., 2011). As described within section 3.9, TA practice was repeatedly measured, with the use of a tool devised by the researcher, based upon existing literature around TA practice. To improve the construct validity, this tool was piloted and adapted in response to the limitations that arose, to ensure that aspects concerning TAs' practice relevant to the research questions, were captured. The researcher acknowledged however that the tool was limited due to the lack of use of the tool by other researchers and/or in wider settings.

3.10.1.2 Internal validity

Internal validity refers to whether the treatment can be causally linked to the outcome measured (Robson, 2011). Kratochwill et al.,(2010) discuss a number of possible threats to the internal validity specifically pertinent within SCEDs. These are detailed in Table 3-4 along with the relevance of the described threats to this study. To address many of these limitations, it is advised that at least three replications of the effect must be demonstrated (Horner et al., 2005; Kratochwill et al., 2010). This was aimed for within this research by recruiting more than three participants. Any additional steps taken to address the identified threats are detailed within Table 3-4.

Table 3-4: *Possible threats to the internal validity of single-case experimental designs, as detailed by Kratochwill et al.,(2010), including details about how these threats were addressed within this research.*

Internal validity threat	**Relevance to current study and any steps taken to address the limitation**
History: Observed effect could be a result of the occurrence of a simultaneous event	As the removal and reintroduction of the intervention were not implemented within this design, the ability to ascertain any effect of history was limited, however the recruitment of four TAs attempted to address this, by seeking replicability of outcomes. The TAs specified that additional support for their practice was not scheduled throughout the duration of this study.
Testing: Possible impact of repeated exposure to testing and/or information gained before testing.	As TAs were observed within their typical lessons and did not directly interact with the materials used to measure their practice, a minimal impact of repeated exposure and practice was expected. When introducing the research to possible participating TAs, the theoretical basis of instructional psychology, which referred to aspects relevant to TA practice was shared and discussed (Appendix v). It is possible that this may have informed and influenced the practice of the TAs before baseline measures were taken. However, the information was included within the initial meeting to prevent ethical risks, including deception of TAs' understanding of the research (discussed further in section 3.11.2).
Instrumentation: Change of the conditions or nature of the tools used to measure behaviours	Measures used to capture TA practice were piloted, refined and defined before the baseline phase, in an attempt to minimise the possible impact of instrumentation.
Maturation: Naturally occurring development in participants for reasons separate to the intervention	It is possible that any changes observed in TAs' practice may have been due to the natural development of their practice over time, as opposed to the intervention. This could not be controlled for however it was addressed by assessing the replicability of the outcomes across four participants.

An additional threat to the internal validity of this study included the possibility that TAs may have adapted their behaviours as a result of being observed. Also referred to as the '*Hawthorne'* or *observer effects* (Cohen et al., 2011), it is possible that the behaviours observed may have not reflected the TAs' typical practice, despite the attempts made for the observations to be as unobtrusive as possible. More discrete strategies to capture the TAs' practice, such as the use of audio-recording devices were considered but not opted for as data collection would have then depended on the TAs operation of such devices and these may have not captured all exchanges between the TA and the student. The threat of the observer effect was considered when drawing conclusions from the outcomes of this research.

3.10.1.3 External validity

The external validity of a study (also referred to as generalisability) concerns the extent to which outcomes concluded from one study can be applied and may be true within wider circumstances, including groups and contexts (Robson, 2011). As SCEDs offer a close analyses of the effect of an intervention on individual participants, the external validity is a recognised limitation of the design (as discussed by Horner et al., 2005).

Within this research, it is possible that the outcomes may not be applicable to other TAs within the school who did not volunteer to participate or TAs within other settings such as other primary schools and/or secondary school. However, as SCEDs allow for specific details around each participant to be captured, the circumstances in which an experimental effect does or does not occur, may be identifiable. This was encouraged within this study by analysing the impact on four TAs.

The external validity of research may also be compromised by *selection bias*, in which the researcher only includes data in which an effect is demonstrated. Within this study, data was included for all participants who completed each step of the procedure (see section 3.7 for additional information around the participant selection).

3.10.2 Reliability and objectivity

Reliability refers to the stability of the tools used within a piece of research to capture the outcomes and whether its repeated use would present the same outcomes (Cohen

et al., 2011). Possible threats to the reliability also implicate objectivity, which concerns the shared agreement of multiple observers.

A number of threats to the reliability and objectivity of the researcher were recognised within this study and where possible, steps were taken to reduce these threats.

This includes the threat of *participant error*, in which the participant's performance fluctuates due to external factors such as tiredness, ailments and time of the day (Robson, 2011). Within this research, external factors that may have resulted in participant error were noted after each observation and considered within the analysis of the outcomes, if any anomalies were evident.

The possibility of *observer error*, where the observer fails to record or measure the behaviours accurately was also relevant to this study, as well as *observer bias*, where the observer's knowledge of the hypotheses and aims of the research influences their ability to observe and measure behaviours objectively (Cohen et al., 2011). With regards to the collection of SCED data, it is advised for at least twenty percent of the data points in each condition (referring to the baseline and intervention phases of this study) to be systematically inter-rated by more than one observer, to assess the consistency of the assessments made (Kratochwill et al., 2010). Although this was sought by the researcher, due to time constraints, it was only possible to inter-rate twenty percent of the intervention phase measures (detailed further in section 4.4). The potential impact of the this on reliability of data was considered when drawing conclusions from this study's outcomes.

The recruitment of an external practitioner to deliver the IC session, complete fidelity checks and collect the TME and interview data was considered, in order to reduce any potential bias that may have resulted from the researcher completing each of these tasks. Unfortunately, another practitioner could not be secured due to practical and time constraints. The implications of this for the reliability of the data was considered during the analysis process and will be revisited in the discussion of findings.

3.11 Ethical considerations

Ethical considerations detailed within the British Psychological Society's (BPS) Code of Human Research Ethics (BPS, 2014) and Professional Practice Guidelines (BPS, 2002) were adhered to throughout the research. Prior to the study, ethical approval was provided by the University of Nottingham's Ethics Committee (see Appendix xvii). Steps taken to address pertinent ethical considerations are discussed below.

3.11.1 Risk

As the researcher was also the link EP for the participating school, the potential of a conflict of interests was acknowledged. To reduce any potential stress induced by the participants perceiving any adverse consequences on their professional employment as a result of participating, it was agreed with the senior managers of the participating school that, unless a concern around safeguarding arose, data obtained around participating TAs or students would not be shared. It was also agreed that only generalised and anonymised information would be provided during the debriefing stages. This agreement was shared with the participating TAs, emphasising that the aim of the research was not to scrutinise professional practice but to investigate how the role and practice of TAs can be supported.

To avoid any unnecessary disruption to the TAs' roles and responsibilities, the time commitment and requirements of participation were shared verbally and in writing. Steps were also taken to ensure that observations were organised to take place during lessons that adhered to the TAs', students' and classes usual timetable.

3.11.2 Valid consent, confidentiality and deception

Written informed consent was obtained from each participating TA (Appendix vi) and the parents/guardians of each participating student (Appendix viii), which stated that they could withdraw at any time, without reason and without adverse consequences. Before the initial baseline phase, TAs read a script to each participating student to gain verbal consent for participation (Appendix xviii). The school, TAs and parents/guardians were informed that participation was entirely voluntary and could be withdrawn at any time, without explanation.

Names of the participating school, TAs and students were anonymised throughout all reporting.

To minimise any deception, all participating TAs and the parents/guardians of participating students were provided with written information containing details on research aims, type and methods of data collection, confidentiality, commitments and debriefing plans (Appendix iii, Appendix iv and Appendix viii).

The volunteering school and TAs may have expected positive outcomes from participants. As the researcher was the visiting link EP who provided, as part of the EPS, support on a traded basis, participation within this study may have been viewed as a beneficial, 'free service.' In response, the researcher emphasised that the study aimed to investigate the impact of intervention on the TAs' practice and minimised any voiced expectations of a positive effect.

3.11.3 Giving advice

During the IC sessions, it was anticipated that advice around professional practice would be provided. In adherence to the framework underlying the IC approach, a collaborative consultee-consultant relationship was agreed, which supported the co-production of actions, as opposed to the provision of advice from the researcher. Any advice provided related to the instructional practice of TAs in accordance to the IC framework; professional advice beyond this was not provided.

As the researcher was also the school's link EP, the possibility that TAs would seek advice prior to the IC session was addressed by reassuring TAs that any concerns would be discussed in full during the IC intervention. In agreement with the school's management team, TAs were aware that the SENCo would be available to consult with for other immediate concerns.

3.11.4 Debriefing

Verbal and written debriefing, on the outcomes of the study, was planned for June 2016 for all stakeholders.

Chapter 4: Results

4.1 Introduction to chapter

This chapter presents findings from the current study. Prior to the findings, approaches to analyse the various data including; SCED, observational, TME and structured interview data are detailed. The outcomes for each of the four TA and student participant pairs are presented in turn. Key information regarding the support TAs provided to their target student is detailed. This is followed by description of the agreed targets, identified within the IC session, and data analyses. The following behaviours were analysed during observation:

- A) TAs' strategies to introduce tasks, including:
    - Providing instructions
    - Closed questions
    - Open questions
    - Modelling
- B) TAs' repair strategies, including:
    - Corrections
    - TA-initiated student-repair, closed questions (TISR-C)
    - TA-initiated student-repair, open questions (TISR-O)
    - Student-initiated student-repair (SISR)
- C) TAs' strategies to check understanding, including:
    - Closed questions
    - Open questions
- D) TAs' feedback strategies, including:
    - Non-specific feedback
    - Specific feedback
    - Links to prior learning
- The indirect impact of IC on the students targeted learning behaviour

Outcomes from the observational data is followed by analysis of the TME ratings and structured interviews. Finally, a summary of the findings linked to the research questions (RQs) is presented.

4.2 Analysis of SCED data

SCED approaches were used to assess the impact of IC on TA practice. As discussed within section 3.4.4, visual and/or statistical approaches may be applied to analyse SCED data. After exploring the possible options, visual approaches were deemed as most relevant.

The visual analysis approach detailed by Kratochwill et al., (2010), as described in section 3.4.4.1, was followed: The raw data was presented graphically, accompanied with descriptive information around the datas' trend, level, variability (both within and between phases), as well as the degree of data-overlap between phases (graphical representations of these calculations can be found in Appendix xxii-Appendix xxxii). The calculations were applied to analyse the baseline phase for each behaviour, to ascertain stability. If a stable baseline was evident, comparisons were made between the baseline and intervention phases. Information was then integrated to ascertain whether three occurrences of an experimental effect was evident for each behaviour.

Due to the deemed lacked relevance to this study '*consistency across similar phases*,' was not examined, as an AB design was implemented and so there were no similar phases.

On each graph, the baseline and intervention phases are separated by a vertical line; the x-axis represents the weeks of data collection and the y-axis represents the number of observed occurrences of the target behaviour. The two weeks in which data was not collected (between weeks 7 and 8) due to scheduled school holidays were omitted from the x-axis. Missing data points indicate when data was not collected for unforeseen reasons, such as student and/or TA absence. Data points were joined together to support the visual analysis procedure.

4.3 Analysis of student-level outcomes

As discussed in 3.5.1, student level outcomes were assessed by taking repeated measures of the students' performance against a learning behaviour target(s) at repeated intervals following the IC session with the TA. An indicative 'baseline' was formed by analysing data from workbooks and previous assessments, as part of the IC process. As this data was collected retrospectively, the way that the data was collected following the intervention may have varied. Additionally, changes were made to some of the learning targets following the IC session (detailed further in each of the participant's profile, before the presentation of the findings). Therefore, comparisons between the indicative baseline and the measures collected following the intervention, could not be reliably made.

To analyse the repeated measures of the students' responses following the intervention, the raw data was presented graphically. This included the indicative 'baseline' data, although comparison with the data collected after the intervention was not made. The graphical data was accompanied with descriptive information of the data collected systematically following the intervention, including the trend amongst the data, variability between the data points and the difference between the first and final measure recorded following the IC session, in order to assess whether there was a perceptible change in responses over time.

4.4 Analysis of TME and structured interview data

As described in section 3.5.2, the TME approach and a structured interview was completed with each TA to supplement the observational data.

For the TME, targets were established by the TA during the IC session, regarding their practice and the students' outcomes. The TAs' perception of the application of each target prior to the implementation of any identified strategies, were mapped onto a scale ranging from 1 to 10 (with 1 indicating that the target was not in place; 10 indicating that the target was consistently in place) to identify a baseline level. As advised by Dunsmuir, Brown, Iyadurai and Monsen, (2009), an expected level of performance was also identified at this stage. Four weeks following the last observation collected during the Intervention phase (approximately eight weeks following the IC session) each target was reviewed and an 'achieved' level on the scale was established. To analyse the TAs' perceived progress, each target was coded using the following guidance provided by Dunsmuir et al. (2009):

- Achieved outcome rating lower than baseline = *Worst progress*
- Baseline rating maintained = *No progress*
- Achieved rating less than expected rating, but above baseline rating= *Some progress*
- Expected and achieved rating match = *Expected progress*
- Achieved rating exceeded expected rating = *Better than expected progress*

With regards to the structured interview delivered with each TA to evaluate the IC approach (see section 3.5.3 and Appendix xiv), a number of analytical approaches were considered, such as thematic analysis. However, such an approach would have required the data from all TAs to be combined and treated as group data, which seemed to run counter to the design chosen for this study. Therefore, in order to ensure that each participant's data was treated individually, data from each case was analysed descriptively and used to complement other data collected as part of the SCED.

4.5 Inter-rater agreement

4.5.1 Inter-rater agreement of repeated measures

In accordance to the guidelines for SCED research provided by Kratochwill et al. (2010), measures of TA practice were made by more than one person in order to ascertain agreement between the assessors (also referred to as inter-rater agreement), as a judgement of the integrity of the measures collected. Twenty percent of the observations of TA practice made by the researcher during the intervention phase were inter-rated by an EP (the potential impact of this on the quality of the data is discussed in section 3.10.2).

Inter-rater agreement was also sought to support the integrity of the student-level measures, collected following the IC session. The researcher inter-observed 80% of the intervention phase measures collected by the TAs.

Agreement between the assessors was then calculated. A wide range of approaches to calculate inter-rater agreement (discussed by Aspland & Gardner, 2003; Kratochwill et al., 2010) were considered.

As the observations measured the frequency of particular behaviours, the Intra-class Coefficient (ICC) was applied (Shrout & Fleiss, 1979; Aspland & Gardner, 2003; Gisev, Bell, & Chen, 2013). The following qualitative interpretations of the ICC were followed: 0-0.2 indicated *poor* agreement; 0.3-0.4 indicated *fair* agreement; 0.5-0.6 indicated *moderate* agreement; 0.7-0.7 indicated *strong* agreement and >0.8 indicated *almost perfect* agreement.

The level of agreement was 0.79 between the two raters who observed TA practice and 0.96 for between the raters who observed students' outcomes, both indicating an almost perfect agreement. This strengthens the reliability of the observations made. It was however acknowledged that the ICC approach is limited as it cannot be determined whether the behaviours recorded by each rater are the same, as the calculation is based upon comparisons between the final quantity of each measured behaviour (Aspland & Gardner, 2003).

4.5.2 Inter-rater agreement of repeated-measures analysis

In order to minimise the potential threats to the reliability of visual analysis (discussed by Kratochwill et al., 2010; and Gisev, Bell, & Chen, 2013), the descriptive and graphical data was analysed by the researcher and a colleague familiar with the components of visual analysis detailed in Table 3-1.

The data for each variable for each TA participant was independently examined and, using the steps detailed in section 3.4.4.1, each rater indicated on a 5-point scale (ranging from 1–*not at all convinced,* to 5- *very convinced)* how much they agreed with the following statement (see Appendix xix):

> *"How certain or convinced are you that the strategies used by the TA underwent a practical and significant change from the baseline phase to the intervention phase?"*

Inter-rater agreement of the visual approach applied to analyse the student-level outcomes was sought, although this did not allow for comparisons to be made between the indicative baseline and the intervention phase (Appendix xx). Each rater independently examined the data and was asked to indicate on a 5-point scale (ranging from 1–*not at all convinced,* to 5- *very convinced)* how much they agreed with the following statement:

> *"How certain or convinced are you that the student's responses following the intervention changed over time?"*

Inter-rater agreement was calculated using Cohen's weighted kappa (Cohen, 1968) due to its suitability in analysing the agreement between two raters, using nominal data (Gisev et al., 2013). The following qualitative interpretations of Kappa values are provided by (Gisev et al., 2013): <0.00= *poor* agreement; 0.00-0.2= *slight* agreement; 0.21-0.4= *fair* agreement; 0.41-0.6= *moderate* agreement; 0.61-0.8= *substantia*l agreement and 0.81-1= *almost perfect* agreement.

The inter-rater agreement was 0.78 for the analysis of the TA level data and 0.81 for the student level data, indicating substantial agreement, supporting the reliability of the visual analysis decisions made for the data in this study.

4.6 Data analysis: Rachel and Jacob

4.6.1 TA and student profile

Rachel had been providing Jacob, a male student aged 10 at the start of involvement, with one-to-one literacy support twice a week for 30 minutes, for approximately three months. This was due to concerns around his reading and spelling abilities.

4.6.2 Targets identified

During the IC session, Rachel identified the following targets for her own practice:

1) For Rachel to provide Jacob with support when he faces a difficulty as opposed to correcting him, for example by asking open questions and providing him with time to correct his own errors
2) For Rachel to provide Jacob with specific praise when he has succeeded, for example by highlighting what he has done particularly well and by asking him to explain any correct choices

Rachel identified the following targets for Jacob:

1) For Jacob to be able to correctly and consistently read a set of words with the same long vowel sounds.
2) For Jacob to be able to correctly spell a set of words with the same long vowel sounds.

After the IC session, Jacob's outcomes around Targets 1 and 2 were measured to form the observational data. The indicative 'baseline' was based upon retrospective data on Jacob's ability to read and spell words with different long vowel sounds.

For the full consultation record, see Appendix xxi; for additional graphs depicting calculations around Rachel's practice see Appendix xxii.

4.6.3 Analysis of strategies to introduce tasks

Graph 4-1: A graph showing the number of observed strategies used by Rachel to introduce tasks to Jacob across the baseline and intervention phases.

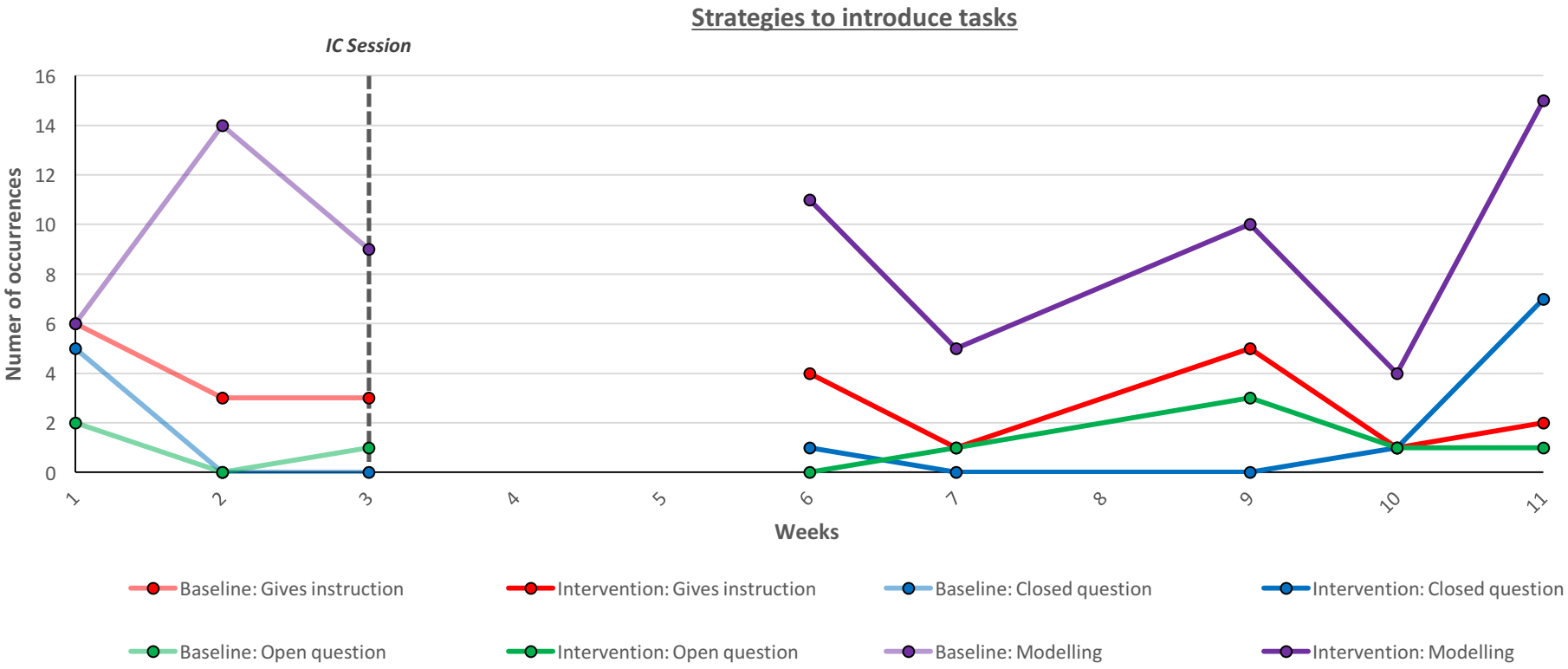


Table 4-1: *A summary of the visual analysis of Rachel's strategies to introduce tasks.*

	Instructional strategies	**Visual analysis**
Level	Gives instruction	The mean decreased from the baseline (4) to the intervention phase (2.6).
	Closed question	There was a slight increase in mean from the baseline (1.67) to the intervention (1.8) phase.
	Open question	The mean increased from the baseline (1) to the intervention (1.2).
	Modelling	The mean decreased between baseline (9.67) and intervention (9).
Trend	Gives instruction	A stronger negative trend is evident at baseline (slope=-1.5) than intervention (slope=-0.22).
	Closed questions	The data presented a negative trend at baseline (slope=-2.5) and positive trend at intervention (slope=0.91).
	Open questions	The data presented a negative trend at baseline (slope=-0.5) and a positive trend (slope=0.2) at intervention.
	Modelling	A positive trend is evident at baseline (slope=1.5) and intervention (slope=0.52).
Variability	Gives instruction	The data point's range was 3(SD:1.73) at baseline; 4(SD:1.82) at intervention.
	Closed questions	The data point's range was 5(SD:2.89) at baseline; 7(SD:2.95) at intervention.
	Open questions	The data point's range was 2(SD:1) at baseline; 3 at intervention (SD: 1.1).
	Modelling	The data point's range was 8(SD: 4) at baseline; 11 at intervention (SD:4.5).
Overlap	Gives instruction	40% of the intervention phase data points overlapped with all baseline data points.
	Closed questions	80% of the intervention phase data points overlapped with all baseline phase data points.
	Open questions	80% of the data intervention phase data points overlapped with all baseline data.
	Modelling	60% of intervention phase data overlapped with all baseline data.

4.6.3.1 Rachel's strategies to introduce tasks: summary

With regards to the strategy *open questions*, a stable and predictable baseline was suggested by the trend (slope=-0.5) and variability (range=2). At intervention, a small positive trend is apparent (slope=0.2), suggesting a possible increase in the use of this specific instructional approach over time. However, the average use of the strategy increased slightly (by 0.2) and the large overlap of data points between phases (80%), limiting the suggestion of an experimental effect.

With regards to the other instructional strategies, the large variance between data points and evidence of a trend at baseline suggests unpredictability and unreliability of the data, therefore limiting the ability to make comparisons of the data before and after the treatment.

4.6.4 Analysis of repair strategies

Graph 4-2: A graph showing the number of the various repair strategies used by Rachel across the baseline and intervention phases.

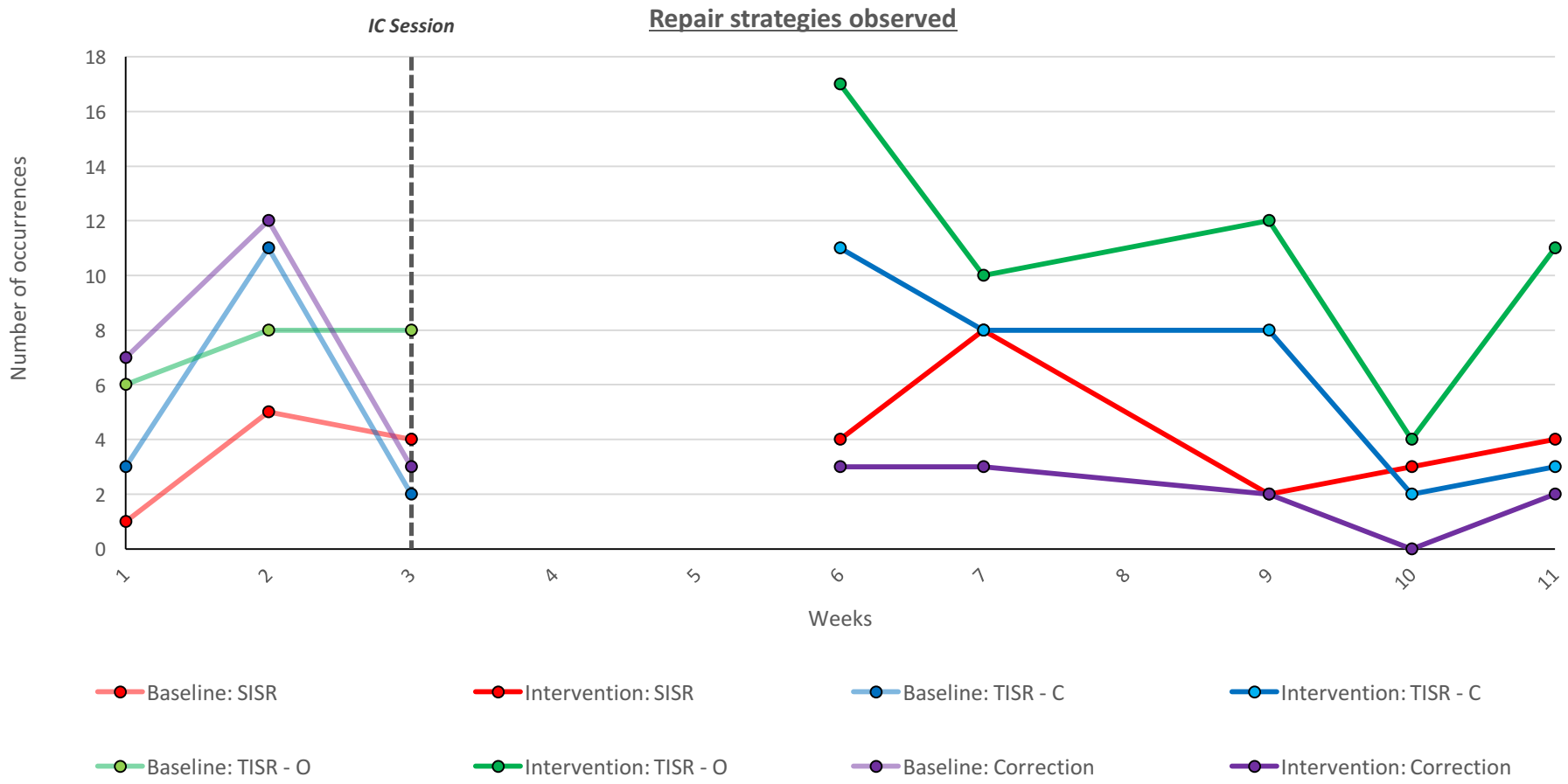


Table 4-2: *A summary of the visual analysis of Rachel's repair strategies.*

	Repair strategies	Visual analysis
Level	SISR	The mean increased slightly between baseline (3.33) and intervention (4.2).
	TISR-C	The mean increased between baseline (5.33) to intervention (6.4).
	TISR-O	The mean increased between baseline (7.33) and intervention (10.8).
	Correction	The mean decreased between baseline (7.33) and intervention (2).
Trend	SISR	A positive trend at baseline (slope=1.5) and negative trend at intervention (slope=-0.5) was evident.
	TISR-C	A negative trend at baseline (slope=-0.5) and intervention (slope=-1.64) was evident.
	TISR-O	A positive trend at baseline (slope=1) and a negative trend at intervention phase (slope=-1.36) was evident.
	Correction	A stronger negative trend is evident at baseline (slope=-2) than intervention (slope=-0.41).
Variability	SISR	The data point's range was 4 (SD: 2.09) at baseline; 6 (SD 2.28) at intervention.
	TISR-C	The data point's range was 9 (SD:4.93) at baseline; 9 (SD:3.78) at intervention.
	TISR-O	The data point's range was 2 (SD: 1.54) at baseline; 13 (SD: 4.66) at intervention.
	Correction	The data point's range was 9 (SD: 4.51) at baseline; 3 (SD: 1.22) at intervention.
Overlap	SISR	80% of the data points at intervention overlapped with all baseline data points.
	TISR-C	There was a 100% overlap of data points between the phases.
	TISR-O	20% of intervention phase data points overlapped with all baseline phase data points.
	Correction	There was no overlap between the intervention and baseline phase data.

