Evaluating the Impact of a Reciprocal Teaching Intervention for Learners with Diverse Reading Abilities in the Upper Primary Phase

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DECLARATION

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Signed   Michael Viney (candidate)

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STATEMENT 1

This dissertation is being submitted in partial fulfilment of the requirements for the degree of MA Education (Wales).

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Date   September 28, 2023

STATEMENT 2

This dissertation is the result of my own independent work/investigation, except where otherwise stated. Other sources are acknowledged by footnotes giving explicit references. A bibliography is appended.

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I hereby give consent for my dissertation, if accepted, to be made available for photocopying and for inter- library loan, and for the title and summary to be made available to outside organisations.

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ABSTRACT

Teaching children to comprehend what they read successfully is a fundamental goal of education. This small-scale action research evaluates the impact of a Reciprocal Teaching (RT) intervention for 31 Year 6 learners in a mainstream school, challenging assumptions about the intervention's inclusivity for all groups of learners. Initially developed by Palincsar & Brown (1984), RT is based on the principle that *comprehension-fostering* and *comprehension-monitoring* strategies are developed within a socially constructed learning environment to improve reading outcomes. A review of the literature recognises its significant impact for readers with adequate decoding skills but who are poor comprehenders. However, evidence of RT within heterogeneous settings remains inconclusive, especially in the UK where it is recently emerging as a teaching method. After suggesting that reading comprehension goes beyond the Simple View of Reading (Gough & Tunmer, 1986), this study explores RT's potential for improving the comprehension skills of two further groups of learners: typically developing readers (TD) and readers with poor decoding and comprehension skills, referred to as poor-in-both (PIB). A pragmatic, mixed-methods framework was adopted to integrate qualitative data from an observation of learners' interactions with data from standardised reading assessments and learner questionnaires. The findings, presented thematically, suggest that while TD learners frequently and proficiently applied reading strategies following the intervention, modest improvements to their comprehension scores were found. In contrast, PC and PIB increased their comprehension scores significantly. The contribution of social interactions in the findings, including dialogue, scaffolding, and self-efficacy, towards co-constructed comprehension is discussed in relation to prior research around RT and three action steps are outlined to inform future practice. By utilising qualitative methods, this study contributes to an understanding of the social constructivist principles of RT in action, although it is recommended that RT should be adapted to meet individual learners' needs in the future.

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ACRONYMS AND ABBREVIATIONS

AR	Action research
BERA	British Educational Research Association
C-I Model	Construction-Integration Model
DIER Model	Direct and Indirect Effects Model
DIME Model	Direct and Inferential Mediation Model
HORS	Higher order reading skills
NGRT	New Group Reading Test
OECD	Organisation for Economic Co-operation and Development
PC	Poor comprehenders
PIB	Poor-in-both
PISA	Programme for International Student Assessment
RCT	Randomised control trial
RQ	Research Question
RT	Reciprocal Teaching (also referred to as Reciprocal Reading)
SAS	Standardised Age Score
SVR	The Simple View of Reading
TD	Typically developing
UWTSD	University of Wales Trinity Saint David
ZPD	The Zone of Proximal Development

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CHAPTER 1: INTRODUCTION

1.1 Context of the study

Reading comprehension is necessary for lifelong learning and accessing education and work opportunities. Reading deficits can lead to cognitive ageing (John, Stott, & Richards, 2022); lower chances of attaining qualifications (McLaughlin, 2014); lower levels of employment and use of health services; and difficulties across the school curriculum (Mulcahy, Bernades, & Baars, 2016). This evidence suggests that by failing to teach students to read for understanding, schools jeopardise their learners' life chances. Considering mainstream classrooms contain diverse reading abilities, selecting evidence-informed approaches is essential. Consequently, this dissertation evaluates the effects of Reciprocal Teaching [RT], a reading intervention initially created by Palincsar & Brown (1984), on Year 6 learners in a mainstream school.

Following the Organisation for Economic Co-operation and Development's [OECD] 2018 Programme for International Student Assessment (PISA) results in reading, Wales ranked average internationally (Sizmur et al., 2019). Insignificant improvements since 2015 mean that Wales remains the poorest-performing UK nation in reading (Welsh Government, 2019), a fact which has influenced its educational policies in the last decade (Dauncey, 2015; Evans, 2021). Media coverage during this period demonstrated PISA's lasting sway on public perceptions of the Welsh education system and the potential political and economic ramifications if rankings did not improve (Davies, 2017; Lewis, 2019). A closer analysis of the 2018 PISA results exposed a specific cause for concern: 'understanding' – the ability to comprehend the meaning of a text – was the weakest aspect of Welsh learners' reading skills, and the disparity between the lowest and highest-achieving pupils had increased (Sizmur et al., 2019). Thereafter, the implications of the COVID-19 pandemic on reading skills and children's futures in Wales became apparent. During the disruption to schools, children who did not read at home had made poor

progress in their reading skills (Estyn, 2021, p.19) Furthermore, a report found that even after controlling for socioeconomic background, pupils in Wales fall behind their English counterparts in PISA results (Sibieta & Fullard, 2021). Considering children in poverty are at a greater risk of underachievement in Wales (Save the Children, 2015), the case for a national effort to improve reading standards is compelling.

Although revered as a 'gold standard' for comparing global educational systems, PISA has drawn criticism for its monolithic influence and design flaws (Zhao, 2020), including problems in standardising comprehension assessments across participating nations to account for differences in contexts and language (Berliner, 2020). Still, the PISA's authority over educational policy is enduring. Nicholas and Smith (2020) speculated that to improve results in Wales, policymakers would look to draw upon evidence-informed practices. A concern over how my school would respond to a national priority to improve reading skills motivated this research. The universal reading provision on offer to all learners was evaluated and revised and so, as a teacher, I asked how I might best address the widening gaps in reading comprehension outcomes for the learners in my class.