4.6.4.1 Rachel's repair strategies: Summary

For the repair strategy *TISR-O,* although a positive trend (slope=1) at baseline is evident, the variability was small (range=2), indicating a stable baseline. A positive experimental effect is suggested by the increased average use of the strategy (by 3.47) between phases and the small overlap of data points between phases (20%). However, the negative trend at intervention (slope=-1.36), suggests that the use of the strategy declined over time and the large variability between data points at intervention (range=13) indicated that the intervention phase data may not be an accurate and reliable representation of the use of the strategy, limiting the suggestion of an experimental effect.

For each of the remaining three behaviours, at baseline, the large variability between the data-points suggested unpredictability and unreliability, limiting the ability to draw comparisons between phases. This is further suggested by the large overlap in data points between phases.

4.6.5 Analysis of strategies to check understanding

Graph 4-3: A graph showing the number of observed strategies used by Rachel to check Jacob's understanding across the baseline and intervention phases.

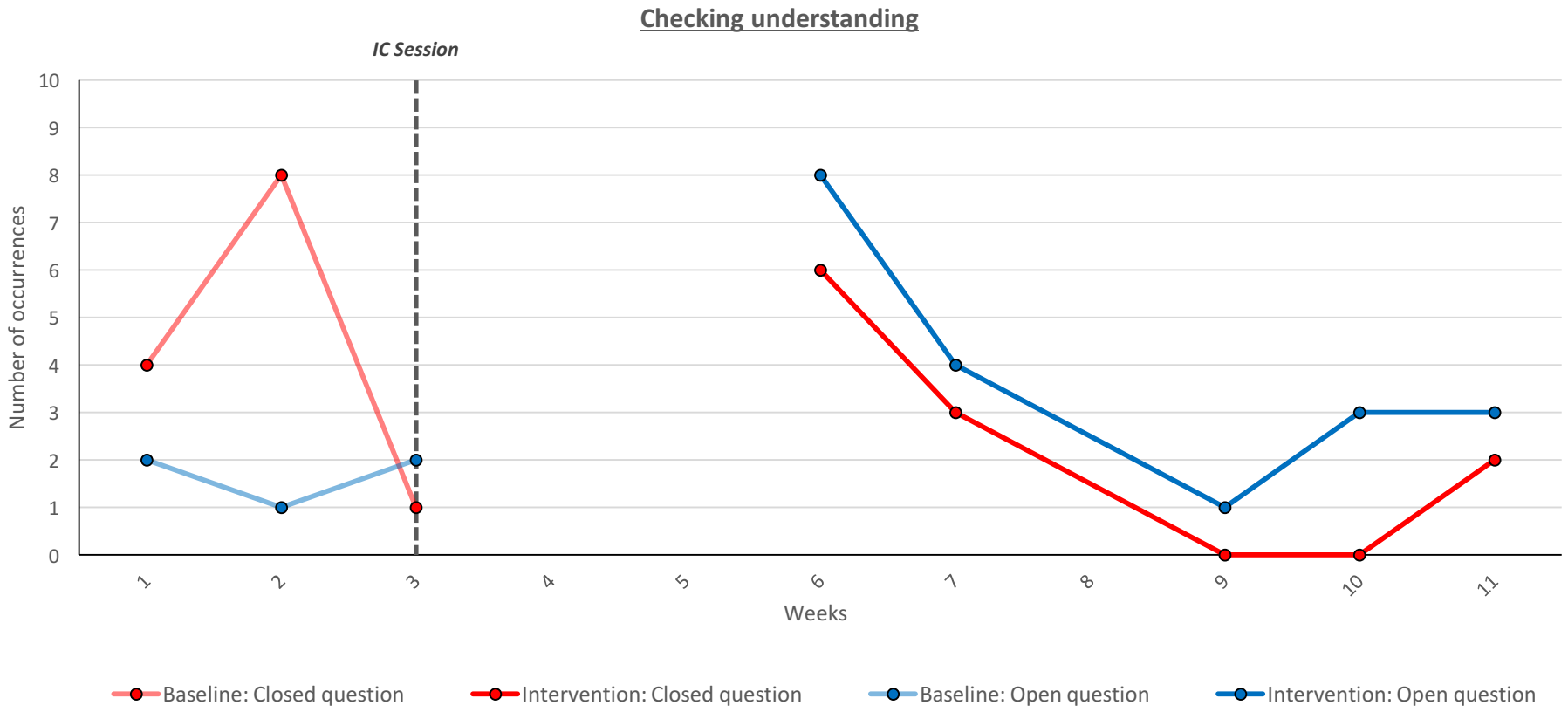


Table 4-3: *A summary of the visual analysis of Rachel's strategies to check understanding.*

	Strategies to check understanding	**Visual analysis**
Level	Closed questions	The mean decreased from the baseline (4.33) to intervention phase (2.2).
	Open questions	There was an increase in mean from the baseline (1.67) to the intervention (3.8) phase.
Trend	Closed questions	The data presents a negative trend at baseline (slope=-1.5) and intervention (slope-0.91) phase.
	Open questions	The data presents no trend at baseline and a negative trend at intervention (slope=-0.9).
Variability	Closed questions	The data point's range was 7(SD:3.5) at baseline; 6(SD:2.49) at intervention.
	Open questions	The data point's range was 1(SD: 0.57) at baseline; 7 (SD: 2.59) at intervention.
Overlap	Closed questions	All intervention phase data points overlapped with 66.6% of baseline data.
	Open questions	20% of the intervention phase data points overlapped with all baseline data.

4.6.5.1 Rachel's strategies to check understanding: Summary

For the strategy *open questions*, no trend in the data and the small variability (range=1) between data points suggests a stable baseline, strengthening the ability to make comparisons between the phases. The average use of the strategy increased by 2.13 between the phases, suggesting an increased use of the strategy. However, the negative trend in the data (slope=-0.9) and large variability between data points (range=7), limits any suggestion of an experimental effect.

For the strategy *closed questions*, the large variability and negative trend at baseline suggests instability and unreliability, limiting the ability to compare the two phases.

4.6.6 Analysis of feedback strategies

Graph 4-4: A graph showing the observed use of the feedback strategies by Rachel with Jacob across the baseline and intervention phase.

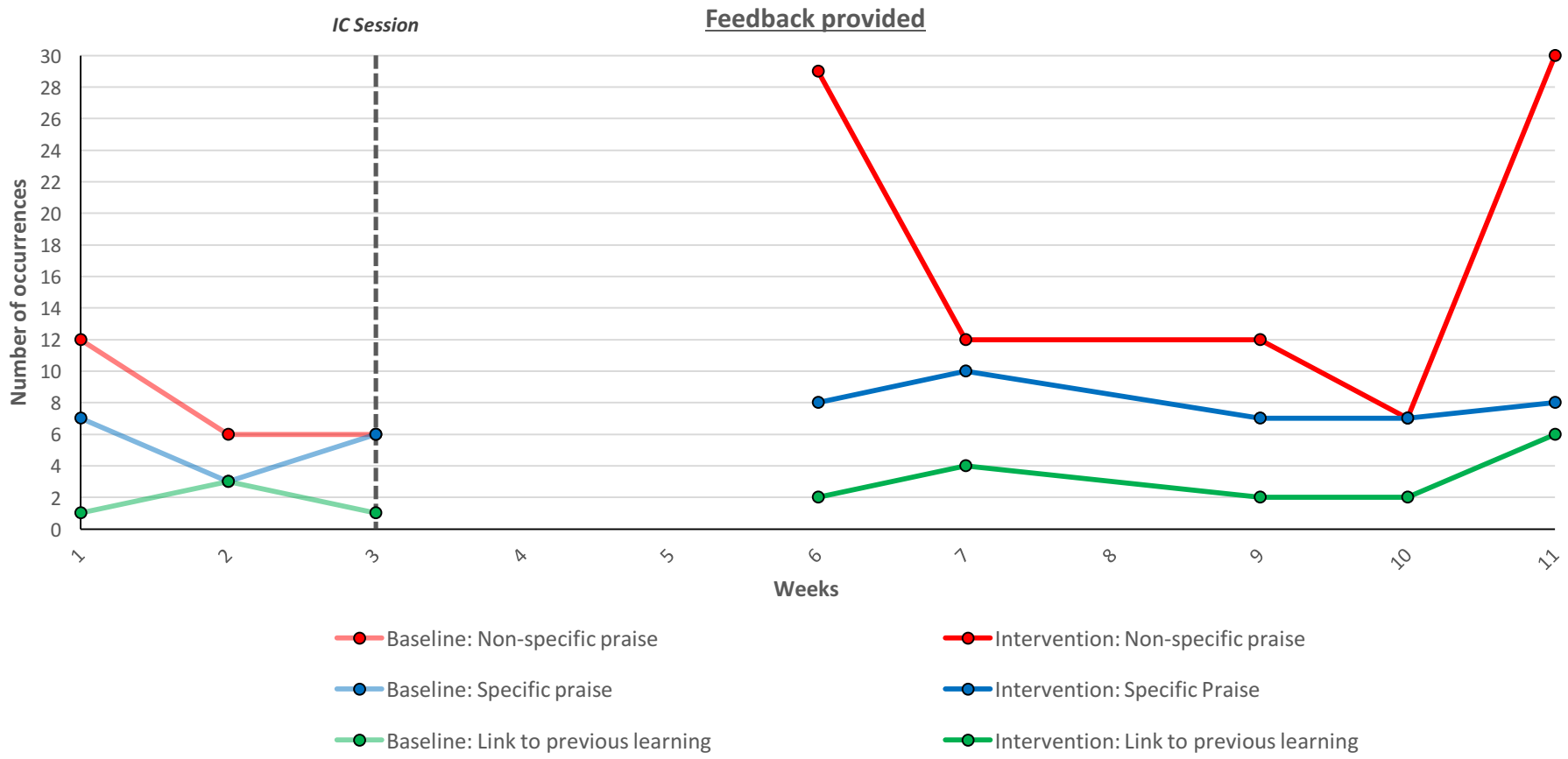


Table 4-4: *A summary of the visual analysis of Rachel's feedback strategies.*

	Feedback strategies	Visual analysis
Level	Non-specific praise	The mean increased between the baseline (8) and intervention phases (18).
	Specific praise	The mean increased from the baseline (5.33) to the intervention (8) phase.
	Linked to previous learning	The mean increased from the baseline (1.67) to the intervention (3.2).
Trend	Non-specific praise	A stronger negative trend is evident at baseline (slope=-3) than intervention (slope=-0.47).
	Specific praise	A negative trend at both baseline (slope=-0.5) and intervention (slope=-0.29) is evident.
	Linked to previous learning	The data indicated no trend at baseline and a slightly positive trend (slope=0.37) at intervention.
Variability	Non-specific praise	The data point's range was 6(SD:3.46) at baseline; 23(SD:10.7) at intervention.
	Specific praise	The data point's range was 4(SD:2.08) at baseline; 3(SD:1.22) at intervention.
	Linked to previous learning	The data point's range was 2(SD:1.15) at baseline; 4(SD:1.79) at intervention.
Overlap	Non-specific praise	60% of the intervention phase data points overlapped with all baseline data points.
	Specific praise	40% of the intervention phase data points overlapped with 33.3% of baseline data points.
	Linked to previous learning	60% of the intervention phase points overlapped with 33.3% of the baseline phase data points.

4.6.6.1 Rachel's feedback strategies: summary

Stability amongst the baseline data points for the feedback strategies, *link to previous learning* was indicated by the small trend (slope=0) and variability (range=2). The average use of this strategy increased slightly following the intervention (by 1.53) however, limiting the suggestion of an experimental effect. With regards to the use of *non-specific* and *specific praise*, the large variability between the data points for each strategy at baseline (range=6 and 4, respectively) suggests instability and unreliability of the data, limiting the ability to draw comparisons between phases.

4.6.7 Analysis of impact of IC with TAs on the targeted learning behaviours of supported students

Graph 4-5: A graph presenting the number of words read and spelt correctly by Jacob.



Table 4-5: *A summary of the visual analysis of Jacob's outcomes.*

	Learning target	**Visual analysis of data following the IC session**
Outcomes	Reading	Jacob read 9 words correctly in the first measurement after the IC session; 8 words correctly 6 weeks later.
	Spelling	Jacob spelt 2 words correctly in the first measurement after the IC session; 8 words correctly 6 weeks later.
Trend	Reading	A negative trend (slope=-0.07) was evident.
	Spelling	A positive trend (slope=0.82) was evident.
Variability	Reading	The data point's range was 3 (SD: 1.15).
	Spelling	The data point's range was 8(SD: 3.05).

For additional graphs depicting the above calculations see Appendix xxiii.

4.6.7.1 Jacob's reading and spelling: summary

With regards to Jacob's reading of long-vowel words, the small variability between the data points (range=2) indicates stability amongst the data. The negative trend amongst however indicates that his performance declined over time. With regards to his spelling outcomes, the positive trend in the data indicate that his ability improved over time following the IC. However, the large variability between the data points (range=8) suggests that Jacob's ability to spell the set of words may have not reliably captured.

4.6.8 TME outcomes

The review of the TME data at post-test indicated that, for all targets set by Rachel for herself and for Jacob within the IC session, Rachel believed that 'better than expected progress,' had been made (Appendix xxxiii).

4.6.9 Interview outcomes

Rachel shared within the interview that that the opportunity to reflect on her own practice and impact of particular strategies during the IC session was most helpful for her practice and Jacob's outcomes, as this was not always allowed. Rachel also shared that the logarithmic graph was useful as this provided Jacob with visual feedback on his progress; nothing was least helpful or could have been done differently.

4.7 Data analysis: Sarah and Tom

4.7.1 TA and student profile

Sarah is a TA deployed to provide general support for a group of six, lower attaining students within Tom's classroom. This group includes Tom, aged 5 years old at the start of involvement.

4.7.2 Targets identified

Sarah identified the following targets for her own practice:

1) For Sarah to provide Tom with increased scaffolded support, for example by writing words out for Tom to copy and/or trace and to ask open questions about Tom's writing when starting a writing task.
2) For Sarah to provide Tom with increased specific praise when he does write well, for example by highlighting what he has done particularly well and reminding him of his progress over time.

Sarah identified the following target for Tom:

1) For Tom to consistently write clearly when requested, regardless of the subject.

Following the IC session, the number of letters from the same sentence written clearly by Tom was measured, to assess any impact of IC on Tom's writing abilities. The data for the indicative 'baseline' data was retrospectively collected, based upon a variety of sentences written by Tom in his workbooks, during the month prior to the IC session.

For the full consultation record, see Appendix xxxiv; see Appendix xxv for additional graphs presenting calculations around Sarah's practice.

4.7.3 Analysis of strategies to introduce tasks

Graph 4-6: A graph showing the number of observed strategies used by Sarah to introduce tasks to Tom across the baseline and intervention phases.

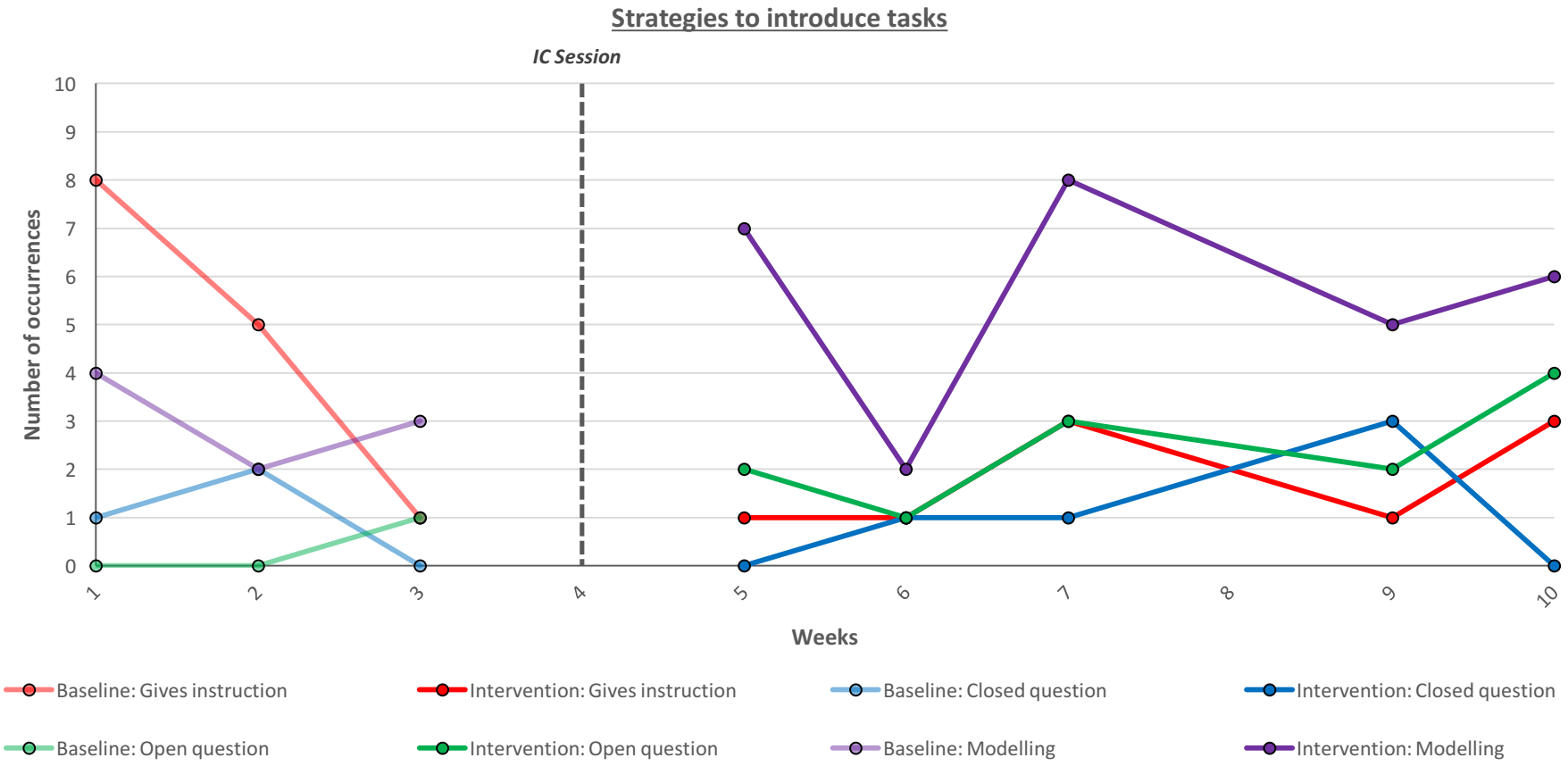


Table 4-6: *A summary of the visual analysis of Sarah's strategies to introduce tasks.*

	Instructional strategies	**Visual analysis**
Level	Gives instruction	The data's mean decreased from the baseline (4.67) to the intervention phase (1.8).
	Closed question	There was no change between the mean at baseline and intervention phases (1).
	Open question	The level increased from the baseline (0.3) to the intervention (2.4).
	Modelling	The level increased from the baseline (3) to the intervention (5.6).
Trend	Gives instruction	The data presents a negative at baseline (slope=-3.5) and positive trend at intervention (slope=0.26).
	Closed question	The data presents a negative trend at baseline (slope= -0.5) and positive trend at intervention (slope=0.17).
	Open question	A positive trend is evident in both baseline (slope=0.5) and intervention (slope=0.36) phases.
	Modelling	The data presents a negative trend at baseline (slope=-0.5) and slight positive trend at intervention(slope=0.05).
Variability	Gives instruction	The data point's range was 7 (SD: 3.51) at baseline; 2 (SD: 0.98) at intervention.
	Closed question	The data point's range was 2 (SD: 1) at baseline; 3 (SD: 1.36) at intervention.
	Open question	The data point's range was 1 (SD: 0.57) at baseline; 3 (SD: 1.05) at intervention.
	Modelling	The data point's range was 2 (SD:1) at baseline; 6 (SD: 2.07) at intervention.
Overlap	Gives instruction	All of the intervention phase data points overlapped with one of the baseline data points (33.3%).
	Closed question	80% of the data points in the intervention phase overlapped with all of the baseline data points.
	Open question	20% of the intervention phase data points overlapped with the baseline data.
	Modelling	20% of the intervention phase data points overlapped with the baseline data.

4.7.3.1 Sarah's strategies to introduce tasks: Summary

With regards to the strategy *gives instruction*, the large variability between the baseline data-points (range=7) suggests instability and unreliability, limiting the ability to draw comparisons between phases. A smaller variability between data-points for each of the remaining strategies, as well the minimal trend amongst the data, suggests stability amongst the baseline data.

With regards to the strategy *closed questions,* the average use of the strategy (1) did not change between phases, indicating no experimental impact, highlighted further by the large overlap of data-points between the phases (80%).

With regards to the use of *open questions* and *modelling*, there was an increase in the average use of the strategies between phases (2.3 and 2.6 respectively) and a slight positive trend amongst the data points for each strategy at intervention (0.35 and 0.05 respectively) suggesting a sustained increased use of these strategies following the intervention. The small overlap of data points between phases (20%) for both strategies indicate an experimental impact on the use of strategy.

However, with regards to the strategy *modelling*, the large variability between the intervention phase data-points (range=6) limits the suggestion of an experimental effect.

4.7.4 Analysis of repair strategies

Graph 4-7: A graph showing the observed use of the various repair strategies by Sarah with Tom across the baseline and intervention phases.

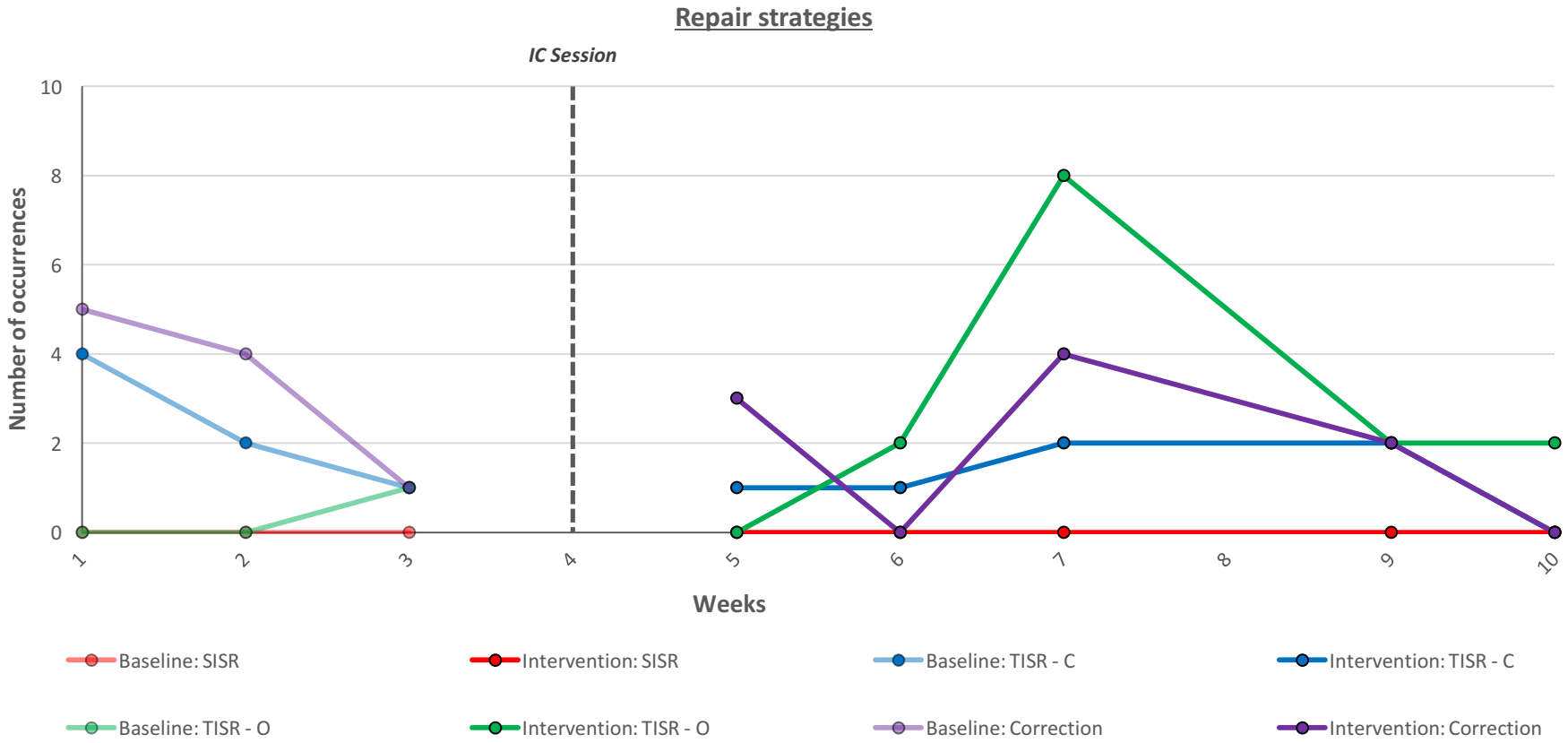


Table 4-7: *A summary of the visual analysis of Sarah's repair strategies.*

	Repair strategies	Visual analysis
Level	SISR	A mean of 0 was evident in both phases.
	TISR-C	There was a slight decrease in mean between the baseline (2.33) and intervention (1.2) phase.
	TISR-O	The mean increased from the baseline (0.33) to the intervention (2.8).
	Correction	There was a decrease in mean between the baseline (3.33) to the intervention (1.8) phases.
Trend	SISR	The data indicated no trend at both baseline and intervention.
	TISR-C	A negative trend was evident at baseline (slope=-1.5) and intervention (slope=-0.08).
	TISR-O	The data presents a positive trend at both baseline (slope=0.5) and intervention (slope=0.14).
	Correction	A stronger negative trend at baseline (slope=-2) than intervention (slope=-0.33) was evident.
Variability	SISR	At baseline and intervention, the data's range was 0 (SD: 0).
	TISR-C	The data point's range was 3 (SD: 1.53) at baseline; 2 (0.81) at intervention.
	TISR-O	The data point's range was 1 (SD: 0.58) at baseline; 8 (SD 3.44) at intervention.
	Correction	The data point's range was 5 (SD: 2.08) at baseline; 4 (SD 1.83) at intervention.
Overlap	SISR	There was a 100% overlap between baseline and intervention phase data points.
	TISR-C	All intervention phase data points overlapped with 66.6% of baseline phase data points.
	TISR-O	20% of the intervention phase points overlapped with all baseline data.
	Correction	60% of the intervention phase data points overlapped with 66.6% of the baseline phase data points.

4.7.4.1 Sarah's repair strategies: summary

An unstable baseline for the use of *corrections* is suggested by the large variability between data points (range=5). This is also true for the strategy *TISR-C* due to the negative trend at baseline (-1.5) limiting the ability to make any comparisons between the phases to establish an experimental effect.

With regards to the use of *SISR*, there appeared to be no observed occurrences before and after the intervention, indicating no experimental effect.

The average occurrence of *TISR-O* increased after the treatment (by 2.47), suggesting an increased use of the strategy. An experimental effect is further suggested by the small overlap between the phases (20%), however the large variability between the data-points at intervention (range=8) suggests that the observations unreliably represent the typical use of the strategy, limiting the ability to ascertain an experimental effect.