1.2 Misconceptions about higher order reading skills in theory and practice

Against this context, staff at my school were encouraged to read the thematic report *English language and literacy in settings and primary schools* by Estyn (2021). The report concluded that although learners in Wales make progress in their literacy skills, standards had remained similar to those five years prior. While learners in Key Stage 2 (aged 7-11) could read fluently, Estyn maintained that advanced reading skills remained underdeveloped and teachers underutilised the most effective practices. These advanced skills, known as higher order reading skills (HORS), are defined as the use of strategies

that enable a reader to select ideas from a text to make inferences about implicit messages, going beyond a literal understanding of what has been read (Welsh Government, 2010, pp. 4-6). An attempt to conceptualise HORS classified reading into basic and higher order skills based on the hierarchical taxonomies by Bloom and Krathwohl (1956; 2002, in Afflerbach, Cho & Kim, 2015). This framework suggests that proficiency in basic reading skills must be achieved before acquiring higher order thinking. In other words, the acquisition of reading skills is sequential. Some critics of Bloom's taxonomy argue that its hierarchical nature is dated and does not represent how learning occurs (Berger, 2018), or that the effects of social processes and individual characteristics are ignored (Kompa, 2017). According to Case (2013), misinterpretation of the taxonomy can lower expectations and lead to less rigorous thinking in schools. Estyn highlights this common misconception:

> The term 'higher order' can be misleading. For example, we know young learners, who are not yet secure in their decoding skills, can infer and deduce meaning from texts when read by an adult. In addition, younger learners can locate appropriate sources and retrieve information from texts, when the texts are accessible. (2021, p. 219)

This conceptualisation aligns with the view that basic and HORS emerge simultaneously: 'inside-out' skills decode written texts at the word level and 'outside-in' skills engage background knowledge to make meaning (Whitehurst & Lonigan, 1998). Specifically, Sipe (2000) demonstrated that, from a young age, learners can be taught to apply HORS regardless of any limitations in decoding. Guidance in the Curriculum for Wales, a new purpose-driven curriculum statutory for schools since 2022, reflects the same view regarding HORS. The message that decoding and comprehension skills should be taught concurrently is clear: 'Being able to decode words alone is not enough; readers need to be able to make sense of what they read. Teaching should enable learners to gain a range of skills and apply different strategies to become fluent readers.' (Welsh Government,

2021). The curriculum emphasises a balanced approach between foundational reading skills, such as decoding, which have led to improvements in internationally recognised assessments in England (Stainthorp, 2020), and explicit instruction in comprehension strategies, popularised in North America (Pressley, 2006; Wyse & Bradbury, 2022). Therefore, research and curriculum policy present a consistent view that supports HORS being taught at all stages of learning, indicating that instruction in reading comprehension should be provided to all learners.

1.3 Looking towards a universal intervention: Reciprocal Teaching

While curriculum documentation provides some guidance in what learners should be able to do as readers, its shift from a prescribed framework of content to one that provides schools with autonomy means that reading practices should be informed by 'disciplinary-specific expertise' and 'learning from professional enquiry' (Welsh Government, 2020). Therefore, the responsibility for evidence-informed pedagogy to improve reading outcomes lies with the practitioner. Considering these principles, and the assumption outlined previously that HORS should be explicitly taught to readers at any stage, I sought to implement an intervention that was evidence-informed for maximum impact on my learners' comprehension. A recent review of post-pandemic catch-up interventions in Wales recommended approaches, such as Catch-up Literacy and Switch-on Reading (Roberts, 2022). Closer readings of their respective evaluation reports revealed that despite promising trials, follow-up research resulted in little or no progress being made by participants (Roy, et al., 2019; Patel, et al., 2017). In light of these results, I sought an alternative intervention that could be feasibly implemented as part of a small-scale research project without buying into a programme. Donegan and Wanzek (2021) revealed how small-group reading strategy instruction that addressed the multi-component aspects of reading predicted significant effects on the comprehension

outcomes of upper primary readers. This evidence, and assumptions made from curriculum policy regarding HORS, provided criteria for the selection of Reciprocal Teaching as an intervention in my research.

1.4 Outline of the dissertation

Following this introduction to the research, this dissertation is organised into five further chapters. Chapter 2 critcally reviews the relevant literature surrounding reading comprehension theory, the teaching and learning principles surrounding RT, and research since the original study by Palincsar & Brown (1984). The current literature is synthesised and informs this research's aims and objectives, which are presented at the end of the chapter. Methodological aspects relevant to the study are presented in Chapter 3, including details on the methodological framework, data collection methods, sampling, ethical considerations, and data analysis. Chapter 4 presents the integrated quantitative and qualitative results, which are discussed in relation to current theory and research. Finally, a summary of my findings along with limitations and next steps is presented in Chapter 5.

CHAPTER 2: LITERATURE REVIEW

The first section of this chapter synthesises established reading comprehension theories and models, followed by an exploration of the literature supporting the main RT principles of *comprehension-fostering* strategies*, comprehension-monitoring*, and socially constructed learning. Afterwards, empirical evidence of RT in practice is discussed the relation to its impact on various subgroups of readers. The final section justifies the gaps and issues in the research that informed the study's aims and objectives.

2.1 Reading comprehension theory and related models

> Making sense of printed words and communicating through shared texts with interpretive, constructive, and critical thinking is perhaps the central task of formal schooling around the world. (Paris & Hamilton, 2009, p.32)

Over a decade since these remarks, a primary teacher's fundamental concern remains teaching learners to read for comprehension. The authors expressed surprise at the paucity of theories explaining how reading comprehension develops in children at the time, and they highlighted disputes surrounding those that did exist. Although research has progressed to sophisticated theoretical models, no consensus has been reached on their practical application (Elleman & Oslund, 2019). If, for good readers, 'processes have become so automatic that frequently they are not even aware of the individual steps they have taken to achieve comprehension' (Van den Broek & Kremer, 2002, p. 2), then a teacher's ability to support learners' acquisition of these processes is critical for achieving this 'central task' of education. Accordingly, several theoretical perspectives are now discussed.

The Simple View of Reading (SVR) (Gough & Tunmer, 1986) remains an influential theory that views reading comprehension as the sum of two components: decoding and

language comprehension. Decoding is a reader's ability to make letter-sound correspondences of printed text, integrating phonological and orthographic awareness to sound out sequences of sounds as spoken language. Language comprehension, on the other hand, entails associating literal and inferred meanings to larger segments of spoken or written language, such as a sentence. Figure 1 depicts how decoding and language comprehension contribute to comprehension. If poor decoding impedes comprehension, this 'bottom-up' theory suggests that reading develops linearly. The reading automaticity model proposed by LaBerge and Samuels (1974) compares this process to a factory, with decoding serving as a cog in the machine that frees up cognitive resources for comprehension. Furthermore, Perfetti (2007) investigated the consequences of poor decoding on reading comprehension and proposed the Lexical Quality hypothesis. In addition to letter-sound correspondences, efficient decoding requires knowledge of word
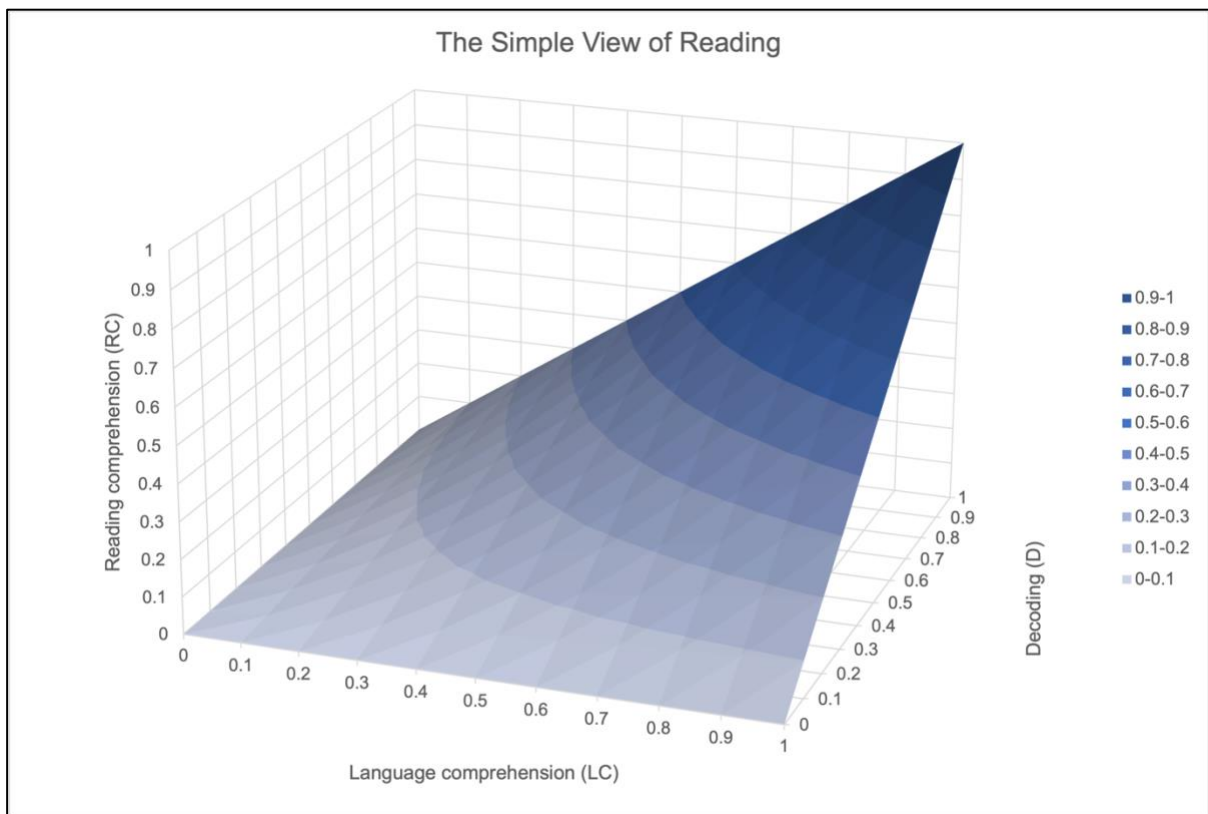
Figure 1. Visualisation of the SVR formula, adapted from Hoover & Tunmer (2018).

Reading comprehension (RC) is the product of a reader's skill level in decoding (D) and language comprehension (LC), ranging from 0 (no skill) to 1 (perfect skill).

forms and meaning. This implies that word knowledge varies from a low to high lexical quality, with variations in how phonological, orthographic, and semantic components of words are successfully integrated. Perfetti based his theory on findings involving adult participants, but a similar study of 200 primary learners substantiated his claims (Richter & Isberner, 2013). Therefore, decoding involves more demanding processes on the reader than the SVR suggests. Although not intended to improve decoding skills, this RT study acknowledges variations in decoding ability.

The second component of the SVR is also significant. Language comprehension, like decoding, can be divided into smaller functions such as background knowledge, vocabulary, syntax, and semantics (Scarborough, 2009). A longitudinal UK study of children conducted between the ages of five and fourteen found that language comprehension predicted reading achievement over general cognitive ability, and phonological and verbal memory, even when early decoding skills were accounted for (Babayiğit, Roulstone, & Wren, 2021). Thus, language comprehension influences reading but does not rely solely on decoding skills to develop. These findings from a large sample using a variety of measures suggest that we should look *beyond* the SVR. As a result, Ehri (1995) and Chall (1983) acknowledge the complex relationship between decoding and language comprehension in their conceptualizations of reading comprehension as stages. Chall's five hierarchical stages emphasise the importance of decoding and increasing fluency before the age of seven or eight to address the 'fourth-grade slump': the point at which school curricula shift from 'learning to read' to a focus on 'reading to learn' (Chall, Jacobs, and Baldwin, 1990). Her model advances from the SVR in that it recognises how interactions between the reader's background knowledge, decoding, and language comprehension are influenced by intrinsic and extrinsic factors from birth, such as language and cognition, literacy, and environment (Horowitz-Kraus et al., 2017). These

staged models define specific decoding and language comprehension milestones, rounding out the SVR formula with a child-centred framework for reading instruction.

The seminal research of Walter Kintsch (2018) clarified the specific cognitive processes that integrate both components of the SVR. In pursuing the goal of expert reading, Kintsch recognised that to achieve expert reading 'students must engage in active problem-solving, knowledge construction, self-explanation, and monitoring - activities very different from the automatic, fluent comprehension of experts.' (Ibid., p. 836). He proposed the Construction-Integration Model (C-I Model), which posits that bottom-up processes become integrated with top-down processes to create mental representations of a text. This process operates on two levels: first, decoding skills and language comprehension lead to an understanding of a text at the word and sentence level; second, prior knowledge is combined with this understanding of language to create a situation model (Van Dijk & Kintsch, 1983). Failures in comprehension, therefore, are addressed in two ways: by considering different plausible meanings at the word level or by selecting appropriate background knowledge. Kintsch's work offers a tangible cognitive model of comprehension that demonstrates how component skills contribute to a coherent understanding of a text. The C-I model highlights how interactions between schematic and linguistic networks are also cognitively *monitored*, and notably, subsequent research has used the C-I Model as a framework for a strategic approach to reading, including research on inference skills (Graesser & Kreuz, 1993; McNamara & Kintsch, 1996), questioning and self-monitoring strategies (Otero, 2009), and word knowledge (Perfetti & Stafura, 2014). Strategy instruction for emerging readers can thus be seen as having theoretical value.