4.7.5 Analysis of strategies to check understanding

Graph 4-8: A graph showing the observed use of the strategies used by Sarah to check Tom's understanding across the baseline and intervention phases.

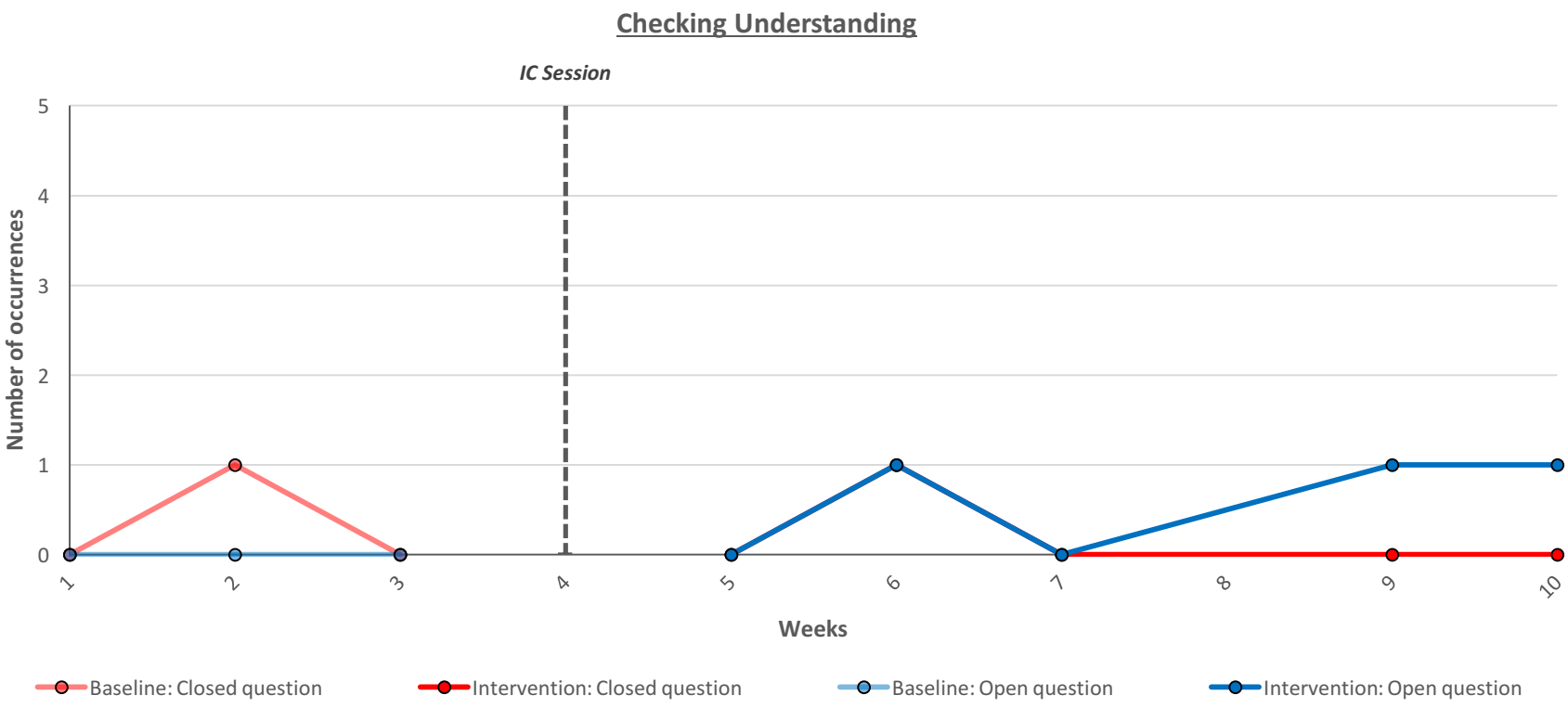


Table 4-8: *A summary of the visual analysis of Sarah's strategies to check understanding.*

	Strategies to check understanding	Visual analysis
Level	Closed questions	The mean decreased very slightly between the baseline (0.33) and intervention phase (0.2).
	Open questions	There was a slight increase in mean from the baseline (0) to the intervention (0.6) phase.
Trend	Closed questions	The data indicated no trend at baseline and slight negative trend (slope=-0.08) at intervention
	Open questions	The data indicated no trend at baseline and slight positive trend at intervention (slope=0.16).
Variability	Closed questions	The data point's range was 1 (SD: 0.58) in the baseline and intervention phases.
	Open questions	The data point's range was 0 (SD: 0) at baseline; 1 (SD: 0.52) at intervention.
Overlap	Closed questions	There was a complete overlap between the intervention and baseline phase data.
	Open questions	40% of the data points in the intervention phase overlapped with all baseline data.

4.7.5.1 Sarah's strategies to check understanding: summary

For both behaviours, a stable baseline was suggested by the small variability and no trend in data points. This strengthens the ability to make comparisons between the phases. With regards to the use of 'closed questions,' the average use of the strategy decreased very slightly following the intervention (by 0.13) limiting the suggestion of an experimental effect, also suggested by the large overlap between phases (100%). With regards to the use of 'open questions,' there was a small increase in the average use of the strategy (by 0.6), limiting the suggestion of an experimental effect.

4.7.6 Analysis of feedback strategies

Graph 4-9: A graph showing the observed use of the feedback strategies by Sarah with Tom across the baseline and intervention phases.

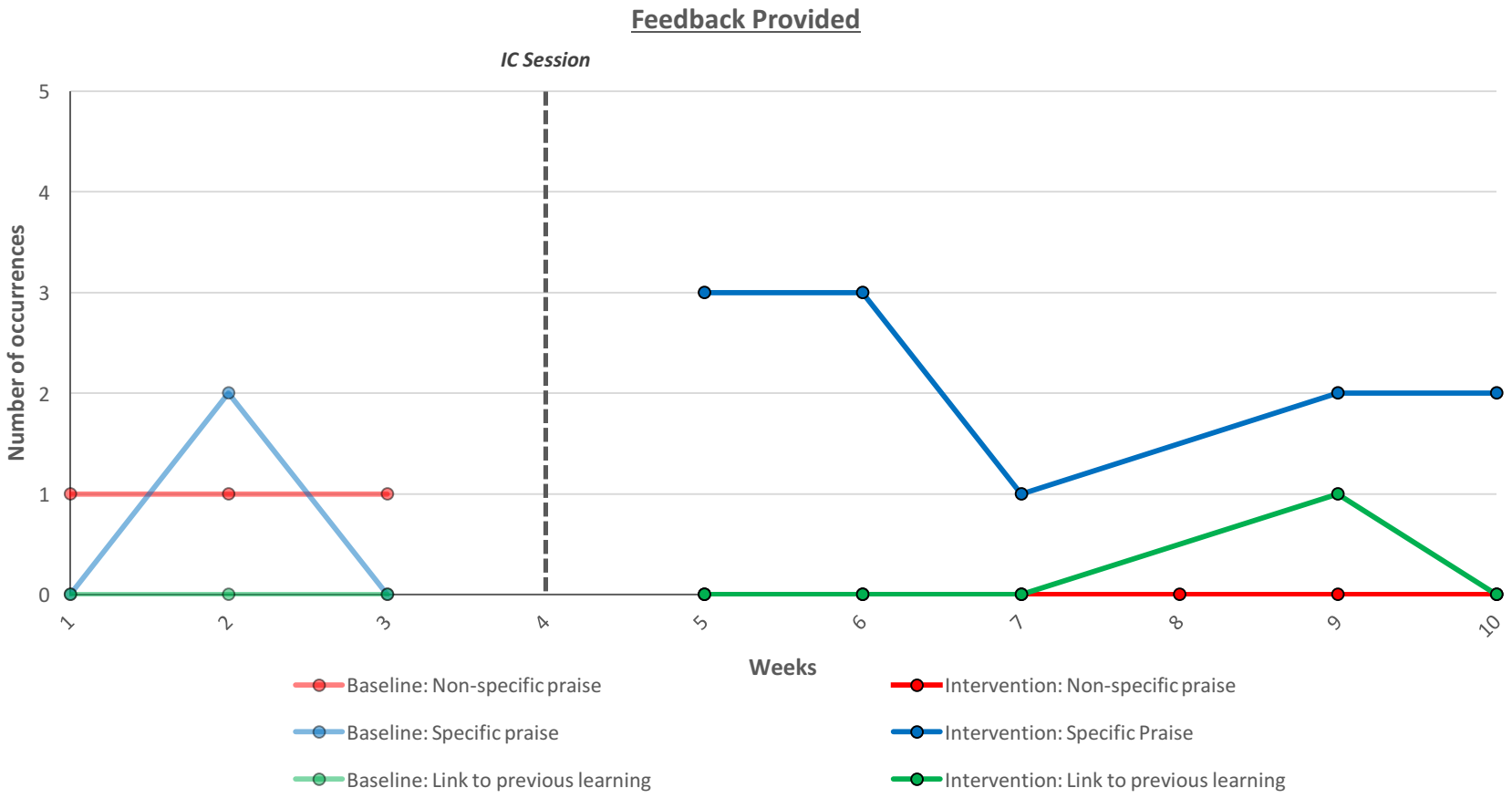


Table 4-9: *A summary of the visual analysis of Sarah's feedback strategies.*

	Feedback strategies	Visual analysis
Level	Non-specific praise	The mean decreased between baseline (1) and intervention (0).
	Specific praise	The mean increased between baseline (0.67) and intervention (2.2).
	Links to previous learning	The mean slightly increased between baseline (0) and intervention (0.2).
Trend	Non-specific praise	The graphical data indicated no trend in both phases.
	Specific praise	The graphical data indicated no trend at baseline phase and a slightly negative trend (slope=-0.2) at intervention.
	Links to previous learning	The data presents no trend at baseline and a slightly positive trend at intervention (slope=0.09).
Variability	Non-specific praise	The data point's range was 0 (SD: 0) at baseline; 0 (SD:0) at intervention.
	Specific praise	The data point's range was 2 (SD: 1.15) at baseline; 2 (SD: 0.75) at intervention.
	Links to previous learning	The data point's range was 0 (SD: 0) at baseline; 1 (SD: 0.52) at intervention.
Overlap	Non-specific praise	There was no overlap of data points between the phases.
	Specific praise	60% of the intervention phase data points overlapped with 33.3% of the baseline data points.
	Links to previous learning	80% of the intervention phase points overlapped with all baseline phase data points.

4.7.6.1 Sarah's feedback strategies: Summary

For all feedback strategies, a stable baseline was suggested by the small variability and no trend in data points. This strengthens the ability to make comparisons in the level and trend between phases.

There appeared to be no occurrences of *non-specific praise*, following the treatment (the average declined from 1 to 0), suggesting an experimental impact of IC, strengthened further by the zero overlap in data points between phases.

There were small increases in the average observed use *specific praise* (by 1.53) and *links to previous learning* (by 0.2) and small variability between the intervention phase data points (range=2 and 1, respectively). However, the minimal change and large overlap in data points between phases (60% and 80% respectively), limits the suggestion of an experimental effect on the use of either of these strategies.

4.7.7 Analysis of impact of IC with TAs on the targeted learning behaviours of supported students

Graph 4-10: A graph showing the number of letters written clearly by Tom.

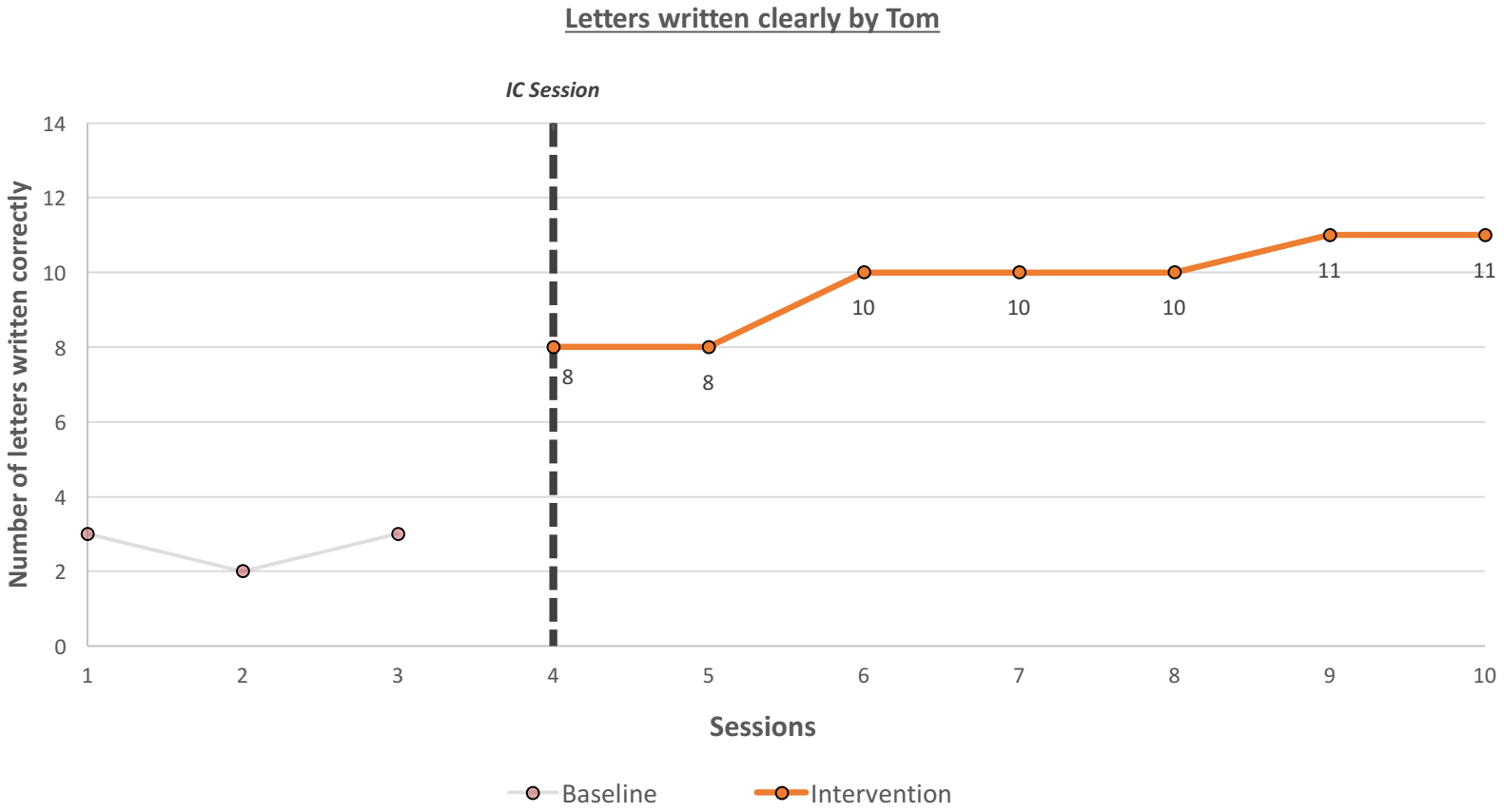


Table 4-10: *A table summarising the visual analysis of Tom's outcomes.*

	Visual analysis of data following the IC session
Responses	The first assessment of Tom's writing following the IC session indicated that Tom wrote 8 letters clearly; the final measure indicated Tom wrote 11 letters clearly.
Trend	The data presents a positive trend (slope=0.54).
Variability	The data point's range was 3 (SD: 1.25).

See Appendix xxvi for additional graphs depicting the above calculations.

4.7.7.1 Tom's outcomes: summary

The outcomes indicated a positive trend amongst the data (slope=0.54) and an increase in the number of letters (from 8 to 11) written correctly by Tom across the time-series, which suggests that Tom's writing improved over time following the IC session. This claim is supported by the small variability between the data points (range=3), which indicates stability.

4.7.8 TME outcomes

The outcomes from the TME suggested that, with regards to her own practice, Sarah believed that she had made progress: for her first target, an 'expected progress' rating was indicated; for her second target, a 'better than expected' rating was awarded. With regards to Tom's outcomes, Sarah believed that better than expected progress was made as a result of the intervention (see Appendix xxxiv for full record).

4.7.9 Interview outcomes

Sarah shared that the opportunity to reflect was most useful for her practice. With regards to the student's outcomes, Sarah commented that she felt the consultation session was most useful, especially being asked about any exceptions of the concern. Sarah stated that nothing was unhelpful or could have been changed but that Tom's level of absence made it difficult to maintain any changes.

4.8 Data analysis: Caroline and Daisy

4.8.1 TA and Student profile

Daisy is a Year 1 student, aged 5 years old (at the start of involvement). Caroline is deployed to provide pedagogical support within Daisy's class two days a week. Caroline particularly supports a group of six lower-attaining students (including Daisy) by providing them with additional instruction, differentiated tasks and individual support if required.

4.8.2 Targets identified

Caroline identified the following target for her practice:

1) For Caroline to provide Daisy with opportunities to work independently by encouraging her to self-correct any errors (i.e. if Daisy answers a question incorrectly), asking her open-questions to introduce tasks so that she constructs strategies and to provide Daisy with specific feedback around her success regarding how much time she may have worked independently within previous lessons.

Caroline set the following target for Daisy:

1) For Daisy to work independently during her numeracy lessons

Following the IC session, the amount of time worked independently by Daisy (during which she does not seek or receive support) within her numeracy lessons was measured on a weekly basis, to assess the impact of IC on Daisy's learning target. The indicative 'baseline' was based upon Caroline's retrospective account of how long Daisy would work independently.

For the full consultation record, see Appendix xxvii; for additional graphs around Caroline's practice see Appendix xxviii.

4.8.3 Analysis of strategies to introduce tasks

Graph 4-11: A graph showing the number of observed strategies used by Caroline to introduce tasks to Daisy across the baseline and intervention phases.

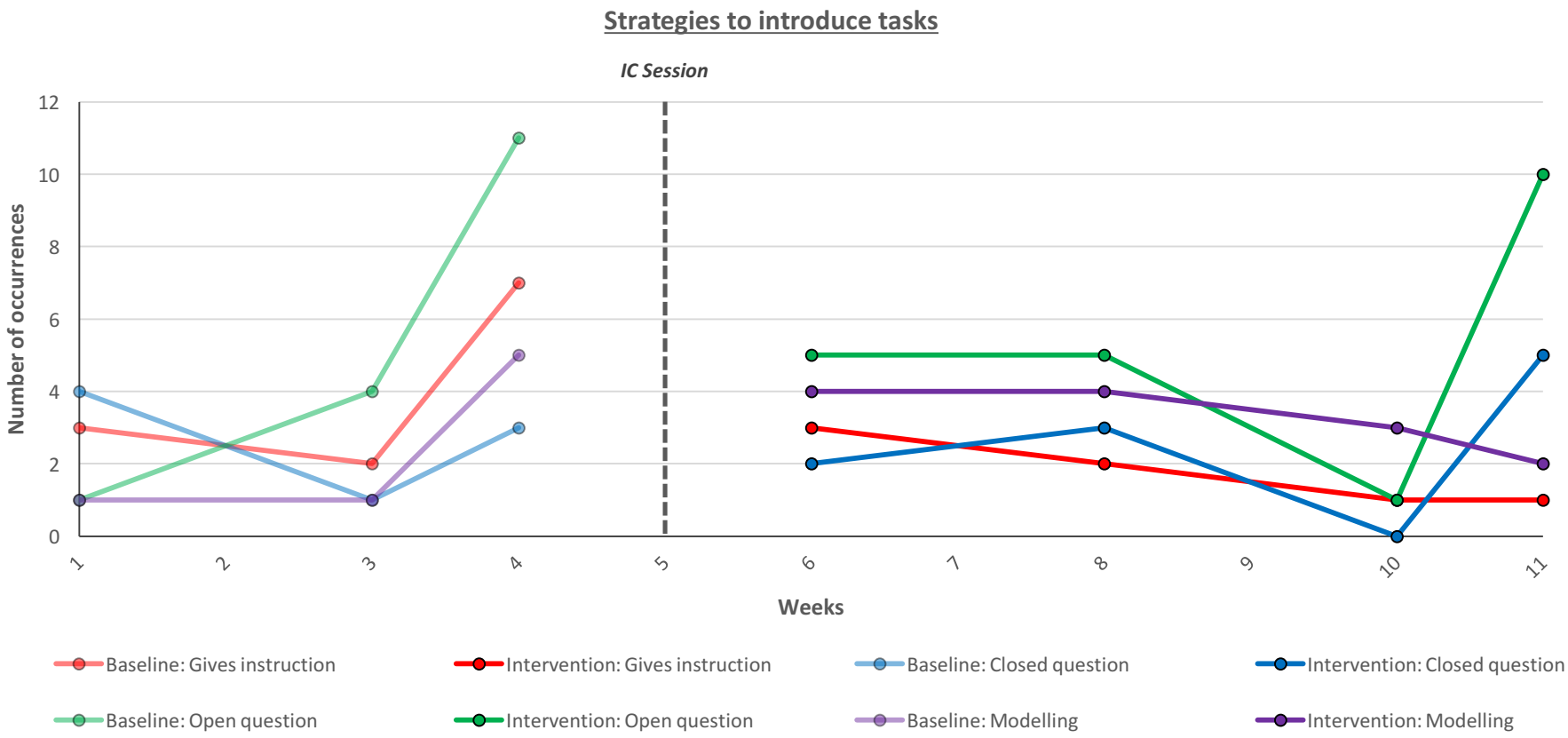


Table 4-11: *A summary of the visual analysis of Caroline's strategies to introduce tasks.*

	Instructional strategies	**Visual analysis**
Level	Gives instruction	The mean decreased from baseline (4) to intervention (1.75).
	Closed questions	The mean slightly decreased between baseline (2.67) and intervention (2.5).
	Open questions	The mean slightly decreased between baseline (5.33) and intervention (5.25).
	Modelling	The mean increased from baseline (2.33) to intervention (3.25).
Trend	Gives instruction	A positive trend at baseline (slope=1.07) and negative trend at intervention (slope=-0.42) was evident.
	Closed questions	A negative trend at baseline (slope=-0.5) and positive trend at intervention (slope=0.23) was evident.
	Open questions	A stronger positive trend at baseline (slope=3.07) than intervention (slope=0.42) is evident.
	Modelling	A positive trend at baseline (slope=1.14) and negative trend at intervention (slope=-0.39) is evident.
Variability	Gives instruction	The data point's range was 5 (SD: 2.65) at baseline; 2 (SD: 0.96) at intervention.
	Closed questions	The data point's range was 3 (SD: 1.53) at baseline; 5 (SD: 2.08) at intervention.
	Open questions	The data point's range was 10 (SD: 5.13) at baseline; 9 (SD: 3.69) at intervention.
	Modelling	The data point's range was 4 (SD:2.31) at baseline; 2 (SD:0.96) at intervention.
Overlap	Gives instruction	50% of the intervention phase data points overlapped with two (66.6%) of the baseline data points.
	Closed questions	75% of the data points in the intervention phase overlapped with all of the baseline data points.
	Open questions	75% of the data points in the intervention phase overlapped with all of the baseline data points.
	Modelling	All intervention phase data overlapped with 66.6% of the baseline phase data.
Anomalies: Week 4 and 11 a new mathematical topic was introduced, possibly explaining the rise in all instructional strategies observed.		

4.8.3.1 Caroline's strategies to introduce tasks: summary

The large variability between data-points at baseline for the strategies *gives instruction, open questions and modelling* (range=5, 10 and 4 respectively) suggests instability and unreliability of the data, limiting the ability to make any comparisons between the phases. The variability between baseline data-points was slightly less for the use of *closed questions* (range=3), however the slight decrease in average use of the strategy after the treatment (by 0.17) and large variability between the intervention phase data-points (range=5) limits any suggestion of an experimental effect on this behaviour.

4.8.4 Analysis of repair strategies

Graph 4-12: A graph showing the observed use of repair strategies used by Caroline with Daisy across the baseline and intervention phases.

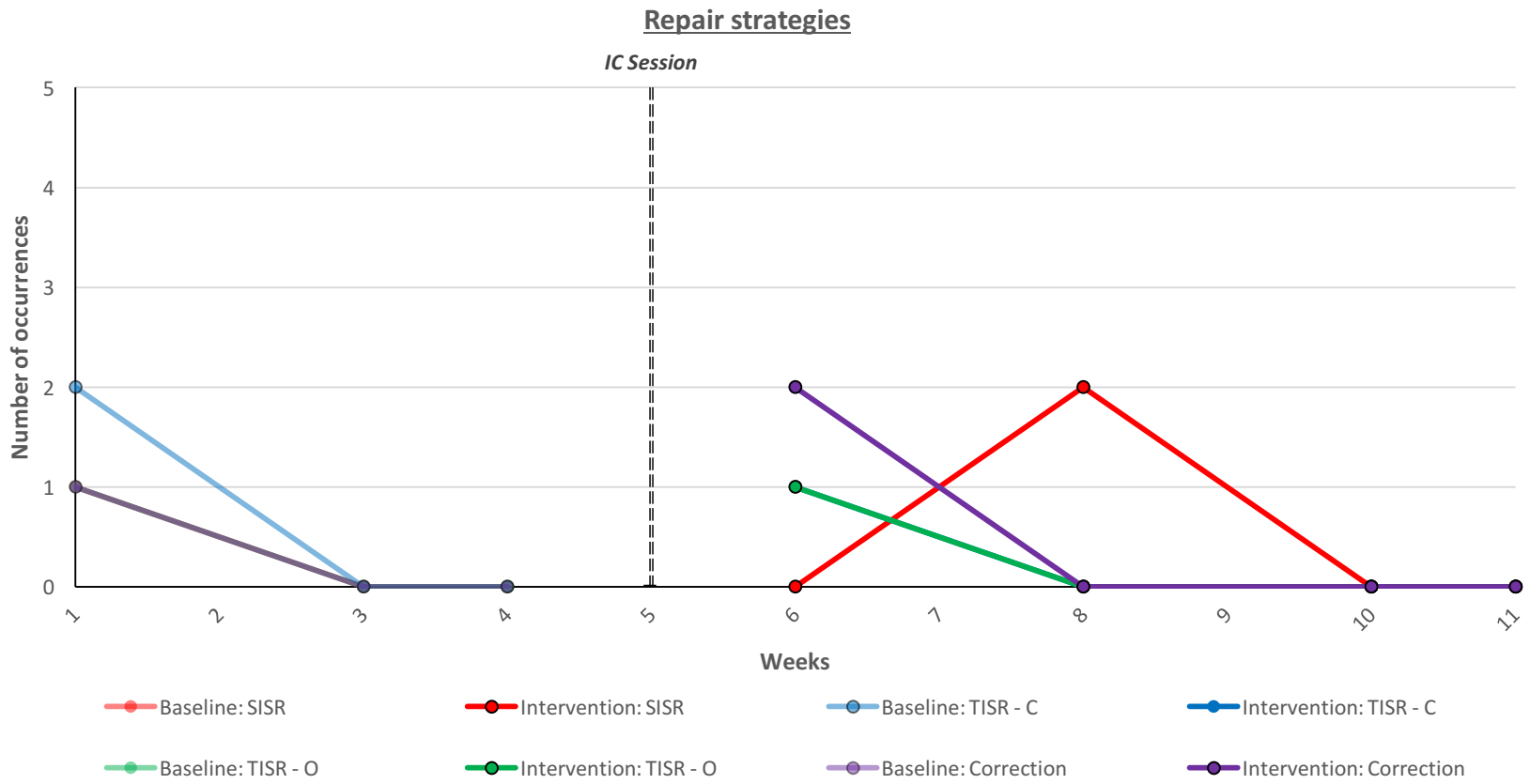


Table 4-12: *A summary of the visual analysis of Caroline's repair strategies.*

	Repair strategies	**Visual analysis**
Level	SISR	The mean slightly increased between the baseline (0.33) and intervention (0.5) phase.
	TISR- C	The mean decreased slightly between the baseline (0.67) and intervention (0.25) phase.
	TISR- O	The mean decreased slightly from the baseline (0.33) to the intervention (0.25).
	Correction	The mean slightly increased from the baseline (0.33) to the intervention phase (0.5).
Trend	SISR	A negative trend at both baseline (slope=-0.36) and intervention (slope=-0.29) was evident.
	TISR- C	A negative at baseline (slope=-0.71) and intervention (slope=-0.19) was evident.
	TISR- O	A negative trend at both baseline (slope=-0.36) and intervention (slope=-0.19) was evident.
	Correction	A similar negative trend at both baseline (slope=-0.36) and intervention (slope=-0.38) was evident.
Variability	SISR	The data point's range was 1 (SD:0.58) at baseline; 2 (SD: 0.96) at intervention.
	TISR- C	The data point's range was 2 (SD: 1.15) at baseline; 1 (SD: 0.5) at intervention.
	TISR- O	The data point's range was 1 (SD: 0.58) at baseline; 1 (SD: 0.5) at intervention.
	Correction	The data point's range was 1 (SD: 0.58) at baseline; 2 (SD: 1) at intervention.
Overlap	SISR	75% of the intervention phase data overlapped with all baseline data.
	TISR- C	All intervention phase data points overlapped with 66.6% of the baseline phase data points.
	TISR- O	75% of the intervention phase points overlapped with all baseline phase data points.
	Correction	75% of the intervention phase points overlapped with all baseline phase data points.