The theories presented above are not exhaustive of the literature in the quest to resolve the 'science of reading.' Some continue to advocate for a focus on decoding, insisting that reading failures are historically attributed to poor phonological awareness (Semingson & Kerns, 2021); others believe the SVR's influence has led to false

impressions of reading comprehension as unidimensional, ignoring multiple factors causing reading difficulties (Duke & Cartwright, 2021; Catts, 2018). As a result, teachers' practice should be guided by current theories and models, with interventions taking a balanced approach (Castles, Rastle, & Nation, 2018). Noting this advice, I present four multi-component models of reading comprehension that incorporate additional processes such as fluency (Schrauben, 2010), self-regulated learning (Massey, 2009), executive functioning (Locascio et al., 2010), metalinguistic skills (Apel, 2021), and text exposure (Muijselaar, et al., 2017; van Bergen, Vasalampi, & Torppa, 2020).

Born from a critical examination of prior theories, the Reading Strategies Mediation Model (ReStMe), compared the use of three RT strategies (questioning, summarising, and predicting) with several measures of reading comprehension involving over a thousand participants (Völlinger et al., 2018). It was found that strategy use mediated successful comprehension in upper primary learners, although the cross-sectional data suggests that this relationship was not causal. Furthermore, the study did not investigate differences in the reading abilities of its participants. The ReStMe Model is built upon the Direct and Inferential Mediation Model (DIME) by Cromley and Azevedo (2007). In this earlier study, strategy use made a minor contribution to comprehension, behind vocabulary and background knowledge. The authors acknowledged that think-aloud measures may have captured strategy use in action better than offline tests alone. Moreover, participants with reading comprehension difficulties performed poorly on all component measures. This suggests that poor readers require instruction that targets multiple skills and background knowledge, which is relevant to my research goals. How RT addresses this requirement will be explored later.

Two final models, the Direct and Indirect Effects Model (DIER model) (Kim, 2020) and the Lattice Model (Connor, 2016) reveal interacting and reciprocal effects across text, linguistic, cognitive, and socio-emotional processes.

Figure *2* depicts the bootstrapping effects of specific reading skills. For instance, teaching learners to improve their decoding may result in improved vocabulary and oral language skills, which in turn will improve social interaction and comprehension. These models, which situate reading development between the individual and their environment, suggest that interventions that address multiple components simultaneously are beneficial for struggling readers. Arguably, implementing an intervention, such as RT, would need to be tailored to the specific needs of each learner. However, the reality of personalised instruction is complicated: changes made to an RT and its defined procedures may jeopardise its validity.
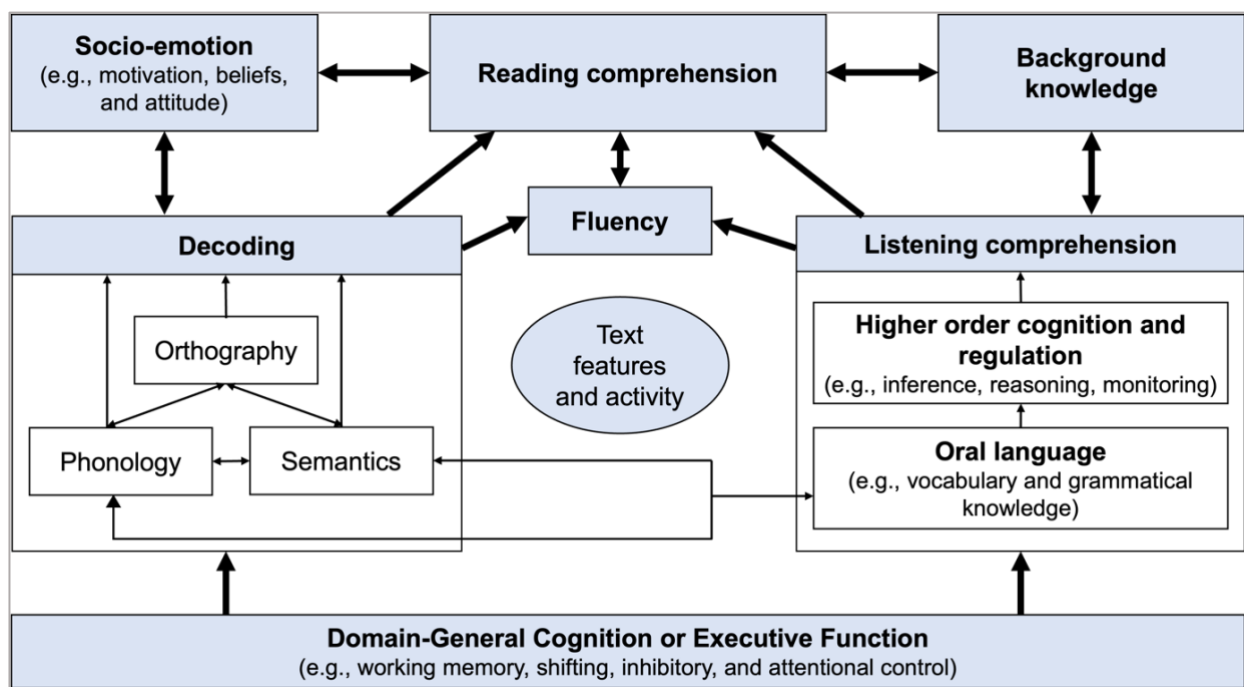
Figure 2. DIER model of reading comprehension, adapted from Kim (2020). Each component skill is hypothesised as hierarchical and interactive, with arrows demonstrating the direct and indirect relationships.

2.2 Principles of Reciprocal Teaching

Through its three principles – *comprehension-fostering* strategy instruction, *comprehension-monitoring* metacognitive processes, and constructivist teaching and learning methods – RT was designed to support students in overcoming comprehension difficulties. Each principle will be defined and justified by reference to relevant theories and critically evaluated in light of the research and debates in the literature.

2.2.1. Comprehension-fostering strategies

Palincsar & Brown (1984) claimed in the pilot RT study that reading strategies could be taught to respond to 'triggering' events that caused a breakdown in comprehension. This process differs from automatic 'expert' reading in that it invokes a 'strategic state' in which the reader 'debugs' the text with an appropriate cognitive procedure. The understanding and application of such strategies were labelled as *comprehension-fostering*. Four strategies – predicting, questioning, clarifying, and summarising – were chosen for RT on the basis that they improve comprehension through skills such as setting reading goals, activating prior knowledge, retrieving main ideas, making inferences, and checking word meanings (Ibid, p.120). A strategy is defined by Dole, Nokes, and Drits (2009, p. 348) as a 'routine or procedure used to accomplish a goal.' The distinction between skills and strategies is important: as my review of reading theories illustrated, reading is comprised of routine subskills at the word, sentence, and text levels. Strategies, instead, are distinguished by their intentional control over the construction of meaning from a text (Dole et al., 1991, p. 242). In other words, strategies are deliberate methods for achieving comprehension. Early reading research (Pressley, 1976; Brown, Day, & Jones, 1983; Singer & Donlan, 1982) revealed the advantages of teaching a single cognitive strategy. Accordingly, RT was designed to combine four distinct strategies to address multiple components that could cause reading difficulties (Dole et al., 1991).