4.8.4.1 Caroline's repair strategies: summary

Stability amongst the baseline phase data is suggested by the small variability between data points for each of the behaviours, strengthening the ability to compare the data before and following the treatment. However, the very small change in average observed use of each of the behaviours (>0.42) indicated no experimental impact of IC on any of the observed use of repair strategies by Caroline, supported further by the large overlap of data-points between the phases (ranging from 75-100%).

4.8.5 Analysis of strategies to check understanding

Graph 4-13: A graph showing the observed use of the strategies used by Caroline to check Daisy's understanding across the baseline and intervention phases.

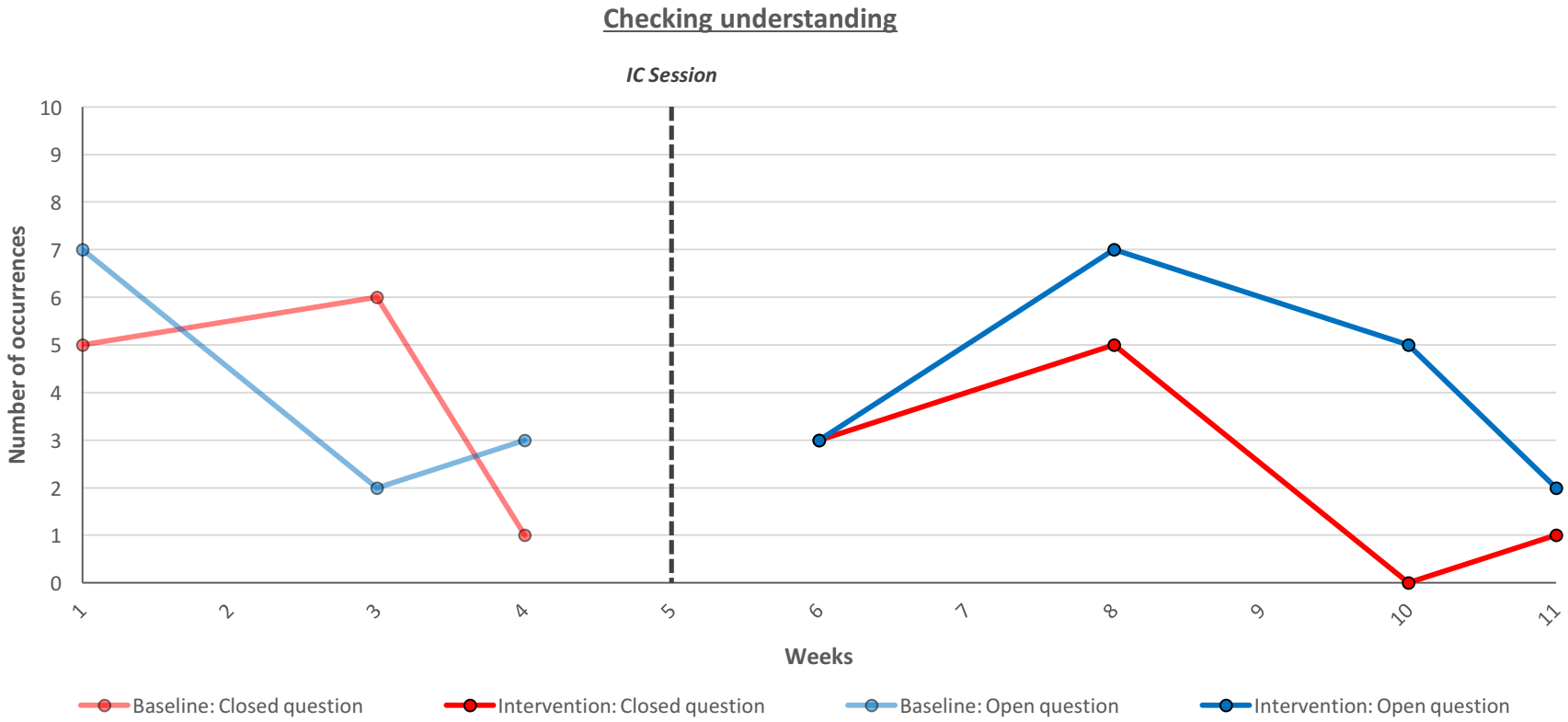


Table 4-13: *A summary of the visual analysis of Caroline's strategies to check understanding.*

	Strategies used to check understanding	**Visual analysis**
Level	Closed questions	The mean decreased between the baseline (4) and intervention phase (2.25).
	Open questions	There was a slight increase in mean between baseline (4) and intervention (4.25).
Trend	Closed questions	A negative trend at both baseline (slope=-1.07) and intervention (slope=-0.66) was evident.
	Open questions	A negative trend at both baseline (slope=-1.5) and intervention (slope=-0.19) was evident.
Variability	Closed questions	The data point's range was 5 (SD: 2.65) at baseline; 5 (SD: 2.22) at intervention.
	Open questions	The data point's range was 5 (SD: 2.65) at baseline; 5 (SD: 2.22) at intervention.
Overlap	Closed questions	50% of intervention phase data points overlapped with all baseline data points.
	Open questions	There was a 100% overlap between data points in both phases.

4.8.5.1 Caroline's strategies to check understanding: summary

An unstable baseline for both behaviours was suggested by the large variability between data points (range=5) for each of the behaviours, limiting the ability to make comparisons of the data before and after the treatment.

4.8.6 Analysis of feedback strategies

Graph 4-14: A graph showing the observed use of feedback strategies by Caroline with Daisy across the baseline and intervention phases.

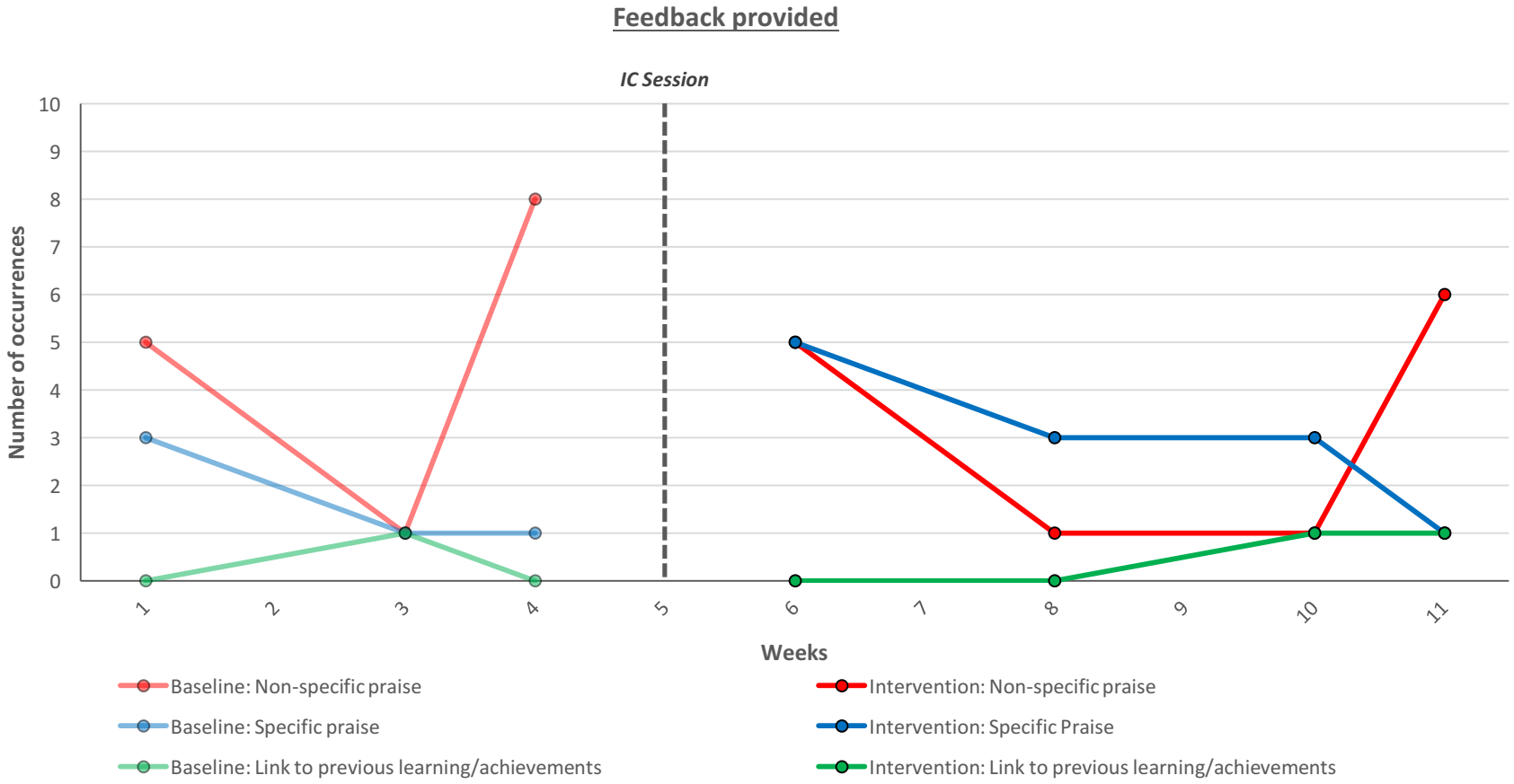


Table 4-14: *A summary of the visual analysis of Caroline's feedback strategies.*

	Feedback strategies	Visual analysis
Level	Non-specific praise	The mean decreased slightly between baseline (4.67) and intervention (3.25).
	Specific praise	The mean increased between baseline (1.67) and intervention (3).
	Links to previous learning	The mean slightly increased from the baseline (0.33) to the intervention (0.5).
Trend	Non-specific praise	A small positive trend at both baseline (trend=0.57) and intervention (slope= 0.02) was evident.
	Specific praise	A negative trend at both baseline (slope=-0.71) and intervention (slope=-0.68) was evident.
	Links to previous learning	A slightly positive trend at both baseline (slope=0.07) and intervention (slope=0.24) was evident.
Variability	Non-specific praise	The data point's range was 7 (SD: 3.51) at baseline; 5 (SD: 2.63) at intervention.
	Specific praise	The data point's range was 2 (SD: 1.15) at baseline; 4 (SD: 1.63) at intervention.
	Links to previous learning	The data point's range was 1 (SD: 0.58) at baseline; 1 (SD: 0.57) at intervention.
Overlap	Non-specific praise	All intervention phase data overlapped with 66.66% of baseline data.
	Specific praise	75% of intervention phase data overlapped with all baseline data.
	Links to previous learning	There was a 100% overlap between intervention and baseline data.

4.8.6.1 Caroline's feedback strategies: summary

The large variability between the baseline phase data-points for the strategy *non-specific praise* suggests instability, limiting the ability to make comparisons between the phases. This was not evident for the remaining strategies, however the small increase in average observed use of both strategies following the treatment (by 1.33 for *specific praise;* 0.17 for *links to previous learning*) suggests no experimental impact, suggested further by the large overlap in data-points between phases (75% and 100% respectively).

4.8.7 Analysis of impact of IC with TAs on the targeted learning behaviours of supported students

Graph 4-15: A graph showing the amount of time in minutes worked independently by Daisy within her numeracy sessions with Caroline.

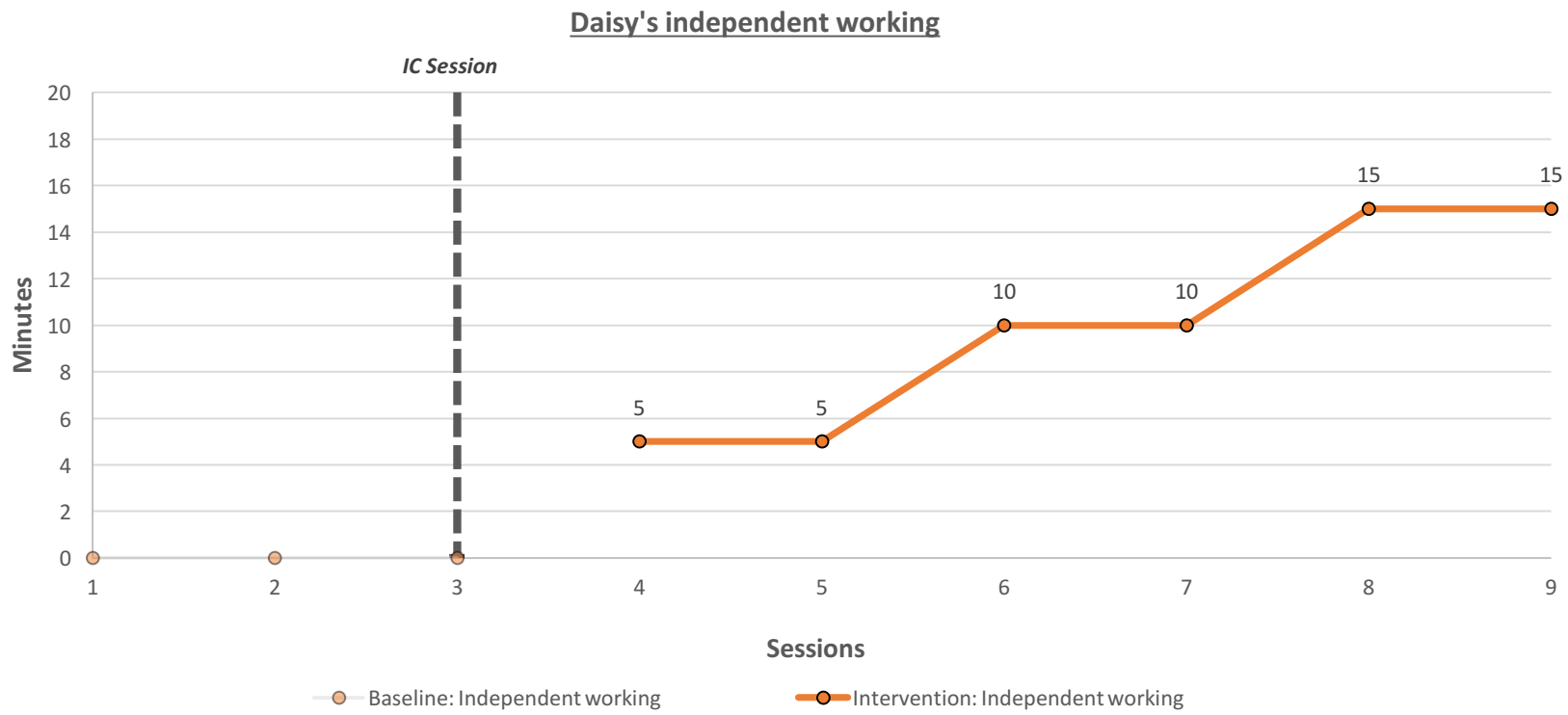


Table 4-15: *A table summarising the visual analysis of Daisy's outcomes.*

	Visual analysis of data following the IC session
Outcomes	Following the IC session, the first measure taken indicated that Daisy worked for 5 minutes independently; the final measure indicated that Daisy worked for 15 minutes independently.
Trend	A positive trend (slope=2.29) was evident.
Variability	The data point's range was 10 (SD: 4.47).

For additional graphs depicting the above calculations, see Appendix xxviii.

4.8.7.1 Daisy's outcomes: Summary

The data indicated that, following the IC session, the amount of time worked independently by Daisy increased by 10 minutes, supported further by the strong positive trend (slope=2.29), suggesting an improvement over time. The large variability between data points (range=10) may be due to the large increase over time.

4.8.8 TME outcomes

Caroline stated that, for both her target and Daisy's target, better than expected progress had been made (see Appendix xxxv for full outcomes).

4.8.9 Interview outcomes

With regards to her own practice, Caroline shared that being asked particular questions during the IC session that encouraged her to reflect on her own practice was most helpful. Caroline felt that nothing was least helpful and nothing would be done differently. With regards to the student's outcomes, Caroline shared that the most useful component of involvement was having the opportunity to step back and reflect on the situation during the IC session, as well as tools that provided Daisy with immediate, visual feedback, including the and logarithmic graph and sand-timer.

4.9 Data analysis: Sharon and Lloyd

4.9.1 TA and student profile

Lloyd, aged 9 years old at the start of involvement, was described as having literacy difficulties and being three years behind his peers. Lloyd receives individual support from Sharon twice-weekly for fifteen minutes, during which they complete the 'Toe-by-Toe,' literacy intervention, described by Sharon as being a short reading exercise.

4.9.2 Targets identified

Sharon identified the following targets for her practice:

1) For Sharon to provide Lloyd with specific instruction and modelling if required at the start of the session to help him to work more independently
2) For Sharon to provide Lloyd with scaffolded support when he faces a difficulty, for example by modelling and asking him open questions after providing him with time to self-correct.
3) For Sharon to provide Lloyd with specific feedback and praise when he has succeeded (as opposed to more general praise), for example by highlighting what he has done particularly well, as well as asking him to explain any correct choices he may have made and sharing the progress he has made over time

Sharon identified the following targets for Lloyd:

1) For Lloyd to develop his reading ability, particular through the Toe-By-Toe intervention, which is currently targeting his ability to correctly read a 40 CVCC/CCVC words and pseudo-words.

Lloyd's progress against the target was assessed for the purpose of the student-level observational data, by measuring the number of words read correctly and without support during the sessions, which took place twice weekly. The indicative 'baseline' was retrospectively collected, based upon written records from Lloyd's previous Toe-by-Toe sessions.

For the full consultation record, see Appendix xxx; for additional graphs depicting calculations around Sharon's practice see Appendix xxxi.

4.9.3 Analysis of strategies to introduce tasks

Graph 4-16: A graph showing the number of observed strategies used by Sharon to introduce tasks to Lloyd across the baseline and intervention phases.

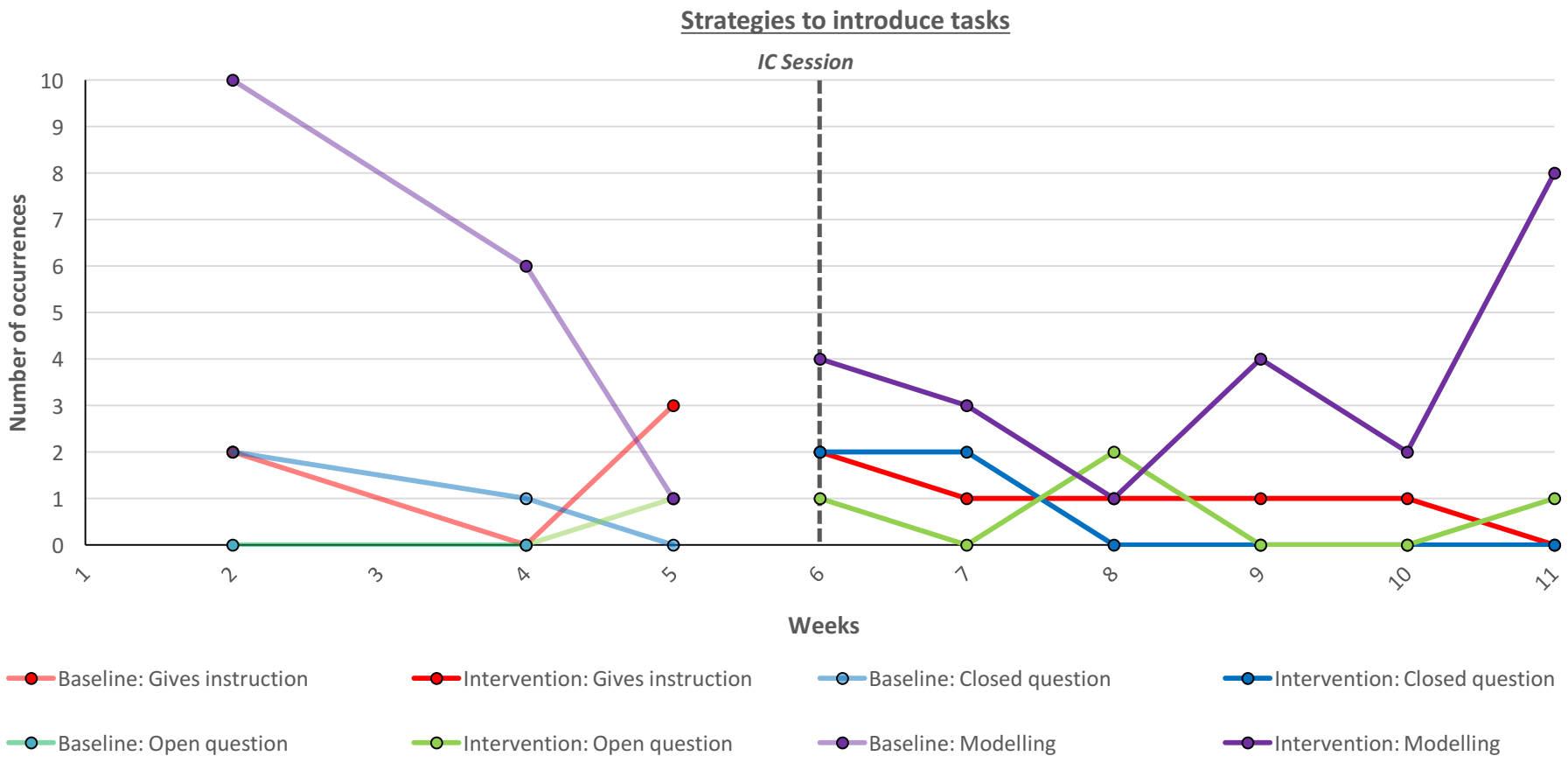


Table 4-16: *A summary of the visual analysis of Sharon's strategies to introduce tasks.*

	Instructional strategies	**Visual analysis**
Level	Gives instruction	The mean decreased slightly between baseline (1.67) and intervention (1).
	Closed questions	The mean decreased slightly between baseline (1) and intervention (0.67).
	Open questions	The mean increased slightly between baseline (0.33) and intervention (0.67).
	Modelling	The mean decreased between baseline (5.67) and intervention (3.67).
Trend	Gives instruction	A positive trend at baseline (slope=0.14) and negative trend at intervention (slope=-0.29) was evident.
	Closed questions	A negative trend at baseline (slope=-0.64) and intervention (slope=-0.46) was evident.
	Open questions	A positive at baseline (slope=0.29) and small negative trend at intervention phase (slope=-0.06) is evident.
	Modelling	A negative trend at baseline phase (slope=-2.89) and positive trend at intervention (slope=0.57) is evident.
Variability	Gives instruction	The data point's range was 3 (SD: 1.53) at baseline; 2 (SD:0.63) at intervention.
	Closed questions	The data point's range was 2(SD:1) at baseline; 2 (SD: 1.03) at intervention.
	Open questions	The data point's range was 1 (SD: 0.58) at baseline; 2 (SD: 0.82) at intervention.
	Modelling	The data point's range was 9 (SD: 4.51) at baseline; 7 (SD: 2.42) at intervention.
Overlap	Gives instruction	100% of the intervention data overlapped with 66.66% of the baseline phase data.
	Closed questions	All intervention points overlapped with all baseline points.
	Open questions	83.33% of intervention points overlapped with all baseline points.
	Modelling	All data points in the intervention phase overlapped with 66.66% of the baseline data points.

4.9.3.1 Sharon's strategies to introduce tasks: summary

With regards to the baseline data for the observed use of *modelling*, the large negative slope (-2.89) suggests that the use of this strategy was declining regardless of the treatment, limiting the ability to draw comparisons between the phases.

Stability was assumed for the remaining three strategies *gives instruction, closed questions* and *open questions,* based upon the small variability between data points (range= 3, 2 and 1 respectively) and small trend for each behaviour (slope= 0.14, -0.64 and 0.29 respectively). Comparisons across phases indicated that the average use of each of these strategies changed very little following the treatment (decrease of 0.67, 0.33 and increase of 0.34 respectively), limiting any suggestion of an experimental effect of the treatment on the use of these strategies. This is suggested further by the large overlap of data between phases (ranging from 66.66-100% for all behaviours).

4.9.4 Analysis of repair strategies

Graph 4-17: A graph showing the observed use of repair strategies used by Sharon with Lloyd across the baseline and intervention phases.

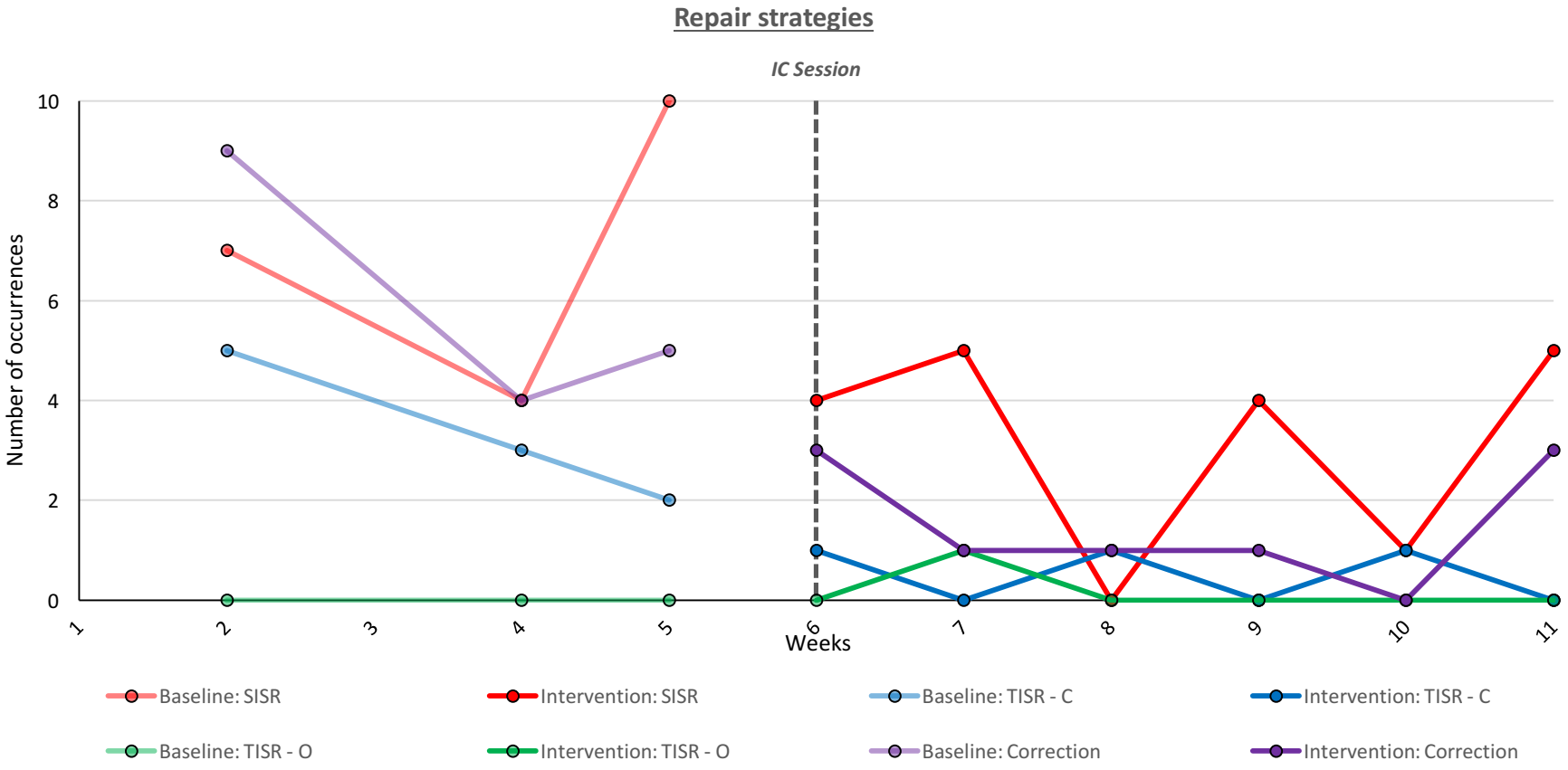


Table 4-17: *A summary of the visual analysis of Sharon's repair strategies.*

	Repair strategies	Visual analysis
Level	SISR	The mean decreased between baseline (7) and intervention (3.17).
	TISR- C	There mean decreased between baseline (3.33) and intervention (0.5).
	TISR- O	The mean increased very slightly between baseline (0) and intervention (0.17).
	Correction	The mean decreased between baseline (6) and intervention (1.5).
Trend	SISR	A positive trend at baseline (slope=0.64) and small negative trend at intervention (slope=-0.09) was evident.
	TISR- C	A stronger negative trend at baseline (slope=-1) than intervention (slope=-0.08) was evident.
	TISR- O	No trend at baseline and small negative trend at intervention (slope=-0.09) was evident.
	Correction	A stronger negative trend at baseline (slope=-1.5) than intervention (slope=-0.09) was evident.
Variability	SISR	The data point's range was 6 (SD:3) at baseline; 5 (SD: 2.14) at intervention.
	TISR- C	The data point's range was 3 (SD: 1.52) at baseline; 1 (SD: 0.55) at intervention.
	TISR- O	The data point's range was 0 (SD:0) at baseline; 1 (SD: 0.41) at intervention.
	Correction	The data point's range was 5 (SD: 2.65) at baseline; 3 (SD: 1.22) at intervention.
Overlap	SISR	33.3% (2 of 6) of data points in the intervention phase overlapped with one baseline data point (33.3%).
	TISR- C	There was no overlap between the data points in the baseline phase and the intervention phase
	TISR- O	83.36% (5 of 6) of the intervention phase points overlapped with all baseline phase data.
	Correction	There was no overlap between the data points in the baseline phase and with intervention phase.

4.9.4.1 Sharon's repair strategies: summary

With regards to the baseline data, large variability between data points for the strategies *SISR* and *corrections* (range=6 and 5 respectively) suggests instability and unreliability of the data, limiting the ability to draw comparisons between phases. With regards to *TISR-C*, the negative trend amongst the baseline data-points (slope=-1) suggested that the use of the strategy was declining, regardless of the treatment, therefore limiting the ability the ascertain an experimental impact.

The baseline data for the repair strategies *TISR-O,* appears to be more stable, based upon the small variability between the data-points (range=0). However, the average use of the strategy appeared to increase slightly following the IC session (by 0.17), limiting any suggestion of an experimental impact on the use of the strategy. This is suggested further by the large overlap of data between phases (83.36%).

4.9.5 Analysis of strategies to check understanding

Graph 4-18: A graph showing the observed use of strategies by Sharon to check Lloyd's understanding across the baseline and intervention phases.

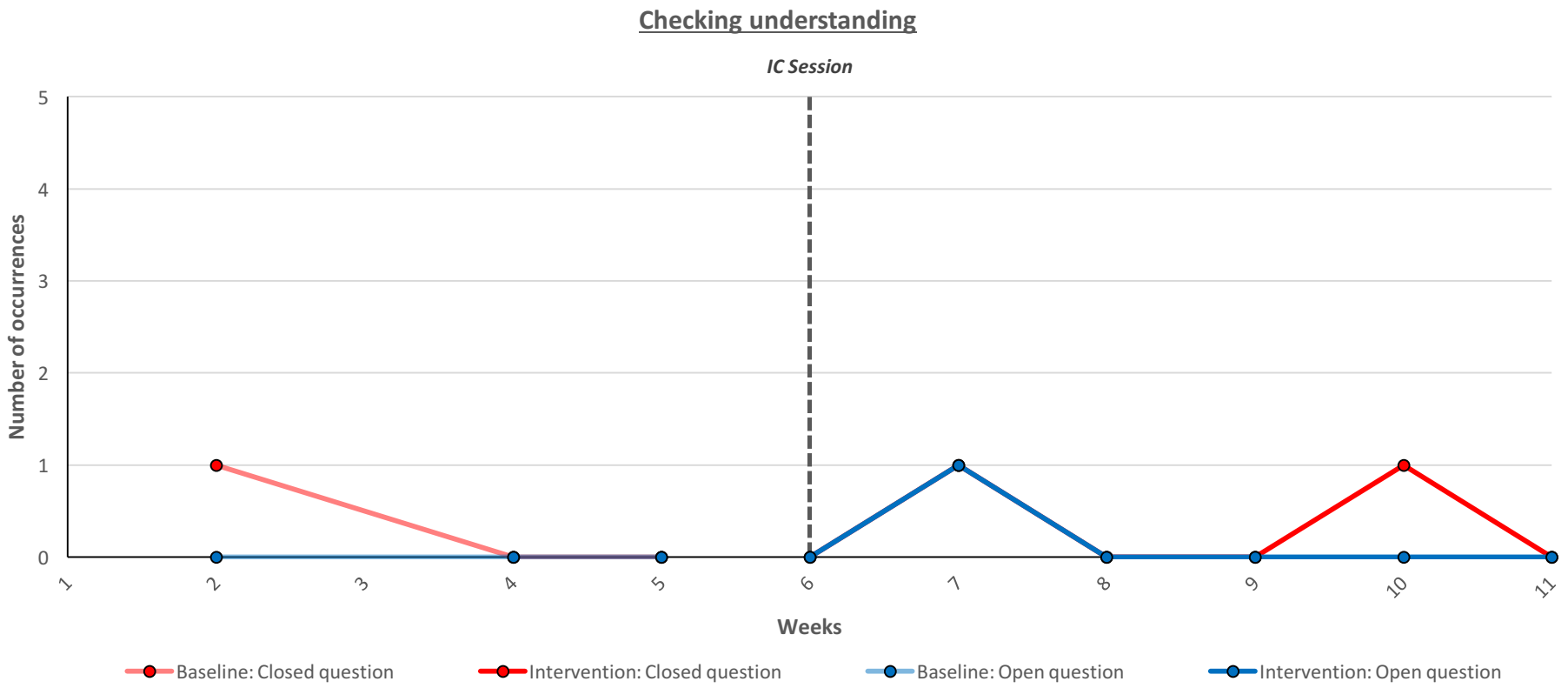


Table 4-18: *A summary of the visual analysis of Sharon's strategies to check understanding.*

	Strategies to check understanding	**Visual analysis**
Level	Closed questions	There was no change in mean between the baseline and intervention phases (0.33).
	Open questions	There was a slight increase in mean between baseline (0) to intervention (0.17).
Trend	Closed questions	A negative trend at baseline (slope=-0.36) and no trend at intervention was evident.
	Open questions	No trend at baseline and small negative trend at intervention (slope=-0.09) was evident.
Variability	Closed questions	The data point's range was 1 (SD: 0.58) at baseline; 1 (SD: 0.52) at intervention.
	Open questions	The data point's range was 0 (SD:0) at baseline; the 1 (SD: 0.41) at intervention.
Overlap	Closed questions	There was a 100% overlap between intervention and baseline data points.
	Open questions	83.3% of the data points in the intervention phase overlapped with all baseline data.

4.9.5.1 Sharon's strategies to check understanding: summary

The baseline data collected for both the use of *closed questions* and *open questions* appeared to be predictable, based upon the minimal variability between data points (range=1 and 0 respectively), although the data's trend suggested that use of *closed questions* declined over time without treatment (slope=-0.36), limiting the ability to draw comparisons between phases. The average use of *open questions* appeared to increase very slightly after the IC session (by 0.16). There was no change in the average use of *closed questions*. The small increase and the large overlap of data between phases (83.3-100%) however limits any suggestion of an experimental effect of IC on Sharon's use of strategies to check understanding.

4.9.6 Analysis of feedback strategies

Graph 4-19: A graph showing the observed use of feedback strategies by Sharon with Lloyd across the baseline and intervention phases.

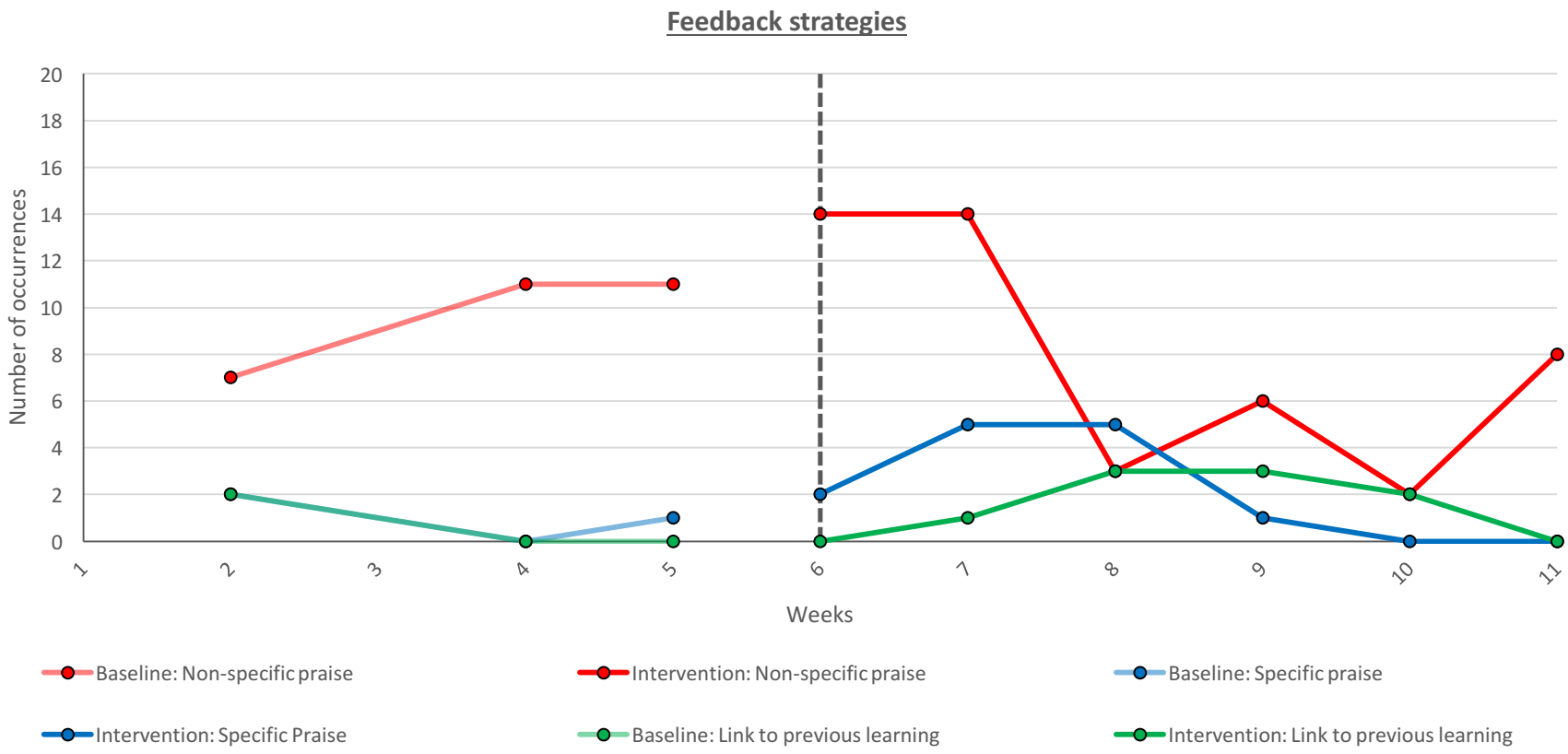


Table 4-19: *A summary of the visual analysis of Sharon's feedback strategies.*

	Feedback strategies	Visual analysis
Level	Non-specific praise	The mean decreased between baseline (9.67) and intervention (7.83).
	Specific praise	The mean increased slightly between baseline (1) and intervention (2.17).
	Link to previous learning	The mean slightly increased between baseline (0.67) and intervention (1.5).
Trend	Non-specific praise	A positive trend at baseline (slope=1.43) and negative trend at intervention (slope=-1.8) was evident.
	Specific praise	A negative trend at both baseline (slope=-0.43) and intervention (slope=-0.83) was evident.
	Links to previous learning	A negative trend baseline (slope=-0.71) and small positive trend at intervention (slope=0.09) was evident.
Variability	Non-specific praise	The data point's range was 4 (SD: 2.31) at baseline; 12 (SD: 5.23) at intervention.
	Specific praise	The data point's range was 2 (SD:1) at baseline; 5 (SD:2.31) at intervention.
	Links to previous learning	The data point's range was 2 (SD: 1.15) at baseline; 3 (SD: 1.38) at intervention.
Overlap	Non-specific praise	66.6% (4 of 6) of intervention points overlapped with all baseline points.
	Specific praise	66.6% (4 of 6) of the intervention phase data points overlapped with all baseline data points.
	Links to previous learning	66.6% (4 of 6) intervention points overlapped with all baseline points.

4.9.6.1 Sharon's feedback strategies: summary

The trend amongst the baseline data points for the strategy *non-specific praise* (1.43) suggests that the use of the strategy increased without any treatment, limiting the ability to draw comparisons between phases.

The baseline data-points for the feedback strategies *specific praise* and *links to previous learning* indicated predictability and stability, based upon the small variability

(range=2 for both strategies) supporting the ability to compare the data between phases.

The average use of both strategies appeared to increase slightly (by 1.17 and 0.83 respectively), limiting the suggestion of experimental impact. The large variability (range=5) between the intervention phase data-points for the use of *specific praise* suggests unpredictability and unreliability of the intervention phase data, limiting the ability to ascertain an experimental effect. The intervention-phase data points for the strategy *links to previous learning* largely overlapped with the baseline-phase data (66.6%) again limiting any suggestion of an experimental effect.

4.9.7 Analysis of impact of IC with TAs on the targeted learning behaviours of supported students

Graph 4-20: A graph showing the number of words out of 35 from the Toe-By-Toe intervention read correctly by Lloyd.

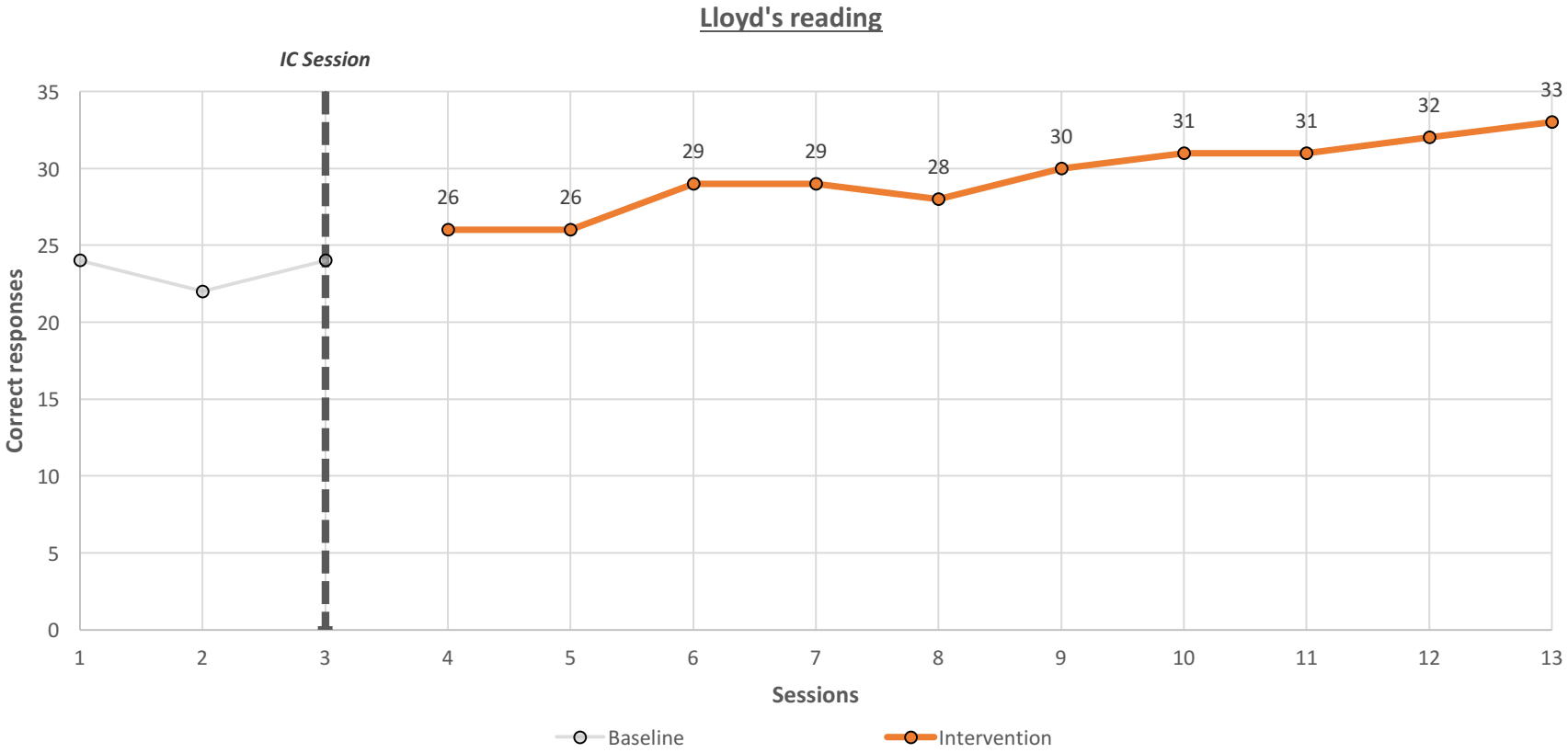


Table 4-20: *A summary of the visual analysis of Lloyd's outcomes.*

	Visual analysis Visual analysis of data following the IC session
Outcomes	Following the IC session, Lloyd read 26 words correctly in the first measure; 33 in the final measure.
Trend	A positive trend (slope=0.75) was evident
Variability	The data point's range was 7 (SD: 2.37).

For additional graphs depicting the above calculations see Appendix xxxii.

4.9.7.1 Lloyd's outcomes: Summary

The correct responses by Lloyd increased between the first and final observational assessment taken after the IC session was delivered to Sharon (from 26 to 33), highlighted also by the positive trend of the data (slope=0.75). The large range between the data points (range=9) is explained by the large difference found between the first and final assessment. Therefore, these outcomes indicate that Lloyd's performance against the target improved over time following the IC session.

4.9.8 TME outcomes

With regards to all of the targets set by Sharon around her practice, the outcomes from the TME data indicated that Sharon believed that she made better than expected progress.

With regards to Lloyd's target, Sharon indicated that, overall, she believed Lloyd had made better than expected progress (see Appendix xxxvi for full outcomes).

4.9.9 Interview outcomes

Sharon shared that to support both her practice and the student's outcomes, the opportunity to reflect on and unpick the situation during the IC session was most useful, in addition to the logarithmic graph which was used to monitor Jacob's outcomes as this provided him with immediate, visual feedback. Sharon shared that nothing was least helpful and that nothing would be changed to support her practice and the student's outcomes.

4.10 Summary of results

4.10.1 RQ 1: Does IC impact the pedagogical strategies associated with TA practice?

The outcomes from the observational data for each participant are summarised in Table 4-21. A classification of either '*strong evidence of effect,' 'moderate evidence of effect'* or *'no evidence of effect'* were provided, in accordance to guidance provided by Kratochwill et al., (2010) (described in section 3.4.4.1). This is followed by a brief description of the outcomes from the observational and evaluative data.

Table 4-21: *Summary of outcomes for each strategy used by each TA, with 'X' indicating that there was insufficient evidence of an experimental effect, and '✓' indicating evidence of an experimental effect.*

	Strategy	Rachel	Sarah	Caroline	Sharon
Instructional strategies to introduce tasks	Gives instructions	X	X	X	X
	Closed questions	X	X	X	X
	Open questions	X	✓	X	X
	Modelling	X	X	X	X
Repair strategies	Corrections	X	X	X	X
	TISR-C	X	X	X	X
	TISR-O	X	X	X	X
	SISR	X	X	X	X
Checking understanding	Closed questions	X	X	X	X
	Open questions	X	X	X	X
Feedback strategies	Non-specific praise	X	✓	X	X
	Specific praise	X	X	X	X
	Links to prior learning	X	X	X	X

4.10.1.1 A) Strategies to introduce tasks

The observational data collected provided evidence of a positive experimental impact of IC on Sarah's use of the instructional strategy *open questions.* The outcomes suggested an increased use of the strategy (by 2.1) and the positive trend of the intervention phase data-points suggested that the use of the strategy increased over time (0.36).

An experimental effect of IC on many of the instructional strategies could not be determined due to the instability amongst the baseline phase data-points, limiting the ability to establish an understanding of the typical application of the strategies, without treatment.

Stable baselines could be determined for some of the strategies, however, analysis of the intervention phase data did not support the suggestion of an experimental effect for a number of reasons, including:

- The small change in Sharon's average use of the strategy, *gives instruction* (by 0.33) and large overlap between phases (66.66%).
- No or small decrease in the use of *closed questions* by Sarah, Caroline and Sharon (no change, decrease by 0.12 and 0.33 respectively).
- Small increase in Rachel and Sharon's average use of *open questions* (by 0.2 and 0.34 respectively).
- Large variability between the intervention phase data points (range=6) for Sarah's use of *modelling.*

As the data presented only one example of an experimental effect, a classification of '*No evidence of effect*' of IC on the TAs' use of instructional strategies to introduce tasks, was determined, in accordance to guidance provided by Kratochwill et al., (2010).

4.10.1.2 B) Repair strategies

An experimental effect of IC on many of the repair strategies could not be determined due to the instability amongst the baseline phase data points, limiting the ability to establish the typical application of the strategies without treatment.

Stable baselines could be determined for some of the repair strategies, however, analysis of the intervention phase data did not support the suggestion of an experimental effect for a number of reasons, including:

- Small change in Caroline and Sarah's average use of *SISR,* and Sharon's average use of *TISR-C* (with changes ranging from 0 to 0.43), limiting any suggestions of an experimental impact.
- Large variability between the intervention phase data points for Rachel and Sarah's observed use of *TISR-O* (range=13 and 8 respectively), indicating instability and unreliability of the data, limiting the ability to ascertain an experimental impact.

Therefore, '*No evidence of effect*' of IC on the TAs use of repair strategies, was determined in accordance to guidance provided by Kratochwill et al., (2010).

4.10.1.3 C) Strategies to check students' understanding

With regards to the participants use of *closed questions* to check understanding, instability between the baseline phase data-points was often evident, limiting the ability to draw comparisons between phases.

Stable baselines were determined on some instances, however, analysis of the intervention phase data did not support the suggestion of an experimental effect for a reasons including:

- The small decrease in Sarah's average use of the strategy *closed questions* (from 0.33 to 0.2) and small increase in Rachel, Sarah and Sharon's average use of *open questions* (by 2.13; 0.6 and 0.16 respectively) limiting the ability to ascertain an experimental effect.
- The negative trend evident in Rachel's intervention phase data for her use of *open questions* to check understanding (slope=-0.9) and large variability between data points (range=7).

Therefore, '*No evidence of effect*' of IC on the TA's use of strategies to check understanding, was determined in accordance to guidance provided by Kratochwill et al., (2010).

4.10.1.4 D) Feedback strategies

With regards to the average use of *non-specific praise,* instability amongst the baseline phase data points largely limited the ability to make comparisons between phases.

This was with the exception of Sarah, in which there was no evidence in the use of the strategy following the intervention (a decline from an average use of 1 at baseline), suggesting an experimental impact.

With regards to the other feedback strategies, stable baselines were determined on some instances, however, analysis of the intervention phase data did not support the suggestion of an experimental effect for a reasons including:

- The small increase in the average use of *specific praise* following the intervention by Sarah, Caroline and Sharon (of 2.2, 1.33 and 1.17 respectively) and small increase in the average use of *links to previous learning* by each of the participants (by no more than 1.53) limiting the suggestion of an experimental effect on this strategy.

As there was only one example of an experimental effect, a classification of '*No evidence of effect*' of IC on the TAs' use of feedback strategies, was determined in accordance to guidance provided by Kratochwill et al., (2010).

4.10.1.5 TME outcomes

The TME data indicated that all TAs believed that *better than expected progress* was made following the IC intervention with the majority of the targets set around their own practice (7 out of 8); Sarah indicated that for one of her targets, *expected progress* had been made.

4.10.1.6 Post-intervention structured interview outcomes

All TAs suggested that they the opportunity to reflect on their practice during the IC session was the most helpful component of the intervention, as well as particular visual tools for supporting their professional practice.

4.10.2 RQ2: Does IC with TAs impact on targeted learning behaviours of students they support?

The observational data indicated that, with the exception of Jacob's outcomes, each of the students made progress over time with their learning target(s) following the delivery of the IC session with the TA.

4.10.2.1 TME outcomes

The TME data indicated that all TAs believed that *better than expected progress* was made following the IC intervention with the learning targets set for the student they were supporting.

4.10.2.2 Post-intervention structured interview outcomes

All TAs suggested that they the opportunity to reflect on the situation around the young person during the IC session was most helpful for supporting the students' outcomes, as well as the application of specific tools such as the logarithmic graph, which was provided to monitor the students' outcomes, as this provided students with visual feedback.

Chapter 5: Discussion

5.1 Introduction to Chapter 5

This chapter aims to examine and discuss the key outcomes from this study. Firstly, the outcomes for each research question (RQ) will be discussed, by addressing each participant in turn. Possible explanations for the outcomes will be explored in light of the theory and research detailed within the Literature Review (Chapter 2). The significance of this study's methodological limitations on the outcomes will then be discussed, including the study's design, measures, procedure and data analysis approaches. This is followed by a reflection upon the implications of this study's research and avenues for future research.

5.2 Key findings

5.2.1 RQ 1: Does Instructional Consultation (IC) impact on the pedagogical strategies associated with Teaching Assistant (TA) practice?

5.2.1.1 Rachel

The observational data did not provide evidence of an experimental effect of IC on any of the observed strategies applied by Rachel. This was largely due to instability amongst the data points, limiting the ability to ascertain whether there was a causal impact of the intervention. It was also due to small changes in the mean use of some strategies following the intervention, including Rachel's use of the strategies *open questions* to introduce tasks and *links to previous learning.*

The outcomes from the TME data indicated that Rachel believed that she had exceeded her expected progress against the targets set for her use of repair and feedback and strategies to check understanding. Rachel indicated within the structured interview that she believed that the opportunity to reflect on her practice was the most helpful component of the process.

5.2.1.2 Sarah

The observational data provided evidence of an experimental impact of IC on Sarah's use of *open questions* to introduce tasks*,* which appeared to increase following the intervention, and her use of *non-specific praise,* which appeared to decrease following the intervention.

A causal impact was not evident for the remaining strategies, partially due to instability in the data at baseline, limiting the ability to ascertain the behaviour patterns before the IC session was delivered. Exceptions to this did not provide evidence of an experimental impact for reasons including instability amongst the intervention phase data, such as the use of *modelling* and *TA initiated Student Repair – Open question (TISR-O).* There were also many instances of a small or no change in Sarah's use of strategies following the intervention, such as her use of the instructional strategy, *closed questions,* repair strategy *Student Initiated Student Repairs (SISR)*, the use of *closed questions* and *open questions* to check understanding and the use of *links to previous learning.*

The outcomes from the TME indicated that Sarah believed she made expected progress and better than expected progress against her two targets, which specifically addressed Sarah's use of scaffolding and feedback. The outcomes from the structured interview indicated that Sarah believed that the opportunity to reflect on her practice was the most helpful component of the process.

5.2.1.3 Caroline

The observational data did not provide evidence of an experimental impact of IC on the pedagogical strategies used by Caroline whilst supporting Daisy. This was predominantly due to instability in the baseline data, limiting the ability to ascertain her existing application of strategies. Exceptions to this also did not provide evidence of an experimental impact due to the small change in use of strategies observed following the intervention, including all repair strategies and feedback strategies *specific praise* and *links to previous learning.*

Although an experimental effect of the intervention on Caroline's practice was not identified within the observational data, the TME data indicated that Caroline believed she had made better than expected progress against targets set around her own practice. The outcomes from the interview indicated that Caroline believed that the opportunity to reflect on her practice was the most helpful component of the process.