2.2.2. Comprehension-monitoring

According to Palincsar and Brown (1984), c*omprehension-fostering* alone is insufficient: readers must also develop their *comprehension-monitoring,* also known as metacognition. Metacognition comprises two components: metacognitive knowledge of the cognitive methods available to meet the demands of a problem, and metacognitive control over these processes (van Kraayenoord, 2010). The control aspect of metacognition also includes self-regulation and executive functioning, which are related to a reader's motivation, planning and evaluation skills, and working memory (Baker & Carter Beall, 2009). Early research indicates that older learners have greater metacognitive awareness (Baker & Brown, 1984; Myers & Paris, 1978; Donegan & Wanzek, 2021), but Cain, Oakhill and Bryant (2004) found that poor awareness of self-correcting strategies at an early age predicted variance in comprehension at age eleven. Additionally, Eme, Puustinen, and Coutelet (2006) revealed that older children frequently held the misconception that fast, fluent reading is desirable over reading for meaning.

It follows that learners should be taught to develop their 'conditional knowledge,' defined as the ability to recognise when a strategy is required and how it will correct comprehension difficulties (Paris, Lipson & Wixon, 1983). Mixed-methods studies of metacognitive reading instruction interventions improved primary learners' ability to identify reading errors (Houtveen & van de Grift, 2007; de Jager, Jansen, & Reezigt, 2005); and a combined metacognitive and self-regulation intervention revealed significant effects for reading comprehension and decoding skills in 74 Scottish primary children (Moir, Boyle, & Woolfson, 2019). This evidence suggests that RT has the potential to bring cognitive processes to an active, conscious level during reading, based on similar samples to my school setting. However, the use of self-reporting measures in these studies raises the possibility of participant bias, and as Beck and McKeown (2009, p. 12) point out, few studies of reading examine live interactions between participants as they employ

metacognitive strategies. For these reasons, the current research observes learner dialogue to show how RT helps learners foster and monitor their comprehension.

2.2.3. Social constructivist learning theory

Previously, I presented current theoretical models that emphasised how socio-emotional dynamics interact with reading skills to achieve comprehension. Comprehension occurs when new information from a text is integrated with prior knowledge (Kintsch, 2018; Van Dijk & Kintsch, 1983). According to the social constructivist learning theory, this integration forms when a text's meaning is co-constructed through interaction with others (McLaughlin, 2012; McAllum, 2014). Two principles that underpin RT fulfil this purpose: first, by requiring the student's active participation in reading through dialogue; and second, by gradually reducing expert scaffolds and in the form of proleptic teaching (Palincsar & Brown, 1984, p. 122).

Numerous studies reveal that students of mixed reading ability can successfully use *comprehension-fostering* strategies (Lee & Schmitt, 2014; Kragler & Martin, 2009; Williams & Atkins, 2009; Pressley & Afflerbach, 1995), but significantly, metacognitive awareness was increased through spoken interactions with peers and teachers. Such findings are consistent with Davis' (2011) 'participation metaphor': he believes that language scaffolds readers towards internalising cognitive procedures that create mental representations of a text centred on the C-I model. Co-constructed language can, therefore, resolve problems during reading. Later, Davis (2013) argued that strategy instruction interventions are frequently misinterpreted and poorly implemented; as a result, group dialogues focus on procedural-only knowledge of strategies while ignoring the development of conditional knowledge. Consequently, this research placed equal

emphasis on socially constructed *comprehension-monitoring* and explicit teaching of *comprehension-fostering* strategies.

King and Parent Johnson (1998) revealed rich findings about constructivist, dialogic practices after analysing transcripts of RT in practice. In this rare qualitative study, teachers modelled language-based scaffolds such as questioning, think-alouds, and guided practice, which taught learners to understand technical vocabulary and connect information with prior knowledge. Importantly, those exposed to high-quality teacher modelling mirrored higher-quality dialogue during independent RT sessions. Conversely, if teachers lack metacognitive knowledge, learners' progress may suffer (Soodla, Jõgi, & Kikasn, 2017). These findings represent a critical second principle of RT: proleptic teaching. This approach requires teachers to provide expert scaffolding and feedback to learners, gradually reducing support until the strategies are used independently. Indeed, Palincsar and Brown's study was rooted in Vygotsky's (1978) Zone of Proximal Development (ZPD), in which individuals progress from one point in their learning to another with the assistance of teachers and peers. A review of teacher scaffolds in reading interventions suggests that positive effects occur in a classroom culture where dialogue is commonplace (Reynolds, 2017); teachers can inhibit a dialogic culture if they interpret problems for the learners as they read (Tengberg, Blikstad-Balas, & Roe, 2022). Unfortunately, few studies of RT in the literature unpick the social interactions between learners and teachers to understand proleptic teaching in practice; further qualitative research might reveal how these social-constructivist practices lead to improved comprehension.