5.2.1.4 Sharon

The observational data did not provide evidence of an experimental impact of IC on the strategies applied by Sharon with Lloyd. This was largely due to instability between the data-points collected at baseline, limiting the ability to ascertain the typical pattern of behaviour and to then draw comparisons with the data following the intervention.

Exceptions to this did not provide evidence of an experimental effect, typically due to the small change in the average occurrences following the intervention in the use of the strategy *gives instruction* to introduce tasks*, closed questions* and *open questions,* repair strategy *TISR-O,* use of *open questions,* to check understanding and feedback strategies *specific praise* and *links to previous learning.*

Despite the lack of observational data indicating an experimental impact of IC on Sharon's practice, the outcomes from the TME suggested that Sharon believed she had

made better than expected progress against all of the targets she set for herself around her practice. The outcomes from the structured interview indicated that Sharon believed that the opportunity to reflect on her practice was the most helpful component of the process.

5.2.2 Summary and interpretation of outcomes for RQ1

The observational data collected through the repeated measures of TA practice only provided evidence of an experimental impact of IC on Sarah's use *open questions* to introduce tasks*,* which appeared to increase following the intervention; and Sarah's use of *non-specific praise,* which appeared to decrease following the intervention. The observational data did not provide evidence of an experimental impact on the other strategies applied by Sarah, or any of the strategies applied by the other participating TAs. This indicates that IC may not impact behaviours associated with TA's practice.

The observational outcomes outlined above contrast with TME data, which indicated that all TAs felt that, following the IC session, they had made better than expected progress with the targets they set for themselves around their practice. It may be that the TME data captured information that the observational data did not. The discrepancy between the TME and observational outcomes may alternatively be due to limitations of using self-report approaches such as TME. This is discussed in depth in section 5.3.3.

The data derived from the interviews indicated that all TAs believed that the opportunity to reflect on their practice, which some stated isn't always possible, was the most useful component of the IC process for their professional practice. This supports the recommendations made by Russell et al., (2012), who advised that TAs practice may benefit from having opportunities to discuss and reflect upon their practice. However, the conclusions drawn from the evaluative data need to be treated with caution due to the limited analysis that could be applied.

In summary, the contrasting influence of IC on the measures of TA practice suggested by the data means that it is not possible to conclude that an experimental effect has been shown in any of the cases considered. These findings appear to contradict the theoretical premise of IC, which suggests that the approach can support change in the

instructional strategies provided to students (Bergan & Schnaps, 1983; Gravois & Rosenfield, 2006; Rosenfield et al., 2015). As identified from the literature review, IC is typically delivered to class teachers; the outcomes from this study could possibly suggest that IC is less suitable for support staff such as TAs. Alternative reasons for the absence of an impact on the TAs' practice, which concerns the study's methodology, are discussed later, within section 5.3.

5.2.3 RQ2: Does IC with TAs impact on targeted learning behaviours of students they support?

5.2.3.1 Jacob

The observational data indicated that, following the delivery of the IC session with Rachel, Jacob's reading outcomes declined over time. An improvement over time in Jacob's spelling outcomes was suggested by the trend in the data, but the large variability between the data points suggested inconsistency in his outcomes, limiting the ability to determine whether there had been any change over time following the delivery of the IC session.

The outcomes from the TME indicated that Rachel believed that Jacob's progress exceeded what she had expected. Rachel shared in the structured interview that she believed that the opportunity to reflect on and discuss Jacob's needs was most helpful in supporting these outcomes, as well as use of the logarithmic graph, which was shared with Jacob as a tool to provide him with visual feedback around his reading and spelling progress.

5.2.3.2 Tom

The observational data indicated that, following the delivery of the IC session with Sarah, Tom's ability to accurately write the target sentence improved over time. This also appeared to be supported by the TME data, in which Sarah indicated that she believed Tom had made better than expected progress as a result of the intervention. Sarah shared in the structured interview that she believed that strategies relating to her practice, such as increased scaffolding support, were helpful in supporting Tom's outcomes.

5.2.3.3 Daisy

The observational data indicated that, following the delivery of the IC session with Caroline, Daisy's ability to work independently during her numeracy sessions, improved over time. This also appeared to be supported by the TME data, in which Caroline shared that she believed Daisy had made better than expected progress around her learning target. Caroline indicated within the structured interview that Daisy's outcomes were supported by the opportunity to reflect on Daisy's needs, as well as the tools that provided Daisy with visual feedback on the time she spent working independently, including the sand-timer and the logarithmic chart.

5.2.3.4 Lloyd

The observational data indicated that, following the delivery of IC with Sharon, the number of words within the Toe-by-Toe programme read accurately by Lloyd increased. This was also reflected in the TME outcomes, in which Sharon indicated that she believed Lloyd had made better than expected progress following the IC session. Within the interview, Sharon shared that the she believed Lloyd's outcomes were supported by the opportunity to reflect and discuss his needs, as well as the use of the logarithmic graph, which allowed Lloyd to monitor his progress and provide him with visual feedback.

5.2.1 Summary and interpretation of outcomes for RQ 2

The observational data, involving repeated measures of each student's performance against their learning target(s) following the IC session with their supporting TA, indicated that three of the four students made progress over time. Of these three students (Tom, Daisy and Lloyd), progress was observed for a variety of learning targets including writing, independent working and reading. The TME outcomes provided further support for the suggestion of a positive impact on the students' outcomes, as each TA indicated that their paired student made better than expected progress against all of their learning targets, following the IC session.

The suggestion of a positive impact on student outcomes provides tentative support for the existing evidence base, which states that the application of IC (albeit, typically delivered to class teachers) positively impacts students' learning outcomes (Sawka et

al., 2002; Glang et al., 2004; Hampton & Reiser, 2004; Yurick et al., 2012; Rosenfield et al., 2015).

It is also noted that that progress was made by students who received support from their TA on a general basis (i.e. as part of a wider group) within the classroom (Tom and Daisy) as well as by a student who received targeted TA support on an individual basis (Lloyd). This suggests that the learning outcomes of students can be supported by general TA support within the classroom, a finding that has been less supported within previous research (Blatchford, Bassett, Brown, Koutsoubou, et al., 2009; Farrell et al., 2010).

However, the ability to ascertain an experimental impact of IC on students' outcomes from the data collected within this study is limited for a number of reasons. This includes uncertainty about the causal link between the delivery of the IC, which targeted TA practice, and the outcomes for students (a difficulty concerning indirect consultation, highlighted by Kennedy, Cameron, & Monsen, 2009). As suggested by the post-intervention interview data, the TAs believed that students' progress was supported by particular tools including the logarithmic graph required for the IC approach, which provided the students with visual monitoring and feedback around their progress. It is possible therefore that the suggested progress made by the students following the IC session was due to these tools, as opposed to any changes in the TAs' verbal strategies.

Additionally, with specific regards to Jacob, it is possible that any suggested progress was a result of the change in task: prior to the IC session, Jacob was required to spell and read words with different vowel sounds; after the IC session, he was asked to spell words with the same vowel sounds. The change made to the task requirements was identified by Rachel during the IC session, when any possible mismatches between the three components of the instructional triangle (Figure 2-3) were explored. This was in accordance to the advice from the literature, which states that the task requirements should be considered and adapted if necessary, although this should take a secondary focus, behind any changes to the instruction (Rosenfield, 1987; Gravois et al., 2007, see 2.3.3.4.7). It is therefore possible that the changes to Jacob's task resulted in the

indicated improvement in his outcomes, as opposed to any possible changes made in Rachel's support.

There are a number of additional methodological limitations that further restricts the ability to ascertain a causal impact of IC on the students' outcomes, including the use and analysis of the observational data and the self-report TME data. These are discussed further in section 5.3.

Therefore, whilst the findings of this study suggest that the students' outcomes improved following the delivery of IC with their supporting TA, questions around causality and limitations around the methodology restricts the ability to conclude that the application of IC with TAs exclusively supported the development of these learning outcomes.

5.3 Evaluation of the research methodology

The following section evaluates the methodology of this study, with reference to the implications for, and the quality of, the outcomes.

5.3.1 Single Case Experimental Design (SCED)

A SCED approach was selected for a number of reasons (detailed in section 3.4.6), primarily being that the design allows for educational practices to be closely evaluated at an individual level (Horner et al., 2005; Barlow et al., 2009). Within this study, the SCED approach permitted for sensitive comparisons to be made between the TAs' practice before and following the intervention, allowing details of each specific case and context to be captured and factored into the analysis. This would not have been permitted within a group design, which would have compared average performances across groups of participants, over time (Horner et al., 2005; Barlow et al., 2009).

Despite this, the design has a number of limitations relevant to the outcomes obtained within this study.

5.3.1.1 AB and multiple baseline design

Two phases were implemented in the design of this study: the baseline phase (phase A) and intervention phase (phase B). Literature around SCEDs largely advocate the removal and reintroduction of the treatment (as an A-B-A/A-B-A-B design) in order to strengthen the validity of any conclusions of an experimental effect (Horner et al., 2005; Kratochwill et al., 2010). As the intention of the IC approach was to create lasting change to practice, the treatment could not be removed and so an AB design was implemented. It is acknowledged that this limited the confidence with which conclusions could be drawn about the impact of the intervention within this study.

The literature also encourages the implementation of a multiple-baseline design, in order to assess whether a corresponding change is observed when the treatment is introduced at staggered times, to strengthen the external validity of the outcomes and strengthen the ability to establish causality (Horner et al., 2005; Robson, 2011). Although a multiple-baseline approach was not planned due to practical reasons (discussed in section 3.4.6), the intervention was introduced to each TA at staggered times (at least one week apart) and within different settings around the school.

Despite this, an experimental effect was not observed across cases, times and settings, strengthening the conclusion of no experimental impact.

5.3.1.2 Stability of the data

The ability to ascertain an experimental impact of the intervention on the targeted behaviours concerning the TAs' practice was compromised by the difficulties in establishing stability in the data. Instability was particularly observed within the baseline phases, which limited the ability to determine what the original behaviour looked like and would have continued to have looked like, without the introduction of the treatment (Barlow et al., 2009; Kratochwill et al., 2010). Comparisons between the baseline and intervention phase data therefore could not be made. A number of factors may have contributed to the variability in data, some of which were more or less controllable.

5.3.1.2.1 Length of phases

It is possible that, if the lengths of the phases were extended, any variability within the data would have stabilised, which would have strengthened the ability to determine the evidence or absence of an experimental effect (Barlow et al., 2009). Preliminary steps were taken during the planning stages of the study to address this, for example by ensuring that at least three baseline data points were collected for each participant, advised as being the minimum amount of data required to form a stable baseline (Kratochwill et al., 2010). The time restraints of the researcher and the school was also considered when planning the length of the study: an eight-week period (not including school holidays) was secured to collect the intervention phase data, during a period of the school year in which there were fewer holidays and trips organised. The duration could not be extended beyond the three-month period secured with the school, due to time-restrictions on the researcher and school staff.

5.3.1.2.2 Extraneous factors

It is recognised however that, even if the baseline and intervention phases were extended, variability may have not been completely eradicated, due to the potential impact of a range of extraneous variables on the observational data.

This includes the potential seasonal impact on engagement: Data collection began in November 2015 and continued through the Christmas period, which may have impacted the engagement of both TAs and students, possibly influencing the types of strategies used by TAs and/or the responses of students. This was recognised when planning the study and accepted as, in comparison to the rest of the school year, the period selected for data collection had fewest school holidays and trips organised.

Additionally, despite observations being organised for set lessons, times and days in attempt to maximise control over extraneous variables, lessons were often rearranged. This was less of a concern for TAs Rachel and Sharon due to the individual, structured sessions they delivered to their paired student, away from the classroom. However, for Sarah and Caroline, who provided support to the specified students within a wider class, the class teacher typically decided the lessons' content, setting and scheduling. The researcher did, at times, offer some flexibility and so observations were rearranged to different times, days and/or settings, to ensure that the observations took place during consistent subjects (for example, for Daisy, this would have been mathematics, as this was where the concerns were most evident). Therefore, observations were not always taken on consistent days or times of the week, which may have confounded the outcomes. This is, however, a recognised limitation of conducting research within 'real world,' highly contextualised settings (Cohen et al., 2011).

Even when observations were completed during the pre-arranged lesson, it is important to recognise that the level of support provided by the TAs may have been determined by the tasks set. For example, if an unfamiliar concept was being introduced to the student, increased support may have been required, making the use of particular strategies more or less relevant. Therefore, the content of the sessions may have largely confounded the outcomes and reduced the ability of this research to ascertain an experimental impact of IC on TA practice. However, the only way to have avoided this would have been to have organised for the TAs to support the students with a consistent task for each observation, which, not only would have been impractical, but also would have raised ethical concerns due to the possibility of

students missing their typical learning opportunities. This would have also resulted in the outcomes being confounded by practice effects.

5.3.1.2.3 Missing data

The stability of the data may have been weakened by the breaks in data collection, which occurred for reasons including scheduled holidays (data was not collected for two weeks between weeks 7 and 8) as well as staff and/or student absences, across both phases. As mentioned in 5.3.1.2.1, the period selected for data collection was agreed upon as it contained fewer scheduled holidays in comparison to alternative periods for data collection in the academic year. In response to staff/student absences, the researcher offered a degree of flexibility to maximise the possibilities of observations being taken (as discussed in 5.3.1.2.2) within the relevant context. The limited control over factors including participant absences is a recognised limitation of 'real-world' research.

5.3.1.2.4 Observer effects

It is also possible that TAs and students may have adapted their behaviours as a result of being observed. As discussed in section 3.10, although attempts were made for observations to be as unobtrusive as possible, the impact of the observer may not have been completely eradicated. The observer's presence may have had an effect on the behaviours and therefore the validity of the outcomes. Alternative approaches to capture the TAs' verbal strategies were considered, such as video and audio recordings, however, due to the ethical implications of collecting recordings, as well as the demands that would have been imposed upon staff to operate the equipment, direct observations were opted for.

5.3.1.3 Measures of TA practice

As an observational tool to measure TA practice was not identified within the reviewed literature, the researcher developed a tool, comprising of strategies associated with the recommended practice of TAs, identified within recent research (Russell et al., 2012; Radford et al., 2015). There are acknowledged limitations of applying a measure that has not been previously tested by different researchers and/or in different settings. For example, it is possible that the tool did not include all components

relevant to the practice of TAs. Alternatively, the tool may have captured too many strategies, some of which may not be relevant to the wider practice of TAs. Preliminary steps were taken to promote the validity of the tool, for example, the researcher completed pilots and modifications were made in response to any shortfalls that arose, which included adding increased description for each behaviour. Although the piloting stage may have strengthened the validity of the tool, it is acknowledged that this may have not counteracted all of its limitations. This, therefore, may have had an impact on the nature and quality of the data collected.

Additionally, it was recognised that the tool only captured the discrete use of strategies and not the incremental use of strategies. This may be understood by examining the behaviours associated with repair strategies: If the TA initiated a student-repair by asking an open question (TISR-O) and the student failed to respond, a closed question (TISR-C) may have then been asked to provide additional support in response to the difficulty experienced by the student. The importance of TAs gradually adapting their level of assistance in accordance to the needs of the students was emphasised by Radford et al., (2015). However, the measurement tool applied within this study would have captured the two strategies within this example discretely, omitting the important fact that a less desirable strategy was provided due to a more desirable strategy failing to provide the required support. This was considered within the planning stages of the study, however, the sequential application of strategies was not incorporated, due to the difficulties that may have resulted from accurately recording the large number of possible interactions during a direct observation. However, this could be incorporated within future research, in order to provide further insight into the pedagogical strategies applied by TA practice.

5.3.1.1 Analysis of SCED data

As discussed in section 3.4.4, the use of visual verses statistical approaches to analyse SCED data is widely debated. The SCED data for this study was analysed completely through visual analysis procedures, due to the lack of agreement around the use of statistical tests, as well as the likelihood that the data from this study would have violated the requirements for most statistical analysis approaches (Barlow et al., 2009; Kratochwill et al., 2010). The limitations of a visual analysis approach were noted and

accepted by the researcher. This included possible subjectivity that may have resulted in Type I (a 'false positive,' in which a non-experimental effect is declared as an effect) or Type II errors (a 'false negative,' in which an experimental effect is not identified) (Kratochwill et al., 2010; Lane & Gast, 2013).

A number of steps were taken to strengthen the reliability of the visual analysis. For example, widely accepted guidance by Kratochwill et al., (2010) was followed to structure the conclusions drawn around any evidence of an experimental effect. This was completed by two independent raters and a high level of inter-rater reliability was obtained, strengthening the reliability of the conclusions made. It is acknowledged that this may not have totally counteracted all possible limitations associated with visual analysis.

5.3.2 Repeated measures to assess student outcomes

To assess the impact of IC at the level of the student, repeated measures of the students' outcomes against a specific learning behaviour was assessed at repeated intervals. These measures could only be taken after the delivery of the IC session, as it was during the session that the TA identified and defined the students' learning target. As part of the IC approach, sources such as prior assessment data and workbooks were referred to in order to gain a general understanding around the students' existing performance against the target and was used to form an indicative 'baseline' (see section 2.3.3.4.7). However, as this data was collected unsystematically and retrospectively, and because, for some students, the target slightly changed following the IC session (for example, Jacob's indicative 'baseline' was based upon his ability to read and spell words with different vowel sounds; the data collected following the IC session was based upon his ability to read and spell words with the same vowel sounds) comparisons between the outcomes before and after the intervention could not be confidently made. Therefore, the analysis of the observation data focused purely on the pattern of the students' outcomes following the IC session. This greatly limited the ability to establish an experimental effect and draw any firm conclusions about any changes observed in the students' performance. However, it could be argued that this reflects practice within real-world settings as practitioners, such as Educational Psychologists (EPs), who typically do not have the opportunity to establish

a stable baseline and instead, monitor a student's response to an intervention (Cohen et al., 2011).

5.3.2.1 Additional confounding variables

There are a number of limitations to the observational measures taken of the students' outcomes. Firstly, with regards to Jacob, whose observational outcomes were based upon his ability to read and spell the same set of words, it is possible that his performance were confounded by practice effects, limiting the reliability of the outcomes. Similar effects may have confounded Tom's outcomes, as he was asked to write the same sentence to assess his progress.

It is also possible that practice effects may have confounded the measures applied to assess Lloyd's outcomes, which were based upon his ability to correctly read a list of words within the 'Toe by Toe' intervention handbook. The intervention requires the individual to read a set of words and to revisit any errors within subsequent sessions, until the student has correctly read the word on three separate occasions. It is possible that Lloyd may have experienced some words more often than others. The increased opportunity to practice particular words may have therefore confounded the observational measures of Lloyd's outcomes.

Possible approaches to minimise the practice effects were considered, for example by asking Tom to write a different sentence each time and asking Lloyd and Jacob to read/spell different words for each assessment, however this approach was not used as it was felt it would have resulted in reduced consistency between the assessed behaviours, which would have further limited the validity of the data.

With regards to Daisy, whose outcomes were based upon the time spent working independently, the measures were dependent upon the content of the lesson. Considerations were made around how to maximise consistency (for example by asking Daisy to complete the same task and measure the time she worked independently), however this was deemed as impractical and raised ethical concerns as this may have resulted in Daisy missing out on her typical learning opportunities. Therefore, it is possible that Daisy's observational outcomes were confounded by the

differences between tasks in which the measures were taken, limiting the reliability of these outcomes.

What cannot be ruled out is the possibility that the students' outcomes were influenced by support additional to that provided by the TA, such as a class teacher. This is likely as, for each of the learning targets examined (reading, writing, spelling and independent working during maths), the student would have had access to support from their class-teacher in addition to the TA, following the intervention. Steps to control for this would have included limiting any support accessed by the student additional to that provided by the TA, however this was not considered for obvious ethical reasons. Therefore, it is accepted that additional support provided to the student may have impacted on the validity of the outcomes reported.

5.3.3 TME and structured interview data

Additional data around the impact of IC was collected using TME and a post-intervention interview, both of which depended upon the viewpoints of the TAs, following the cessation of the observations. It is possible that the outcomes were confounded by the social-desirability effect, in which participants alter their self-reported responses to portray a more positive perception of themselves (Cohen et al., 2011). This may have been particularly relevant to this study, as the outcomes of the TME data reflected on the development of participants' professional practice, as well as their participation in the study in which they had invested time and energy. This potentially limits the validity of the conclusions drawn from the outcomes of the TME and structured interview.

Furthermore, the data collected from the interviews completed with TAs, was descriptively reported. This may have limited the insight that could have been generated by a more detailed analysis of TAs' thoughts around the IC process. Alternative analytical approaches were considered, such as thematic analysis, however this was not completed in order to preserve the individual treatment of each TA's data, as applied for the SCED. As a result of this, it is acknowledged that the conclusions drawn from the interviews are case specific and cannot be easily generalised and therefore, must be treated with caution.

5.3.4 IC Intervention

5.3.4.1 Instructional Consultation as an approach to address TA practice

Overall, the observational data indicated that IC did not experimentally impact the measured behaviours associated with TA practice. This finding may have been because, although the IC session drew attention towards the behaviours associated with strategies used to introduce, repair, feedback and check understanding, the TAs identified within the IC session the importance of changing the use of only *some* strategies, not all. For example, Sarah identified within the IC session that an increased use of open questions to introduce tasks and specific praise, as opposed to non-specific praise, might support the student in question. These were incorporated as targets for Sarah, which may have explained the significant change in the use of these strategies following the IC session. However, the remaining three TAs also set targets that explicitly addressed specific components of their practice and significant change was not evident within their observational data.

The trends observed across the intervention phase indicated that any changes in TAs' use of particular strategies was often not sustained. As the IC approach applied within this study consisted of a single consultation session, accompanied with reminders of the session's outcomes after each observation (Appendix xiv)**,** it is possible that there may have not been sufficient 'dose' of the IC intervention in order to create sustained change in TAs' professional practice. Difficulties in changing the ingrained nature of professional practice was discussed by Webster et al., (2013), who asked schools to apply unspecified and unsystematic trials across a term, to provide TAs with opportunities to reflect upon their interactions with students. Webster et al., (2013) concluded that, "The difficulty of identifying substantive change is likely to have been compounded by the fact that changing TAs' talk to pupils is particularly challenging… there could be resistance to change, because TAs' practice was so ingrained or 'hard-wired.'" (Webster et al., 2013, p. 91). With regards to this study, it could have been that additional support and/or longer period of time was needed for the TAs' to make changes to their instructional strategies. This was not incorporated within this study in order to abide by the guidance provided around the delivery of IC (Rosenfield, 1995, 2002) and to abide by the timeline agreed upon with the school.

5.3.4.2 Treatment integrity

Due to the collaborative and non-scripted nature of the IC approach, it is possible that no two IC sessions delivered by the researcher were the same. For example, different stages may have been discussed at different lengths; and there may have been differences between the TAs around their awareness of students' needs, their own practice, and different instructional approaches, tasks and interventions. This may have limited the integrity of the IC session, which may have consequently influenced the impact of the intervention. Steps were taken to minimise this risk, for example by following a specific framework and structure for the IC session (Appendix xi), based upon guidance within the literature (Rosenfield, 1995, 2002). However, a script was not devised to maintain the collaborative nature of the IC approach (as advised by Rosenfield, 2008), therefore possible impact of this on the integrity of the treatment is acknowledged.

5.3.4.3 Researcher's delivery of IC

What also must be considered is that all IC sessions were delivered by the researcher alone. It is therefore possible that the outcomes may be a reflection of the researcher's delivery of the IC approach, as opposed to the IC approach in itself. Additional steps to minimise any observer bias were explored during the planning stages of this study, for example, it was considered whether the IC sessions and data collection could have been conducted by more than one practitioner and/or for the fidelity of the IC sessions to have been checked by another researcher. By having an individual not invested in the research collecting the data, it is possible that opportunities for observer bias may have been reduced. Unfortunately, due to the limited availability of possible independent researchers/practitioners this was not possible. The implications of this for the quality of the data collected are acknowledged.

5.3.4.4 Isolating impact

As discussed within section 5.3.2, the ability to isolate an impact of IC on the outcomes of the students supported by TAs was limited. This is due to a number of reasons discussed, including practice effects, maturation effects and students' access to

support from other adults. Furthermore, within the post-intervention interview, the TAs attributed the positive outcomes on student outcomes to tools that provided visual feedback, including the logarithmic graphs, which may have had a significant role in any suggested impact, therefore limiting the ability to isolate an impact of IC on the students' outcomes.

5.3.5 Participant selection

The participants from this study derived from an opportunity sample, who volunteered to participate once the school's manager had agreed for the research to take place. Only one school agreed to participate out and the majority of eligible TAs within the school opted not to participate, for reasons including time requirements. It is possible that the sample of participants may not be representative of the wider population of TAs both within and beyond the school, therefore limiting the external validity of the outcomes. However, alternative approaches to obtain a sample, such as asking school leaders to nominate participants, was not opted for, due to the ethical risks that this would have involved, as well as the impact this may have had on the engagement of participating TAs.

Furthermore, the participating students were selected by the participating TAs due to academic concerns that they had identified, that were not considered great enough to typically warrant support from an external service. It is possible that bias may have impacted the selection of participants, which may limit the validity of the student level outcomes derived from the study. Steps were taken to minimise this, for example, it was planned for students to be randomly selected from a range of possible students identified by the TA. However, each TA only nominated one student; which may have introduced some bias in the sample.

5.3.6 Researcher's role

A critical-realist stance approach was adopted by the researcher to address this research, as, although attempts were made to objectively understand the causal impact of the intervention, it was acknowledged that this may have been limited for reasons including bias, as a result of the relationship between with the researcher and the outcomes of the study (Guba & Lincoln, 1994; Cohen et al., 2011). Steps were

taken to counteract any subjectivity, including use of inter-rater reliability for the outcome measures and analysis procedure, which proved to be high. It is acknowledged that these steps may have not completely counteracted all opportunities for subjectivity by the researcher.

What also must be considered is the role of the researcher as a practitioner within the participating school. This may have increased the risk of potential threats such as the social-desirability effect, which may have influenced the participants' responses. Steps were taken throughout the study to inform and remind participants of the distinctions between the two roles, however this may have not completely removed social-desirability effects.

5.4 Implications of this study

This study provides an in-depth examination of the impact of IC on the practice of four primary school TAs and the outcomes of four students supported by these TAs. The following section intends to highlight the wider implications of this study's outcomes from this study.

5.4.1 TA level

The recent empirical interest in to the TA role has largely drawn negative attention to the profession (Blatchford et al., 2011). Few evidence-based recommendations have been made around how TAs' practice may be supported, besides the suggestion that TAs would benefit from opportunities to reflect upon and share their models of practice (Russell et al., 2012). Although further investigation is necessary, this research represents an early attempt to provide this support with the use of an IC approach and offers some early indication that the professional practice of TAs may be supported from receiving support through IC.

Furthermore, the participating students were referred by the TAs due to concerns around their learning, which may not typically have been large enough to qualify for support from external professionals in the context of this study. As the evidence offers some suggestion of a positive impact of IC on the learning outcomes of the students, this study provides some tentative indications that IC may support and contribute to the graduated, preventative, early intervention approach that is assumed of the TA role (Russell et al., 2012).

5.4.2 Student level

This research indicated a possible positive impact on a range of learning targets of students aged 5-11, when supported by TAs who received the IC approach. The learning targets included reading, writing, spelling and learner independence, highlighting the breadth of potential impact that IC may have. What was important within this study was that the students referred by the TAs were described as being students with needs that may not be currently large enough to warrant the attention of external professionals such as EPs, but could escalate to have a detrimental impact on the student's educational wellbeing. The tentative suggestion of a positive impact

of IC on student-level outcomes indicates that IC may support the outcomes of students who may not typically have qualified for specialist support from external agencies in the context of this study, although further investigation into this is required.

5.4.3 School level

As indicated within the outcomes from this study, the practice of TAs and effectiveness of their role in providing pedagogical support to students can be developed by having the opportunity to receive support, such as that through IC. Furthermore, the benefits of delivering IC to TAs can theoretically have a wider impact, as outcomes from a session around an individual student can be applied to groups of students with similar needs, broadening the potential impact of the intervention.