2.3 Reciprocal Teaching research in the literature

2.3.1. Groups of readers

My research aims to investigate how RT benefits readers of various abilities in a heterogeneous, mainstream classroom. Prior research classified readers based on their specific reading characteristics, using the SVR as a theoretical framework; many longitudinal studies revealed how specific or combined deficits in skills account for variation in reading comprehension outcomes (Cain, Oakhill, & Bryant, 2004; Cain & Oakhill, 2007; Oakhill & Cain, 2012; Catts, Adlof, & Weismer, 2006). Figure 3 displays the groups that have become generally accepted in the literature: typically developing readers, those with dyslexia (poor decoders with adequate listening comprehension), poor comprehenders, and those who are poor-in-both (Catts, Hogan, & Fey, 2003). Feng et al. (2022) more recently discovered a link between each deficit and brain patterns, providing
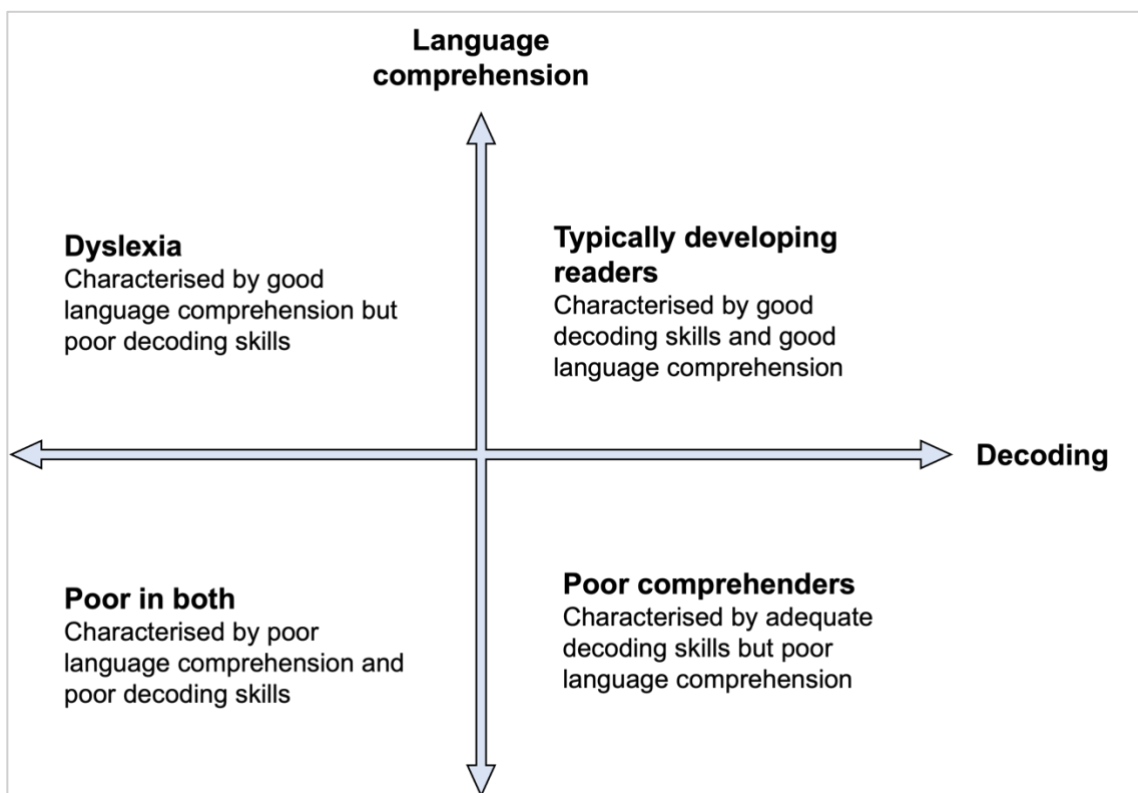
Figure 3. Classification of groups of readers based on the SVR adapted from Catts, Adlof & Weismer (2006)

a neurological basis for the group classifications. Although these imposed boundaries do not make allowances for certain anomalies (i.e., any additional learning needs), the literature provides reliable evidence to justify their use in most mainstream educational contexts.

2.3.2. Reciprocal Teaching for poor comprehenders

Rosenshine and Meister's (1994) review of RT studies, which assigned a .32 effect size for standardised measures of comprehension and .88 for researcher-developed tests, likely influenced RT's prominence as an intervention for poor comprehenders. Its reputation persisted in the USA due to Hattie's (2009) claims that RT had an overall effect size of .74 based on two meta-analyses of thirty-eight studies. Effect sizes, a popular measure of best practice, can arguably be overestimated as the sole metric for educational impact (Simpson, 2022), so I was endeavoured to critically engage with the available evidence.

Initially conceived for poor comprehenders, empirical studies of RT have shown that it is effective in improving comprehension outcomes for this group (Johnson-Glenberg, 2000; Lysynchuk, Pressley, & Vye, 1990; Wanzek et al., 2010; McHugh, 2016; Westera, 2002). Lonigan, Burgess, and Schatschneider (2018, p. 270) discovered that the influence of language comprehension increases above decoding as upper primary students reach a 'developmental shift.' Poor comprehenders would expect to benefit from strategy instruction because decoding is no longer a barrier, and as Spencer and Wanger (2018) found, poor language comprehension can improve by developing oral language skills. Moreover, Compton et al. (2014), referring to Perfetti (2007), assert that many reading interventions necessitate only low-level processes that do not allow learners to construct mental representations of a text by integrating knowledge and contextual meaning when

decoding. Subsequently, the language-rich, metacognitive dimensions of RT should provide the conditions to develop higher order reading skills.

2.3.4. Reciprocal Teaching for poor-in-both readers

Few studies have explicitly explored the effects of RT on poor decoders. Takala (2006) compared the effects of RT on students in mainstream and specific language impairment classes and discovered that both groups improved their comprehension scores, but there was no correlation between the results and the variation in decoding skills between groups. Alfassi et al. (2009) discovered that RT improved comprehension scores significantly in adolescents with learning disabilities who had poor decoding skills. Although the sample populations are not transferable to most contexts, these studies show that RT improves comprehension despite poor decoding skills. Nonetheless, learners improved their comprehension and decoding skills during an RT project in a mainstream school in New Zealand (Westera, 2002), indicating the intervention's inclusiveness. Overall, there is some evidence that poor decoders can benefit from RT, but no correlation is established in the literature.

A common theme in the research is how RT has been adapted to accommodate poorer readers. These include additional scaffolds to encourage quieter learners to participate (Hacker & Tenent, 2002), the use of audiobooks or read-alouds (Aarnoutse, Van Den Bos, & Brand-Gruwel, 1998; Le Fevre, Moore, & Wilkinson, 2003), or multilingual adaptations (Fung, Wilkinson, & Moore, 2003; Decristan, et al., 2022; Klingner & Vaughn, 1996). While such modifications can reduce the cognitive demands of decoding for poorer readers, changes to an intervention's original procedures risk reducing its fidelity through 'lethal mutations' (Brown & Campione, 1996). I determined that in the endeavour to ensure

the integrity of the intervention's procedures, no extreme deviations from the main principles of RT would be made.

2.3.4. Whole-class studies

The findings of studies implementing RT at a universal level - with whole heterogeneous classes - are mixed. A review of whole-class reading interventions found an overall small effect size (Okkinga et al., 2018) despite evidence from small-scale classroom studies that RT benefits classes with a range of reading abilities (Kelly, Moore, & Tuck, 1994; Hampson-Jones, 2014; Kula & Budak, 2020). Muijselaar et al. (2018) delivered strategy instruction to primary learners in whole-class settings, and while the experimental group increased their strategy use, the comprehension tests revealed no significant differences. Alfassi (2004), on the other hand, found significant differences in standardised comprehension scores between the control and experiment groups in an RT intervention combined with direct instruction in heterogeneous classes. Likewise, studies on the effects of a combined RT and self-regulated learning intervention yielded positive results (Schünemann et al., 2017; Schünemann, Spörer, & Brunstein, 2013), and a study found comprehension outcomes were influenced differently for different combinations for grouping students during RT sessions (Law, 2014). Because of inconsistencies in various studies of adapted forms of RT in whole-class settings, drawing conclusions about its application in my own setting is difficult.

2.3.5. Reciprocal Teaching in the UK

Although RT is not widely implemented in the UK, the Education Endowment Foundation – an organisation that evaluates teaching approaches – has commissioned several projects in English schools. The first involved a randomised control trial (RCT), in

which over 5,000 Year 7 students participated in RT for three to four hours per week for eight months (Crawford & Skipp, 2014). Despite the large intervention dosage and positive teacher feedback, the treatment group's comprehension scores had a small effect size. In their evaluation, the authors explained how school withdrawals from the project caused difficulties balancing pupils' characteristics in both samples. Consequently, progress made in this study should be interpreted as an estimation only.

Later, in a highly feasible and methodologically sound study implementing RT for poor comprehenders in small-group and whole-class settings, O'Hare et al. (2019) produced promising results. The former approach was successful, with students improving their comprehension scores by two months. Teachers credited the more analytical approach to reading as inclusive of passive learners, even noting improvements in decoding skills. The findings, with over 8,000 participants, are highly generalizable to UK school settings, although certain issues at the whole-class level, such as lack of time and low confidence of poorer readers, are realistic barriers to implementing RT.

The culmination of a three-year project, Cockerill, Thurston, and O'Keefe published a feasibility and efficacy report on RT in English secondary schools in early 2023. Following a 16-week intervention, a precursory RCT found a .19 effect size for the treatment group (Thurston et al., 2020), and having established its efficacy, Cockerill et al. (2022) later scaled up the intervention. Teacher surveys suggested that RT encouraged quieter readers through small mixed-ability cooperative learning groups, deemed an unexpected benefit of the intervention. However, the authors acknowledged that future research should use a control group to measure outcomes in reading over feasibility alone (p. 19). Subsequently, 733 students participated in an RCT, which found that treatment groups made similar gains in reading comprehension compared to the earlier sample by Thurston et al. (2020), with no significant differences observed between groups (Cockerill, Thurston, & O'Keefe, 2023). Taking place during the COVID-19 pandemic, disappointing results

could be attributed to interventions taking place in registration groups with lower-than-planned dosages.

2.4 Emerging themes from the reviewed literature

Evident from my literature review is that the processes that lead to successful reading comprehension are complex and multifaceted, which has implications for teachers who must identify effective reading approaches. Nonetheless, I have demonstrated how RT is based on sound theoretical foundations that combines strategy instruction with metacognitive practice within a socially constructed learning environment. This approach is proven to be effective for learners with poor comprehension skills although its impact is dependent on how the intervention is implemented and adapted. Moreover, an ambiguous picture emerged for RT as a whole-class approach capable of supporting learners with poor decoding skills while also challenging more proficient readers. It is possible to conclude that research on RT in UK schools is still emerging, with mixed results that necessitate further investigation, and like much of the existing research, are largely quantitative. Greenway (2002) considers this is a significant issue that calls for additional qualitative research to capture the cognitive and social processes of RT in natural classroom settings.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

Chapter 3 describes and justifies the methodological framework and methods used to answer the research questions (RQ). My aims and objectives are presented, followed by a discussion of how pragmatism and action research provide the basis for classroom research. A description of the study's sampling methods and three data collection methods are then outlined, concluding with a description of all associated data analysis methods used to identify the study's key themes.

3.1 Research aims and objectives

How effective is Reciprocal Teaching as a universal intervention for improving reading comprehension in mainstream Year 6 classes?

RQ1: How does Reciprocal Teaching influence the progress made in the reading comprehension outcomes of learners with varied reading abilities?

RQ2: Following the intervention, how effectively do learners employ *comprehension-fostering* and *comprehension-monitoring* strategies to understand an unfamiliar text?

RQ3: How does social interaction contribute to learners' comprehension of unfamiliar texts during Reciprocal Teaching?

To achieve these aims, three objectives were identifed: to assess the universal impact of RT on three groups of readers in my school; contribute to the emerging evidence of its impact in the UK; and use qualitative techniques to understand the cognitive and metacognitive processes in learners' interactions.

This research has inherent limitations due to the number of variables that can be analysed which restriction the scope of this study. Reading comprehension is a multifaceted construct to measure, complicated further by the diverse characteristics of the participants. Therefore, this research focuses on the interactions between learners

and its effect on comprehension outcomes. Furthermore, the sampling methods and lack of a control group prevent generalisations from being made. Conducting 'capital R' research in an authentic classroom context is challenging, but value is found in teacher-research that identifies a relevant problem, avoids bias, considers multiple perspectives, and is restrained in its claims (Saul and Launius, 2010). This study aims to improve my teaching practice and inform decisions around reading approaches for other practitioners by using theory to 'enlighten' research outcomes (van Manen, 1990).

3.2 Action Research

3.2.1. Action Research as an ontological commitment to change

In spring 2022, a discussion about reading approaches provoked a response that led to the conception of this research. A colleague suggested that RT was best suited for fluent and competent readers. I questioned the legitimacy of this assumption: could an approach to reading not, ideally, benefit all learners in the class? Does this assumption defy an inclusive classroom ethos? Had this assumption been tested? I realised that my experiences, values, and beliefs shaped my response to this claim. McNiff (2013, p. 28) describes these interpretations as a practitioner's 'ontological commitment' to learn how actions in practice benefit individuals within a specific context. This study utilises action research (AR) as a framework because it locates research within a practitioner's own concerns and contexts (Stenhouse & Elliott, 1975; 1978, cited in McAteer, 2013, pp. 13-14). AR as a process can be summarised as follows:

> … a constructive enquiry, during which the researcher constructs his or her knowledge of specific issues through planning, acting, evaluating, refining and learning from the experience. It is a continuous learning process in which the researcher learns and also shares the newly generated knowledge with those who may benefit from it. (Koshy, 2009, p. 9)

Cochran-Smith and Lytle (2009) believe teacher-research can be defined as a 'stance.' They recognise how teachers bring unique interpretations to their research that challenge established assumptions and contribute towards a local knowledge of practice. AR fosters positive change through a dialectic relationship between practice and research, producing commodified knowledge that others may find practically useful (Cain & Allan, 2017). AR can resolve a dichotomy between theory and classroom practice by addressing concerns over the inaccessibility of academic research (Gardner, 2011). Winch, Oancea & Orchard (2015) believe AR empowers teachers as a 'way of being,' where theory informs routine procedures, intuitive decision-making, technical expertise, and critical reflection. Furthermore, Kemmis (2009) suggests that AR is a meta-practice in which the researcher's roles as theorist and practitioner is interchangeable. AR, in this vein, frames my research to contest an established assumption and avoid a passive acceptance of established practices (McNiff, 2013, p. 47). In this dissertation I draw upon theory and research to explain the changes within my context that occurred because of the actions implemented.