5.4.1 EP role

There are a number of outcomes from this research that have implications for the EP role: The findings provide some indication of the possible indirect benefits for students' learning outcomes, when their supporting adults received support through IC. Quite often, when concerns are raised around a young person, support from EPs may be directed towards the student's class teacher and/or directly to the student him/herself. This study raised the importance of considering the unique position that TAs occupy within school settings, in not only gaining a comprehensive insight into a student's needs, but also in providing the student with personalised, instructional support. By targeting EP time to support the professional practice of TAs through the application of collaborative, indirect approaches such as IC, this has the potential to have a wider, preventative impact within a school setting, which may alter the perception that school leaders can have of EPs as being reactive professionals, as opposed to preventative (Wagner, 2000). This should arguably be considered by EPs if TAs continue to occupy a pedagogical role within schools.

5.4.1 Local Authorities

The findings from this study has implications on how Local Authorities may engage with schools: The evaluative comments from the outcomes suggested that, by applying the IC approach to support staff members such as TAs, their professional practice and

consequently the services they provide to students, may be enhanced. Although further research is required, this theoretically suggests that, by applying an indirect, collaborative approach such as IC, wider groups of students may benefit and thus a systemic impact is possible, highlighting the potential cost-effective benefits of the approach. Local authorities may therefore consider adapting approaches that may be applied when consulting with school staff to enhance the services that may be provided by school staff to students.

5.4.1 Instructional Consultation approach

The narrative literature review indicated that IC is often embedded within schools and therefore delivered to teachers by a senior school staff member, trained in the approach (as an 'Instructional-Consultation Team', see section 2.3.3.4.8). An internal IC model within schools is said to support with early intervention and for the approach to be experienced by a wider range of school staff, as opposed to depending on services from external consultants (Rosenfield, 1987). However, this may result in IC being delivered by professionals with little training and experience in consultation. This study alternatively investigated the impact of IC when delivered by an external professional trained in Educational Psychology. Although further investigation into this is required, it may be argued that the delivery of IC is particularly suitable for professionals such as EPs, who are typically trained and experienced in consultation approaches (Wagner, 2000). This may therefore enhance the quality of the delivery of IC and, in turn, the IC approach as a model of service delivery.

Furthermore, the outcomes of the systematic literature review (section 2.5) indicated that empirical attention has primarily been paid to the application of IC with teachers in the USA, as opposed to support staff who provide pedagogical support. Although further investigation into this subject is required, the outcomes from this study suggests that there are possible benefits to applying IC with UK based TAs, for example, to support the development of TA professional practice as well as the academic outcomes of the students they support. This study therefore broadens the application of IC to wider target audience to include TAs.

5.4.2 Evidence-based practice

The outcomes from this study highlighted the importance of developing evidence-based practice within education and psychology, in order to support the role of EPs: This study aimed to identify the impact of IC as an approach to supporting the development of the practice of TAs, which, in accordance to the literature review, has not been previously investigated. Although further investigation is required to provide a more conclusive understanding of the impact of IC on TA practice, this study offers some evidence of the possible outcomes of the approach, when delivered by EPs. By developing the evidence-base around interventions such as IC, the support provided by EPs may subsequently be strengthened.

5.5 Suggestions for future research

As specified within Chapter 2, the current evidence base around the application of IC to support TA practice is limited. This study attempted to systematically investigate the impact of IC on TA practice and, whilst this study did not provide evidence of an experimental effect, the qualitative comments from TAs and indication of improvement in student performance provides tentative evidence of some impact of the intervention. Replication of the current study, addressing its methodological limitations, would be beneficial to enhance the confidence in the findings. This is explored within the following section, alongside potential avenues for future research.

5.5.1 Sample

As a SCED approach was selected for this study, a limited sample was recruited to allow for a close and detailed insight to be generated into the impact of IC on TA practice. However, this limits the ability to generalise the outcomes to wider settings. The external validity and reliability of the outcomes of this study may therefore be strengthened by replicating the study within a range of alternative settings (for example secondary schools) with a larger number of cases (Barlow et al., 2009).

5.5.1 Fidelity

in order to improve on the reliability and objectivity of the outcomes of the present study, any replication would benefit from recruiting external researchers to collect the data as well as to deliver the IC approach, to ensure that the observed outcomes are not just a result of professional expertise of one particular practitioner or professional.

5.5.2 Measures of TA practice and student outcomes

As indicated within the discussion of the outcomes from this study, the use of a measure of TA practice developed by the researcher limited the validity of the outcomes. Therefore, within future research investigating TA practice, importance should be placed upon employing a tool with increased validity to reliably capture the different components of TA practice. This may be achieved by asking other researchers to apply the tool developed by the researcher, within a range of settings. The tool may also be adapted to measure the sequential and incremental application of pedagogical

strategies of TAs (as discussed within 5.3.1.3) to capture the dynamic nature of support.

The student-level impact of IC was explored within this study as a secondary focus. Future research may allow for a greater examination into the impact on the outcomes of students supported by TAs. This may be completed by applying standardised assessments relevant to the students' needs, so that comparisons can be made before and following the intervention, to gain a greater insight into any impact of the approach. Additionally, future research could explore the views of the students on the support provided by their TA before and after the application of IC, to gain an insight into their experience as the indirect 'client' within the consultation approach.

5.5.3 Wider impact

This study explored the impact of IC on an individual student supported by each participating TA. As discussed within section 5.4, IC targets professional practice and so, theoretically, the approach has the potential to create a wider, systemic impact on students with similar needs supported by a recipient consultee. Future research could seek to examine the impact of the approach across a wider range of students supported by the adult receiving IC. This would allow for a greater exploration of the breadth of any experimental impact of IC.

5.5.4 Enhanced analysis of qualitative data

The outcomes from this study predominantly depended upon the analysis of quantitative data, to assess for change in outcomes over time. This was supplemented by some qualitative data collected through the use of a structured post-intervention evaluative interview, in order to gain an insight into what the TAs believed was most and least helpful from the IC process. As the interview was structured, the opportunity for TAs to provide detailed and expansive evaluative information was limited, which may have restricted the insight gained into their views on the application of IC. Additionally, the outcomes were reported descriptively and individually. Future research may allow for a greater exploration and analysis of the TAs' views on the application of IC as an approach to address their practice, to gain a greater insight into the appropriateness and application of the intervention to support TAs.

5.5.5 Alternative interventions

This study's primary aim was to identify and investigate an approach which supported the development of TA practice, due to the lack of a previous systematised evidence addressing this need. IC was selected due to the approach's core principles, which is to address and enhance the instructional practice of staff providing pedagogical support (Rosenfield, 2008). Alternative approaches to consultation might equally be applied to address the practice of TAs. Future research may wish to consider use of group designs, in which TAs are randomly allocated to IC or an alternative form of consultative support. This should ultimately support the development of a more robust evidence base for the impact of IC on TA practice.

5.6 The researcher's reflections

This study aimed to investigate the impact of IC as an approach to support the practice of TAs. The following section intends to detail a number of reflections that arose throughout the different stages of this study:

5.6.1 Stakeholder engagement

In an attempt to maximise the ecological validity of the outcomes, this study was delivered within a "real world context." In order to plan, develop and implement this study successfully, a close relationship and maximum engagement with all stakeholders, in particular the participating school, was key. A number of steps were taken to establish a relationship with the participating school and volunteer TAs, for example by completing regular visits prior to the study and providing sufficient information to the school leaders and the TAs. Building and maintaining a trustworthy relationship with the school and the participating TAs was of high importance, to ensure that they fully engaged with the process and recognised the need for partnership in the research. Care had to be taken however to ensure that expectations were managed and that the school and TAs did not assume that, by agreeing to participate, they would receive a "free" service that would benefit those involved. This concern was particularly relevant as the researcher as a practitioner, offered services through the Educational Psychology Services (EPS) on a traded basis. This raised the researcher's awareness of managing relationships and expectations with stakeholders, not only for the purpose of delivering research but also for input as a practitioner.

5.6.2 Investment in research

The time the researcher invested in this study had to abide and coincide with the bursary agreement, which delegated the researcher's time between this study, other University related activities and the practitioner responsibilities as a Trainee Educational Psychologist for the EPS. A great deal of contact time was required for this research as a result of taking adopting a SCED approach, which required repeated observations to be made. This was stretched further by having to respond to unexpected changes made to the scheduled observations, which the researcher had to respond flexibly when possible. These demands highlighted the difficulties that may

arise from conducting real-world research within the EP role as a researcher or scientist-practitioner. However, the value of the outcomes emphasised the importance of investing time and energy into research, in an attempt to further develop the evidence-base of the EP profession.

5.6.3 The Instructional Consultation approach

IC was a form of consultation that appeared to the researcher to be discussed less within the literature in comparison to alternative consultation models, possibly due to the lack of research into the approach conducted within the UK. The researcher first applied and practised the IC approach for the purpose of this study, however the wealth of information that arose from the IC sessions highlighted the usefulness and relevance of the approach to everyday EP practice. It is noted, however, that there is a lack of evidence supporting the application of IC within UK contexts by EPs. Therefore, if the approach is applied, there remains a need for robust evaluation on a case-by-case basis, to monitor any responses by school staff and students to the intervention. This has highlighted to the researcher the importance for professionals, such as EPs, to continuously explore and consider the literature and evidence base, to enhance and maintain an awareness of the different approaches that may be applied to support professional practice.

5.6.4 The TA role

The completion of this study has added to the researcher's understanding of the growing prominence of TAs within schools and has highlighted further the importance of attending to the TA workforce, in order to support the pedagogical provision for students.

Chapter 6: Conclusion

6.1 Introduction to chapter

This chapter summarises the outcomes from this study, as well as offering comment on its unique contribution to applied educational psychology knowledge, evidence base and practice.

6.2 Main findings and unique contribution of the research

This study investigated the impact of Instructional Consultation (IC) on the practice of Teaching Assistants (TA), with practice referring to the verbal, pedagogical strategies applied by TAs. This research appears to be the first study to apply IC to support the professional practice of TAs.

The outcomes did not conclusively provide evidence that IC had an impact on the practice of the four participant TAs: repeated observations of the strategies employed by the TAs both before and after the delivery of the IC session indicated an experimental impact on two of the strategies applied by one TA, including an increase in the use of open questions to introduce tasks and decrease in the use of non-specific praise.

The impact on the learning targets of a student supported by each TA was also investigated by repeatedly assessing the students' performance against learning targets following the IC session. The observational data indicated that three of the four students made progress over time following the IC session, against learning targets that concerned reading, writing and independent working. However, questions around accurately establishing a causal impact of IC on the students' outcomes, as well as limitations of the quality of the data, restricted the ability to suggest an impact of IC on the students' outcomes.

The Target Monitoring and Evaluation (TME) approach (Dunsmuir et al., 2009) and a structured interview was completed with each TA, to gain a greater insight into the participants' views of the use of IC to support their practice. The TAs largely indicated that they believed that better than expected progress around the targets devised concerning their practice, and by students around their learning targets, had been

made as a result of the IC. The TAs shared that they believed that the progress was predominantly due to the time that the IC session allowed to reflect on their practice and on the students' needs. However, the possible influence of demand characteristics and social desirability effect on the self-report data limited the ability to draw conclusions from this data.

The discussion explored possible reasons for these outcomes. This included consideration of existing literature into TA practice, which has suggested that difficulties may be faced when attempting to address and instigate change in established TA professional practice behaviours (Webster et al., 2013). Additionally, literature around IC predominantly advocates the application of IC with class-teachers. It was therefore also considered whether the outcomes from this study suggest that the IC approach is less suitable for the development of TA pedagogical support.

The discussion also considered the methodological limitations of this study and the implications that this may have had on the outcomes. This includes limitations around the measures adopted to capture and assess the TAs ongoing application of pedagogical strategies, the extraneous variables that may have influenced the outcomes the researcher's role in delivering the intervention and collecting data.

The implications of this study on a number of levels were explored, including the implications for the professional practice of TAs, the practice of EPs and the evidence-base for the IC approach. To further develop the current understanding of the application of IC as an approach to support TA practice, as well as to address the methodological limitations of this study, a number of developments of this study were considered.

6.3 Conclusion

This study represents the first attempt to evaluate the impact of IC on the pedagogical support provided by TAs in the UK. This study seeks to address and build on previous research that suggests that the quality of TA support may have negative implications on the outcomes of students (Blatchford et al., 2011). Whilst the evidence from this study is inconclusive as to the impact of IC on the practice of TAs, it has highlighted a number of avenues for further research and practice development.

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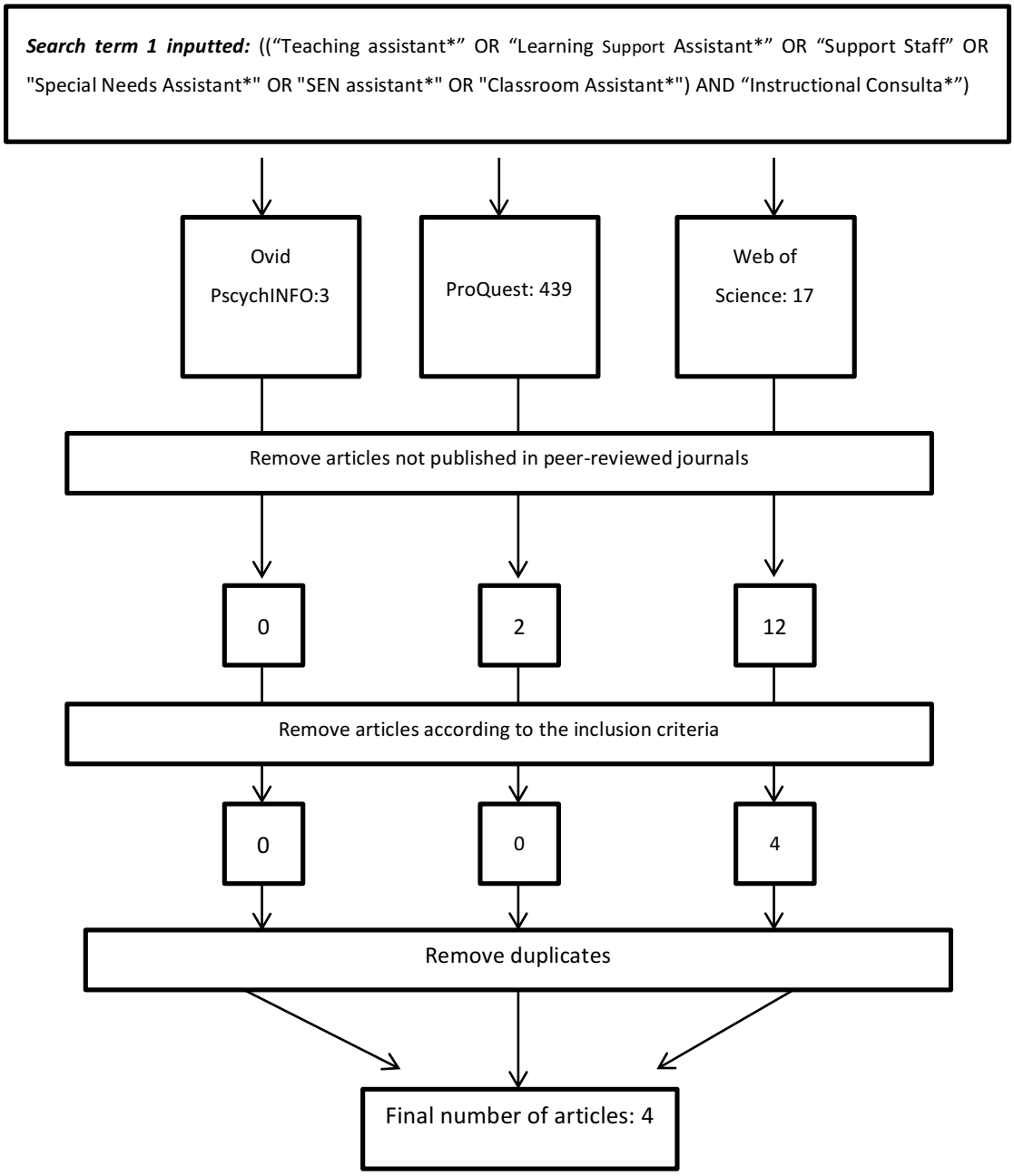
Appendices

Appendix i *Peer reviewed articles not included within the systematic literature review search after the inclusion criteria was applied*

Search Term:((Teaching assistant OR Learning Support Assistant* OR Support Staff OR "Special Needs Assistant*" OR "SEN assistant*" OR "Classroom Assistant*") AND Instructional Consulta*)*

	Reference	Reason to not include
Web of Science		
1	Berger, J., Yiu, H. L., Nelson, D., Vaganek, M., Rosenfield, S., Gravois, T., & Hong, V. (2014) Teacher Utilization of Instructional Consultation Teams, JOURNAL OF EDUCATIONAL AND PSYCHOLOGICAL CONSULTATION, 24 (3)	Measure: the use of ICT, not the impact on practice Target adult: Not with TAs
2	Smith, CA; Hetzel, S; Dalrymple, P; Keselman, A (2011) Beyond Readability: Investigating Coherence of Clinical Text for Consumers, JOURNAL OF MEDICAL INTERNET RESEARCH,13(4)	Not looking at enhancing learning or on improving TA practice (measured ability to read different fonts)
3	Kearns, KD; Sullivan, CS; Subino, C., (2011) Resources and practices to help graduate students and postdoctoral fellows write statements of teaching philosophy, ADVANCES IN PHYSIOLOGY EDUCATION, 35 (2) 136-145	Measured: Didn't measure anything, but gave description on support TAs provided, use of instructional methods to mentor students Adults targeted: faculty mentors, graduate students, post-doctoral fellows
4	Yetter, G. (2010) Assessing the Acceptability of Problem-Solving Procedures by School Teams: Preliminary Development of the Pre-Referral Inter-vention Team Inventory, JOURNAL OF EDUCA-TIONAL AND PSYCHOLOGICAL CONSULTATION, 20 (2), 139-168	Full text analysed No suggestion that IC was used. Just referred to pre referral teams Measured: uptake of a pre referral team
5	Keengwe, J.; Kidd, T.; Kyei-Blankson, L. (2009) Faculty& Technology: Implications for Faculty Training and Technology Leadership, JOURNAL OF SCIENCE EDUCATION AND TECHNOLOGY,18(1),23-28	Not relevant – doesn't mention using IC to support learning
6	Rubinson, F. (2002) Lessons learned from implementing problem-solving teams in urban high schools, JOURNAL OF EDUCATIONAL AND PSYCHOLOGICAL CONSULTATION, 13(3), 185-217	Focus: teachers Measured: use of instructional approaches to support learning
7	Snell, ME; Lowman, DK; Canady, R. L. (1996) Parallel block scheduling: Accommodating students' diverse needs in elementary schools JOURNAL OF EARLY INTERVENTION,20(3),265-277	Discusses an approach, no mention of any measures Targets: range of staff
ProQuest		
8	Gu, F. (2006) The role of library media services in the university distance and distributed education. Library Management, 27(6), 379-389. doi: http://dx.doi.org/10.1108/01435120610702378	Aim: Asses role of library media services in partnership with other university campuses. No mention of IC or support staff
9	Bernstein, J. L., & Meizlish, D. S. (2003). Becoming congress: A longitudinal study of the civic engage-ment implications of classroom simulation. Simulation &Gaming, 34(2), 198-219. Retrieved from http://ezproxy.nottingham.ac.uk/login??url=http://search.proquest.com/docview/230323236 =8018	Focus: University students. No mention of support staff. Aim: assess whether students' self knowledge, cynicism and participation was dependent on whether their American government course included a character-playing simulation. No mention of IC

Appendix ii *Outcomes from searches completed for systematic literature review searches, including the removal of articles after the inclusion criteria was applied*



Appendix iii *Information letter sent out to schools approached to participate*

The University of Nottingham

UNITED KINGDOM · CHINA · MALAYSIA

[insert researchers name, contact number and email address]

To the staff of [insert schools name]

I am a Trainee Educational Psychologist, currently completing my Doctorate in Applied Educational Psychology at the University of Nottingham and working with XXX. I am writing to provide details of research I hope to complete as part of my studies and to ask if the school would be willing to participate.

This study aims to investigate the impact of Instructional Consultation on the development of TAs skills, which are thought to promote the independence and learning skills of students. The study will involve regular consultation sessions with myself, as well as the opportunity for an initial peer discussion with other TAs.

To evaluate the impact of Instructional Consultation the study also requires that student performance is measured over time in response to the changes in instruction provided by participating TAs. To do this, participating TAs will be required to take measurements of the student's performance in response to an academic task at least once per week across the autumn term. The instructional practice of TAs will also be observed and measured each week by myself to further assess the impact of Instructional consultation.

Participation in this study is completely voluntary and you are under no obligation to take part. You are free to withdraw at any point during the study without giving reason. All data collected will be kept confidential and used for research purposes only. It will be stored securely in compliance with the Data Protection Act. You will also be provided with feedback on the general outcomes of the study when it is complete.

I hope that this research will be important in developing the support that students receive from TAs in school. If you wish to participate within this study, and/or require further information, please do not hesitate to contact myself at [provide researcher's contact details] and/or my University supervisor, [include name].

Warm regards,

Randeep Gill (trainee Educational Psychologist).

Appendix iv *Information letter provided to TAs*

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

[insert researchers name, contact number and email address]

TA Research Project: Information Letter

To the Teaching Assistants of ABC Primary School

I am a Trainee Educational Psychologist, currently completing my Doctorate in Applied Educational Psychology at the University of Nottingham. I am training with XXX Community Educational Psychology Services (CEPS). I am writing to provide details of research I hope to complete as part of my studies and to ask if any Teaching Assistants (TAs) would be willing to participate.

This study aims to investigate the impact of Instructional Consultation on the development of TAs skills, which are thought to promote the learning and independence of students. The study will involve regular consultation sessions with myself, as well as the opportunity for an initial peer discussion with other TAs.

To evaluate the impact of Instructional Consultation the study also requires that measures of the interactions between participating TAs and a student are taken in class for a period before, during and following the sessions. To do this, participating TAs will be required to take measurements of the student's performance during a set task at least once per week across the autumn term. These interactions will also be observed every few weeks by myself to gain an insight into the TA-student interactions across this time period.

Participation in this study is completely voluntary and you are under no obligation to take part. You are free to withdraw at any point during the study without giving reason. All data collected will be kept confidential and used for research purposes only. It will be stored securely in compliance with the Data Protection Act. You will also be provided with feedback on the general outcomes of the study when it is complete.

I hope that this research will be important in developing the support that students receive from TAs in school. If you wish to participate within this study please register your interest with XXX (SENDCo), and/or myself at xxx.ac.uk If any further information is required, please feel free to contact myself and/or my University supervisor, XXX, at the University of Nottingham.

Warm regards,

Randeep Gill (Trainee Educational Psychologist).

Appendix v *Presentation delivered to TAs introducing Instructional Consultation*

TA Research Project

xxxx Primary School

Randeep Gill
Trainee Educational Psychologist
Doctorate in Applied Educational Psychology

1

Today

- Recap
- Theory
- Practicalities: stages, timeline and requirements

2

Firstly…

- Thank you!
- About me and the aim of my research
- Changes
- Remember, you are free to withdraw at ANY point of the study

3

Expectations of the TA role

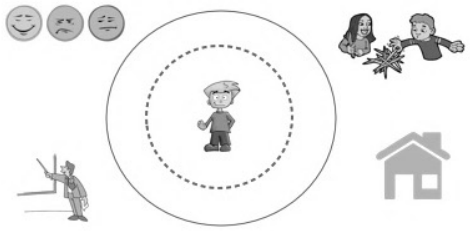
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Assumptions of Instructional Psychology

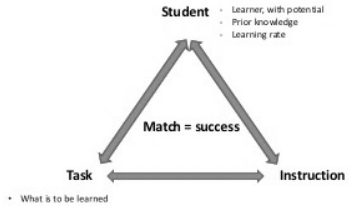
- Often, we assume that there is a problem to be diagnosed and we seek answers to questions around the child's difficulties
- In Instructional Psychology a different perspective is taken – focus is taken away from finding an "internal deficit" within the student
- Focus : Instruction provided by staff to enhance learning

5

Vygotsky



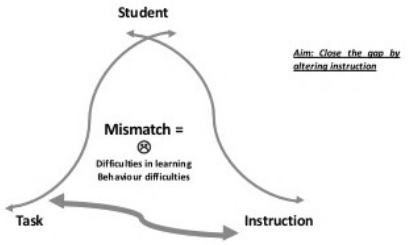
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7

Instruction

8



9

Pause

10

Plan

1. **Individual meeting**
   - Problem identification- where is the gap between current and desired performance?
   - Assessment and intervention planning
2. **Observation**
   - Gain a further insight into the above concern
   - Collect a baseline (3 collection points)
3. **Assessment**
   - May help to answer questions around academic ability
4. **Data collection – ongoing assessment**
   - Crucial ingredient!
   - Each time TA works with student, TA collects data based on the assessments above
   - Reviewed regularly with myself - changes made if necessary
   - Time scale and my support

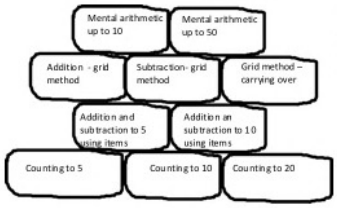
11

Assessment

1. What does the student know?
2. What can the student do?
3. What does the student think?
4. How does the student approach what he or she is unsure of?
5. How is the student supported?
6. What can the TA do next?

12

Assessment - Curriculum



In an instructional assessment, an insight into what skills the student has and where they can enter the curriculum is identified

13

Assessment - Instruction

- What type of instruction is usually provided?
- What best works for this student?
- What can be done differently to support the student with this task?

14

Thank you!

- Questions and reflections
- What next?
- Contact
- Information packs

15

Appendix vi *TA consent letter*

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

Thank you for expressing an interest in participating within the study, which aims to look at and develop the role of Teaching Assistants (TAs).

Please complete the form below, to provide consent for participation within the study. These questions should be answered independently.

- Have you read and understood the Information Sheet? YES/NO
- Have you had the opportunity to ask questions about the study? YES/NO
- Have all your questions been answered satisfactorily? YES/NO
- Do you understand that all information collected will be confidentiality and securely retained at all times? YES/NO
- Do you understand that you are free to withdraw from the study? (at any time and without giving a reason) YES/NO
- I give permission for my data from this study to be shared with other researchers provided that my anonymity is completely protected. YES/NO
- Do you agree to take part in the study? YES/NO

"This study has been explained to me to my satisfaction, and I agree to take part. I understand that I am free to withdraw at any time."

Signature:

Name (in block capitals):

Date:

To be completed by the researcher:

I have explained the study to the above participant and he/she has agreed to take part.

Signature of researcher [Randeep Gill, Trainee Educational Psychologist]:

Date:

Appendix vii *TA audit*

TA Research Project

Name: Date:

Please tick the most relevant answers to the following questions.

If more than one answer is relevant, **please rank** your answers, starting with 1 (the most relevant answer)

1) As a Teaching Assistant, I predominantly support:

☐ Student's learning

☐ Student's behaviour

☐ Teachers with admin/clerical tasks

☐ Students with care support

2) I typically work with:

☐ An individual student

☐ A number of individual students on a one-to-one basis

☐ Small groups of students in the classroom

☐ Small groups of students outside the classroom

☐ Whole classes

3) I work with student(s) in Year(s)_____

Throughout my career, I have been working as a Teaching Assistant for ___ years and ___ months (please delete)

Whilst working as a Teaching Assistant, I have received training for this role

☐ From internal members of staff

☐ From external support services

Please state the nature of the training and the length of the training

Appendix viii*Parent/carer information and consent letter*

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

Dear Parents/Guardians,

I am a Trainee Educational Psychologist, currently completing my Doctorate in Applied Educational Psychology with the University of Nottingham and working with XXX Community Educational Psychology Services. I am writing to provide details of research that I hope to complete at [insert name of school] as part of my studies.

The study aims to look at the role of Teaching Assistants (TAs) and the support they provide may be developed. As part of the research, we hope to assess how students who receive one-to-one TA support respond to changes in TA instruction. TAs will measure this by asking a student to complete a short task once a week. For example, a student who receives TA support within Numeracy will be asked to complete 10 sums at the end of each numeracy lesson, based on the content of the lesson.

As your child receives regular support from TAs, we would like to measure how any changes to the TAs' instruction impacts your child's learning. This will involve discussing your child's progress with myself during an individual meeting with the TA. Your child will also be required to complete a short assessment as described above until the study ends in the Spring. The TA will explain this to your child beforehand to seek their agreement. I will provide a written summary of the general outcomes of the study before the end of the school year.

The amount and intensity of TA support provided to your child will not be different from what is typically received.

Participation in this study is totally voluntary and you or your child are under no obligation to take part. You or your child are free to withdraw at any point before or during the study. All data collected will be kept confidential and used for research purposes only. It will also be stored securely in compliance with the Data Protection Act.

I hope that this research will be important in developing the support that students receive from TAs in school.

If you are happy for your child to participate within this study please complete and return the slip below to the school, indicating if you agree to your child taking part in this study, by the [insert date two weeks prior to the agreed dates of the intervention]. If you require any further information on the study, please feel free to contact myself and/or contact and/or my University supervisor, [include name].

Yours sincerely,
Randeep Gill (Trainee Educational Psychologist)

Please complete and return to your child's class teacher by [insert date]

Name of child: Class:

- Have you read and understood the information sheet? YES/NO
- Have you had the opportunity to ask questions about the study? YES/NO
- Have all your questions been answered satisfactorily? YES/NO
- Do you understand that all information collected will be confidentiality and securely retained at all times? YES/NO
- Do you understand that you are free to withdraw from the study? (at any time and without giving a reason) YES/NO
- I give permission for my child's data from this study to be shared with other researchers provided that my/my child's anonymity is completely protected YES/NO
- Do you agree for your child to take part in the study? YES/NO

Your name (in block capitals):

Signed _____ Date _____

Appendix ix *Timeline of implementation of research*

Informal discussions with schools regarding research participation	March 2015
Discussion with SENCo and Head-teacher of participating school	May 2015
Initial meeting with TAs	20th September 2015
Individual meetings with volunteer participant TAs	w/b 2nd November 2015
TA practice measures piloted	2nd November 2015
Baseline phase	w/b 2nd November – w/b 30th November 2015
Intervention	w/b 23rd November – w/b 7th December
Intervention phase	w/b 23rd November 2015 – w/b 25th January 2016
Post-intervention phase interview	w/b 29th February 2016
Debrief letters sent for parents and debrief meeting scheduled with staff members	June 2016

Appendix x *Schedule of measures collected for all TAs who volunteered participation*

	2.11.15	9.11.15	16.11.15	23.11.15	30.11.15	7.12.15	14.12.15	21.12.15	30.12.15	4.01.16	11.01.16	18.01.16	25.01.16
TA 1	✓	✓	✓	X	X	✓	✓	SCHOOL HOLIDAYS		X	✓	✓	✓
TA 2	✓	✓	✓	X	✓	✓	✓			X	✓	✓	✓
TA 3	X	✓	X	✓	✓	✓	✓			✓	✓	✓	✓
TA 4	✓	X	✓	✓	X	✓	X			✓	X	✓	✓

TAs whose participation was ceased

TA 5	✓	X	X	✓	X	X	X						
TA 6	✓	X	X	✓	X	X	X						
TA 7	X	✓	✓	X	X	X	X						

Key:

X = cancelled observations
✓ = completed observations

Appendix xi *Guidance followed during the IC session, based upon Information provided by Rosenfield (1987; 2008)*

Problem definition	Description of the concern using specific behavioural terms
	Description of where the student is expected to be in the curriculum
	Description of the student's actual instructional level (meaning "the point at which the student has the prerequisite skills to enter the sequence of the curriculum") and the size of the discrepancy between the expected and actual ability
	Description of the types of errors made by the student
	Exploration and evidence of any requisite skills required to master the instructional level and whether they are missing
	Identification of whether the learner is expected to work at instructional level or at frustration level and if relevant, any barriers to placing the student at instructional level. Identification of existing performance (log on graph).
Current instructional procedures	Description of the strategies used (past and present) to eliminate the discrepancy between the desired performance and the actual performance, including a) the format of instructional strategies; b) the frequency c) opportunities for feedback and error correction d) how understanding is checked
	Consideration of any conditions in which the learner can demonstrate the targeted skill and when he/she cannot
Hypotheses formation	With a focus on the instructional triangle, an exploration of whether the instruction currently provided matches the students skills and the task objectives
	Exploration of anything around instruction that can be done differently
Intervention formation	Identification of changes that can be made to the instructional support, including scaffolding and motivation techniques and what this may address
	Identification of materials required and frequency of intervention delivery
	Consideration of how the impact on the student's learning could be measured, as well as how frequently and how mastery would be determined

Appendix xii *Resources provided to TAs following the IC session, to document the outcomes from the IC and the performance and progress made by students*

Instructional Consultation Student Documentation Form

Student name: TA name:

Class/Year group: Date started:

Description of concerns		
Priority	1 2 3	1 2 3
Baseline: ***Observable/ measurable statement of current performance***		
Description of intervention, including materials, frequency of data collection and motivational strategies		
Short term goal: expected performance in __ weeks		
Long term goal: expected performance in __ weeks		

Appendix xiii *Post-observation fidelity schedule, completed in intervention phase*

TA: Date: Intervention measure:

1. Review targets formed

2. Review data collected since (including any results from graphs)

3. What has worked well?

4. What hasn't worked well?

5. Do the hypotheses feel supported at this point in time?

6. Next steps/ meeting (time, date)

Appendix xiv *Post-intervention evaluation interview script*

Instructional Consultation Interview

Throughout my involvement, we have completed a number of tasks, including:

- Initial presentation, explaining instructional psychology
- Consultation session, during which we
    - Discussed what is working well/helping progress to be made
    - Discussed what wasn't working well/ may be hindering progress
    - Hypothesised around what may support progress
    - Developed goals and strategies to support with progress
- Reviewed the hypotheses and strategies after each observation

What do you feel was most helpful? (Please select from above, or chose and describe 'other')

- For supporting student's outcomes

- For supporting TA practice

What do you feel was least helpful? (Please select from above, or chose and describe 'other')

- For supporting student's outcomes

- For supporting TA practice

Is there anything that you feel could have been done differently?

- For supporting student's outcomes

- For supporting TA practice

Appendix xv *Pilot observation schedule to measure TA practice*

Instruction	Frequency
Closed question AFTER failure to complete alone (not re: understanding check, link to prior learning	
Open question AFTER failure to complete alone (not	
Modelling AFTER failure to accurately response and after asking closed and open question	
Check understanding (e.g. do you understand this? Does this make sense? How are you finding this?)	
Link to prior learning (E.g. do you remember doing something like this before? Last lesson do you remember…")	
Specific feedback (including praise)	

Appendix xvi*Final observation schedule to measure TA practice*

		Freq.
Instruction to **introduce tasks** Has to be regarding task, (not e.g. "you need a pen.")	**Gives instruction** to student- tells what to do at the start of a task (e.g. "you need to do questions 1-4") including providing small steps throughout lesson	
	Closed question before student attempts to complete alone (e.g. Do you know what to do?)	
	Open **question** before student attempts to complete alone (e.g. what do you think we need to do here?)	
	Modelling- provides **strategy and/or example**. Can be verbal (e.g. 'put them in order first' 'lets count together and see what's missing') or non-verbal if accompanied with verbal information (e.g. writes on white board and asks student to copy)	

Checking understanding/	**Closed question** to check understanding when answered correctly (e.g. Do you understand this question?)	
	Open question when answered **correctly** (e.g. How did you get to this answer? What have you learned so far?)	
Linking to previous learning	Linking to **previous learning or to context** (e.g. Do you remember last lesson when we…; What did we do last lesson that was similar to this?)	

Repair *anything student has* ***difficulty*** *with* e.g. failure to complete alone, doesn't start task, makes errors	**Student initiated Student Repair** (TA waits for student to identify error and correct self)	
	TA initiated Student Repair – *closed question* (e.g. TA: "are you sure q5 is correct? Does this make sense?" then student repairs)	
	TA initiated Student Repair – ***open question*** (e.g.: "have another check of your answers" then student makes corrections)	
	Correction – TA initiated TA repair or student initiated TA repair (e.g. "The answer is 2; Miss, what does this mean?" and TA provides answer)	

Positive feedback	**Non-specific** praise (e.g. "brilliant! Well done!")	
	Specific praise (e.g. "You've answered all of these questions correctly by dividing. Well done.")	

Things to remember:

- Only record if strategy is directed to the target student AND/OR wider group IF the target student is a part of that group. DO NOT record if another adult displays any of the above OR if the target TA provides strategies to another student.
- Record each time TA provides a strategy even if its around same task e.g. if TA gives 5 examples of non-specific praise consecutively, record all 5.

Appendix xvii *Ethics approval letter*

SJ/wb Ref: 734 Tuesday, 27 October 2015

Dear Randeep Gill & Nick Durbin,

Title of the new project: Investigating the impact of Instructional Consultation on the practice of Teaching Assistants (TAs)

Applicants: Randeep Gill

Further to your request for Chair Approval for amendments to the project:

Details of the previous study:

Title: Do collaborative-consultation groups develop the quality of interactions between Teaching Assistants and students? (Original title)

Date of approval: 24.03.2015 Reference number (if known): 631

As Chair of the Ethics Committee I have considered your request and I am happy to grant approval for the following changes:

Final responsibility for ethical conduct of your research rests with you or your supervisor. The Codes of Practice setting out these responsibilities have been published by the British Psychological Society and the University Research Ethics Committee. If you have any concerns whatever during the conduct of your research then you should consult those Codes of Practice.

Independently of the Ethics Committee procedures, supervisors also have responsibilities for the risk assessment of projects as detailed in the safety pages of the University web site. Ethics Committee approval does not alter, replace, or remove those responsibilities, nor does it certify that they have been met.

Yours sincerely



Professor Stephen Jackson

Chair, Ethics Committee

Appendix xviii *Script read by TAs to students to gain verbal consent for participation*

Please read this script to the student

You may have noticed that we have a visitor in the room today. This is Miss Gill and she is here to observe the work we do together. This is also so that some strategies can be developed for this lesson. Is this ok? She will be here every week until January. Please let me know if you wouldn't want this to take place.

Appendix xix*Script provided to colleague for the purpose of inter-rating the visual analysis of the TA-level SCED data*

A TA's use of x different strategies was observed and recorded before and following an intervention. The outcomes for each of these behaviours are visually presented in the graphs below. Descriptive information is also provided. The following table explains the information presented both visually and descriptively, to aid with the visual analysis process:

Calculation	Description
Level	Mean performance during a condition. A change in level between phases indicates an experimental effect.
Trend	Rate of increase/decrease of the straight line of best-fit of data points in each phase. An effect is evident if the trend conforms to that predicted following the introduction of the IV.
Variability	Degree of which data points fluctuate around a slope within each phase. Small variability indicates a consistent pattern.
Degree of overlap	Proportion of data that overlaps from one phase, with a previous phase. A smaller overlap indicates a larger effect.

Please look at each of the strategies in turn and, by referring to the graphs and the descriptive data, take the following steps:

1. Identify a stable baseline pattern
2. Examine each phase to assess any *within-phase pattern(s)* Is there sufficient, consistent data to demonstrate a predictable pattern?
3. *Compare phases* to assess if the introduction of the treatment led to an "effect"

Using the judgements from above, please consider the following question:

> ***"How certain or convinced are you that the strategies used by TAs underwent a practical and significant change from the baseline phase to the intervention phase?"***

Please indicate your response for each of the strategies on the following table. It is acceptable to return to previously analysed graphs during the process if your opinion changes.

Dependent variable	*1 – Not at all convinced*	*2 - Uncertain*	*3- Think it's possible*	*4 – Reasonably certain*	*5- Very convinced*

Appendix xx *Script provided to colleague for the purpose of inter-rating the visual analysis of the student level data*

The student's responses to a learning target were observed and recorded following an intervention. The outcomes are visually presented in the graphs below. Descriptive information is also provided. The following table explains the information presented both visually and descriptively, to aid with the visual analysis process:

Calculation	**Description**
Trend	Rate of increase/decrease of the straight line of best-fit of data points in each phase. An effect is evident if the trend conforms to that predicted following the introduction of the IV.
Variability	Degree of which data points fluctuate around a slope within each phase. Small variability indicates a consistent pattern.

Please look at each of the responses in turn and, by referring to the graphs and the descriptive data, take the following steps:

1. Identify stability between the responses
2. Examine to assess any patterns - Is there sufficient, consistent data to demonstrate a predictable pattern?

Using the judgements from above, please consider the following question:

> ***"How certain or convinced are you that the student's responses following the intervention changed over time?"***

Please indicate your response for each of the strategies on the following table. It is acceptable to return to previously analysed graphs during the process if your opinion changes.

Learning target	***1 – Not at all convinced***	***2 - Uncertain***	***3- Think it's possible***	***4 – Reasonably certain***	***5- Very convinced***

Appendix xxi*IC consultation record with Rachel*

Current situation: Jacob, a male student was receiving additional literacy support due to concerns around his reading and spelling abilities, which was hypothesised by school staff to result in challenging behaviours being displayed by Jacob. Rachel shared that Jacob had historically poor attendance, which may have resulted in the academic gap between Jacob and his peers.

Rachel's sessions with Jacob were said to consist of various games and activities that target the spelling and reading of words with different long vowel sounds. During their sessions together, Rachel shared that they typically focused on spelling a variety words from a bank collected by his class teacher during the week, using a 'look, cover, check' approach. These words would change each fortnight. They would also read a book of Jacob's choice.

Problem definition: Rachel shared that Jacob has made little progress with his reading and spelling since starting his sessions with her. Rachel also shared that Jacob had low confidence and self-esteem with regards to his literacy abilities and that he didn't appear to enjoy his sessions with her.

Hypotheses and intervention formulation: Rachel identified that Jacob particularly struggles to identify the correcting vowel sound when spelling a word (for example, he would spell "rain" as "rane;" "please" as "pleese"). It was hypothesised by Rachel that Jacob would benefit from being asked to spell words with same long-vowel sounds at one time, to allow him to discriminate between the appropriate spellings. Rachel also hypothesised that Jacob may require more than a fortnight to master particular spellings

Rachel identified that, in response to an error made by Jacob, she may be too fast to correct him as opposed to providing him with opportunities to correct himself with or without being prompted with questions.

Rachel also shared that Jacob responds well to praise and that highlighting any incorrect responses is harmful to his self-esteem. When asked whether praise is incorporated into her sessions with Jacob, Rachel shared that she isn't the "type to over-do it," by providing constant general praise. Rachel identified that alternatively, more specific praise could be incorporated occasionally to provide Jacob with feedback on his progress, which may be meaningful to Jacob and target the concerns raised. Rachel identified that she often questions errors made and hypothesised that Jacob would benefit from being asked questions when he succeeds, in order to check his understanding.

Rachel identified that competitive activities (which were not routinely incorporated within her sessions with Jacob) tend to motivate Jacob. From this, Rachel proposed that Jacob's progress each week should be charted by Jacob, for him to provide him with immediate feedback as well as to motivate him to surpass his previous scores.

Appendix xxii *Graphs presenting the level, trend, variability and overlap for SCED data assessing Rachel's practice – See CD-ROM*

Appendix xxiii *Graphs presenting the trend and variability for Jacob's outcomes– See CD-ROM*

Appendix xxiv *IC consultation record with Sarah*

***Problem definition and current support*:** Sarah raised concerns around Tom's writing ability, which she described as being very poor and to almost resemble mark-making. Sarah shared that Tom will often show reluctance to write and will often rush in order to complete any writing task. Sarah shared that, asides from the whole class weekly handwriting session in which students are required to repeatedly copy selected symbols and/or words, Tom does not receive any additional support for his handwriting.

Sarah identified during the IC session that Tom forms letters better more clearly when he is asked to copy individual letters, however he struggles to write independently. She also shared that, when Tom is writing about a subject he enjoys, he concentrates harder on his writing, which was hypothesised to be due to an increase in motivation and interest in the work. Sarah also hypothesised that this may be due to being required to only write a few words per page, as opposed to lengthier sentences that he is more often required to write unsupported.

Hypotheses and intervention formulation: It was hypothesised whether there may be a discrepancy between Tom's task demands (e.g. having to write numerous words) and his current ability to work independently, which may be resulting in Tom working at 'frustration' levels. Sarah hypothesised whether Tom may require more scaffolded support with his handwriting, for example by giving him single letters to write as opposed to numerous words, and, if he experiences difficulties with this, for correct writing to be modelled with the use of words to copy or to trace over. Sarah had identified that this had supported the handwriting of another student and hypothesised that Tom would benefit from an increased level of support also.

Sarah further hypothesised that Tom demonstrates a reluctance to write as he recognised that he finds the task difficult and often makes mistakes. When asked what may support his self-esteem and confidence in his writing ability, Sarah suggested that he may benefit from being praised specifically for his writing techniques, for him to be asked about the techniques used when he does write clearly, for him to be reminded of examples of his successful writing and for him to receive rewards (such as stickers) when he does demonstrate effort when writing.

In order to assess whether these changes impacted Tom's handwriting, Sarah charted on a twice-weekly basis the number of letters written clearly by Tom, with details around the level of support provided to Tom. Sarah intended to share this chart with Tom, along with specific example of his successful writing, in order to support his self-esteem around writing.

Appendix xxv *Graphs presenting the level, trend, variability and overlap for SCED data assessing Sarah's practice – See CD-ROM*

Appendix xxvi *Graphs presenting the trend and variability amongst Tom's outcomes– See CD-ROM*

Appendix xxvii *IC consultation record with Caroline*

Problem definition: Caroline raised concerns around Daisy and her performance during numeracy lessons in particular. Caroline reported that Daisy will rarely begin and progress through a numeracy task independently and will constantly require prompts and seek reassurance. Daisy is said to become visibly upset when she makes an error, which can lead to her being absent in subsequent sessions. Caroline reported that Daisy's mathematical ability is only slightly behind in comparison to her classmates but hypothesised that her lack of confidence and self-esteem is slowing down Daisy's rate of progress. Caroline shared her concerns around over-supporting Daisy and this resulting in Daisy becoming increasingly dependent on adult support, as she appears to panic when TA support is not available.

Current support: When asked what is currently being implemented to support Daisy's academic self-esteem, Caroline shared that she provides Daisy with lots of specific praise when she succeeds, as well as tangible rewards where possible (such as stickers). Caroline also shared that she has tried providing Daisy with entire tasks (with steps written down) as well as individual steps at a time, however neither appeared to support her independence. She now provides Daisy with a few individual instructions at a time.

Caroline shared that she often asks Daisy questions in front of the group that she knows Daisy can answer correctly, however she often doesn't reply. Caroline shared that she also incorrectly models examples to Daisy and asks her for correction, which Daisy is said to enjoy.

Hypotheses and intervention formulation: Caroline shared that Daisy's independence may be supported by being encouraged to identify her own errors as well as by being asked more open questions when being instructed with a task, in order to shift responsibility onto Daisy.

As Daisy was described as being mathematically able but is held back by her lack of self-esteem, it was asked what could support her independence. Caroline shared that a former student with similar needs had access to a sand-timer, which the student was encouraged to use to guide a time-frame during independent work was required. Caroline hypothesised whether Daisy would benefit from this also and whether this would gradually provide Daisy with evidence of how capable she is.

Caroline agreed to chart twice-weekly the duration that Daisy would work independently (without requesting support), both before and after the introduction of the sand-timer. Caroline believed that Daisy would benefit from having the chart shared with her so that she can monitor her own progress and remind herself of past achievements, to support her intrinsic motivation.

Appendix xxviii *Graphs presenting the level, trend, variability and overlap for SCED data assessing Caroline's practice – See CD-ROM*

Appendix xxix *Graphs presenting the trend and variability of Daisy's outcomes– See CD-ROM*

Appendix xxx *IC consultation record with Sharon*

Current support: Lloyd, a student aged 9 years old, is described as having literacy difficulties and is at least three years behind his peers. Lloyd is said to receive extra support since he was five years old when it was recognised that his rate of progress with literacy was slower in comparison to his peers.

Lloyd receives individual support from Sharon twice weekly for fifteen minutes, during which they complete the 'Toe by Toe,' a short, literacy intervention. which targets basic literacy skills. Lloyd is required to read three and four letter consonant-vowel-consonant CVC/ CVCC/ CCVC real words and pseudo-words. Lloyd is required to read a list of 35 words, which is repeated in subsequent sessions until a 90% success rate is achieved.

Problem definition: Lloyd was said to have been completing the 'Toe-By-Toe' intervention for nearly two years and Sharon shared that, despite at times showing signs of progress, this isn't often retained and applied within the classroom. Sharon shared that Lloyd is aware of the difficulties he experiences with literacy and that this appears to have impacted his academic self-esteem – he is described to contribute little within the classroom and often he becomes frustrated quickly and attempts to avoid tasks that require reading, including behaving disruptively. It was also shared that Lloyd may have been over-supported within previous academic years by TAs, which has led to him becoming over-dependent on additional support.

Hypotheses and intervention formulation: When asked what strategies are currently employed by Sharon to introduce the task, she shared that she often waits for Lloyd to attempt the task alone and then corrects him if he makes an error. When asked what may be done differently to support Lloyd, Sharon hypothesised whether he would benefit from having examples modelled to him by Sharon so that he has some guidance. Sharon also hypothesised whether he would benefit from not being immediately corrected, but for him to be prompted to try himself beforehand.

During the IC session, it was said that Lloyd has enjoyed the Toe-By-Toe intervention more so than other interventions as he receives immediate feedback, however this isn't always positive and his achievements aren't always transparent. Sharon also shared that Lloyd often shows reluctance at the start of the session, which she hypothesised may be due to him being overwhelmed by the long list of words, particularly when the lists are repeated when he hasn't reached the ceiling response rates. When asked what would improve this, Sharon shared that he may benefit from being presented with one word at a time, as opposed to the whole list. Sharon also hypothesised that Lloyd may benefit from having his results charted so that he can easily access his previous success rates, which may motivate him to beat this in subsequent sessions.

When asked about the other strategies used by Sharon to provide Lloyd with feedback, she shared that she often tells him when he is doing well. When asked whether this is effective for Lloyd, Sharon hypothesised whether he would benefit from receiving less frequent but more specific feedback and praise from Sharon, as well as house-points for demonstrating success.

Appendix xxxi *Graphs presenting the level, trend, variability and overlap for SCED data assessing Sharon's practice – See CD-ROM*

Appendix xxxii *Graphs presenting the trend and variability of the observational data assessing Lloyd's outcomes– See CD-ROM*

Appendix xxxiii *TME data: Rachel and Jacob*

Rachel's targets:

1) *For Rachel to provide Jacob with support when he faces a difficulty/ makes an error, for example by asking open questions and have time to correct his own errors:*
   - BASELINE= 5 EXPECTED= 7 ACHIEVED= 9 = Better than expected progress

2) *Rachel to provide Jacob with specific praise when he has succeeded as opposed to more general praise, for example by highlighting what he has done particularly well, as well as asking him to explain any correct choices he may have made:*
   - BASELINE=4 EXPECTED= 7 ACHIEVED= 9 = Better than expected progress
   - **Comments:** Had a positive impact on Jacob – he appears to have more control, he smiles more and is less reliant on support.

   General comments: Worked hard. I feel rewarded seeing the positive contribution this small change may have had on him. Have a way to go but feel more confident now

Jacob's targets:

1) *For Jacob to be able to correctly and consistently <u>read</u> words from the same family of long vowel sounds:*
   - BASELINE= 2 EXPECTED= 6 ACHIEVED= 8 =Better than expected progress
   - **Comments:** Jacob is far more confident in his reading. He self-correct himself and can hear when something sounds wrong.

2) *For Jacob to be able to correctly <u>spell</u> words from the same family of long vowel sounds:*
   - BASELINE= 1 EXPECTED= 5 ACHIEVED= 8 = Better than expected progress
   - **Comments:** Spelling has substantially improved. He can now see when spelling if a word looks incorrect and corrects himself without prompt/support. He also is discouraged less when he makes error.

General comments: He is now far less negative, making errors doesn't throw him off guard, he seems to be interested more in literacy. His independence and literacy skills in the classroom is said to have improved also. A lot has improved in a short amount of time.

Appendix xxxiv *TME data: Sarah and Tom*

Sarah's targets:

1) For Sarah to provide Tom with scaffolded support, for example by writing words out for Tom to copy and/or trace and to ask open questions about Tom's writing when starting a writing task.

- BASELINE:2 EXPECTED: 5 ACHIEVED: 5 = Expected progress
- **Comments:** She now thinks more about how to support Tom with his handwriting, as opposed to correcting his errors.

2) For Sarah to provide Tom with increased specific praise when he does write well, for example by highlighting what he has done particularly well and reminding him of his progress over time.

- BASELINE: 4 EXPECTED:7 ACHIEVED: 9 = Better than expected progress
- **Comments:** Now thinks more about providing this for all students. Feels that this has particularly had a positive impact on Tom and his target.

Tom's target

- 1) For Tom consistently write clearly when requested, regardless of the subject
- -BASELINE: 3 EXPECTED: 6 ACHIEVED: 7 = Better than expected progress
- **Comments:** Sarah said that Tom's writing no longer resembles mark making and he no longer writes random symbols to appear to look like he is writing.

Appendix xxxv *TME data: Caroline and Daisy*

Caroline's target:

1) For Caroline to provide Daisy with opportunities to work independently by encouraging her to self-correct any errors, asking her open-questions to introduce tasks so that she constructs her own plan and to provide Daisy with specific feedback around her success regarding how much time she may have worked independently within previous lessons.

- BASELINE:5 EXPECTED:8 ACHIEVED: 9 = Better than expected progress
- ***Comments:*** Caroline shared that she has seen the impact the small changes have made but still feels that further progress can be made.

Daisy's target

1) For Daisy to work independently during her numeracy session

- BASELINE: 2 EXPECTED:5 ACHIEVED:8 = Better than expected progress
- ***Comments:*** Caroline shared that her academic self-esteem had developed substantially for all subjects, and that her general confidence to share her concerns has developed. This has led to a number of observable changes, for example: Daisy now joins in more, she shares her ideas confidently, she no longer seeks regular assurance, she now eats school dinners (previously she would refuse to eat school or home dinners), she is no longer upset when she arrives to school, she is more willing to try new things and she seems happier in the school setting. Caroline shared that she was surprised with how much could be changed with the implementation of small strategies, over a short amount of time.

Appendix xxxvi *TME Data: Sharon and Lloyd*

Sharon's targets

1) For Sharon to to provide Lloyd with specific instruction and modelling if required at the start of the session to help him to work more independently

- BASELINE: 3 EXPECTED:6 ACHIEVED: 8 = Better than expected progress

2) For Sharon to provide Lloyd with scaffolded support when he faces a difficulty, for example by modelling and asking him open questions after providing him with time to self-correct.

- BASELINE:3 EXPECTED:6 ACHIEVED: 8 = Better than expected progress

3) For Sharon to provide Lloyd with specific feedback praise when he has succeeded (as opposed to more general praise), for example by highlighting what he has done particularly well, as well as asking him to explain any correct choices he may have made and sharing the progress he has made over time

- BASELINE:3 EXPECTED:6 ACHIEVED: 8 = Better than expected progress

Comments for all targets: she shared that she felt more confident in applying the targets and felt they were becoming more automatic. She felt that she is thinking more about her practice and, although some habits have been hard to change, an impact has been seen. Sharon shared that she still felt that she has improvements and progress to make.

Lloyd's target

1) For Lloyd to develop his reading ability, particular through the Toe-By-Toe intervention, which is currently targeting his ability to correctly read a 40 CVCC/CCVC words and pseudo-words.

- BASELINE:3 EXPECTED:6 ACHIEVED: 8 = Better than expected progress
- **Comments**: Sharon indicated that she felt Lloyd had made some progress. Sharon described the achieved level to be less than the expected progress as, although he retains more now, he still has a long way to go. But he now looks forward to their session as well as other literacy tasks within the classroom and he appears to have an increased interest and enthusiasm towards literacy. Sharon shared that she did not expect him to have become so enthusiastic due to the number of interventions that had been attempted with Lloyd with little effect. Sharon shared that Lloyd now relies less on staff, has become more independent and more willing to try and thinks about his learning more.