3.2.2. Ethical dilemmas arising from action research

Although AR within educational settings can produce viable forms of knowledge applicable across contexts (Rovio-Johannson, 2020), teacher-research raises ethical concerns, particularly for research involving children. Lambirth et al. (2019) determined that AR was a viable framework for producing sustainable change if ethical dilemmas were addressed at every stage of the research. As my teaching role blurred with a researcher's, I noted that power imbalances could arise, potentially causing harm and affecting the research's validity. To safeguard my learners, a morally conscious approach was taken to break down internalised power asymmetries by collaborating with all parties involved (including learners, colleagues, gatekeepers, and parents/carers), embracing multiple

perspectives in my methods, and making adjustments to improve equity (e.g., ensuring accessibility to the questionnaires). These actions contribute to ethical practice based on morally-reciprocated relationships (Groundwater-Smith, Bell, & Dockett, 2014, p. 39), which improves the research vailidity (Herr & Anderson, 2008).

Elliott (2015, p. 6) suggests that teacher *praxis* and ethical virtue form a practitioner *phronesis,* where continuous personal reflection and practical wisdom are integral in transforming teaching and learning. I acknowledged the importance of uniting subjective knowledge of my context with theoretical knowledge as an objective lens for understanding change (Herr & Anderson, 2005). I addressed epistemological and ethical dilemmas through honest, reflective practice in accordance with the UWTSD *Research Ethics and Integrity Code of Practice* (2022).

3.2.3. Reflective and reflexive practice

Reflective practice is a crucial aspect of a teacher's role and AR, which involves the iterative, cyclical act of planning, acting, observing, and responding to an introduced change (Carr & Kemmis, 1986; Kemmis, McTaggart, & Nixon, 2014), Cook (2009) believes the innate 'messiness' of AR, where the researcher grapples with new practices and alternative perspectives, can lead to new ways of seeing and knowing, adding rigour to the research. The model chosen for this research (Elliott, 1991, Figure 4) includes continuous reconaissance and revisions, representing the dynamic nature of classroom practice. Recognising failures during 'messy' research can challenge pre-conceived beliefs and begin a shift towards truth (Ross & Call-Cummings, 2020). This shift involves *reflexive* practice, defined in two reciprocal modes: being self-aware by critically engaging with how status, power, and positionality affect research; and recognition of how the research alters preconceived onto-epistemological ideals (Attia & Edge, 2017). Anderson

(2019, p. 6) noticed that reflexivity was induced during episodes where teachers 'tended to turn back on their practices in ways that seemed to be indicative of potential restructuring of knowledge or beliefs,' a phenomenon attributed to Schön's (1992) theory of 'reflection-in-action.' Consequently, I have striven to be self-aware and objective at each stage of the process, recognising the potential for this research to challenge assumptions held around RT. This research forms the first cycle represented in Figure 4, whose action steps will inform a subsequent cycle in the future.
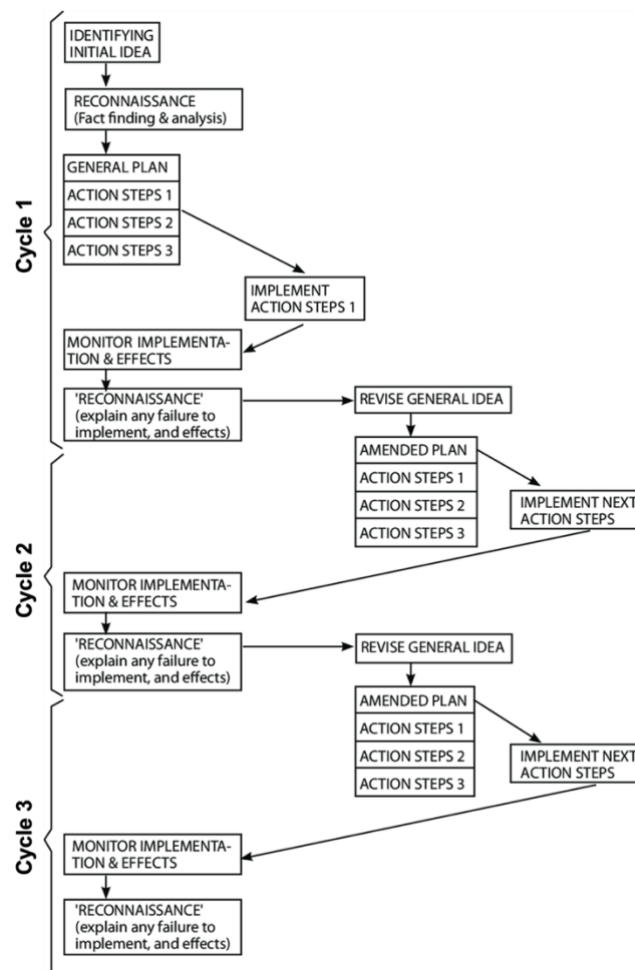
Figure 4. A Revised Version of Lewin's Model of Action Research adapted by Elliott (1991)

3.3 Pragmatism and mixed methods

Coe argues that traditional research paradigms are problematic for teacher-researchers (2021, p. 8). He recognises that the contrasting philosophies of positivism

(which locates knowledge of the world in mostly objective quantitative research) and interpretivism (where qualitative methods aim to understand people within their social context) cannot be reconciled without adopting a pragmatic framework. Pragmatism, a 'third paradigm' and 'philosophical partner' for educational action research, combines traditional philosophies achieve a researcher's aims (Johnson & Onwuegbuzie, 2004). My concern was how my research design could reveal how RT might change reading outcomes for all learners. A mixed-methods framework, combining qualitative and quantitative tools, was adopted to generate a comprehensive understanding of RT and its effect in my context.

Mixed-methods design can produce an authentic description of research from the 'messiness' of AR (McAteer, 2013, p. 30). It complements AR, allowing for a robust connection between research questions, complementary and authentic context-specific findings, and perspectives informed by the teacher's experiences (Ivankova & Wingo, 2018; Katsarou, 2017; Newby, 2014). Rather than selecting methods to simply coexist, I aimed to *integrate* my methods by considering three key dimensions: the use of *complementary* qualitative and quantitative data collection methods to address each aspect of the research question; triangulation of data from researcher and learner perspectives to achieve *completeness*; and analysis of quantitative data to *corroborate* rich, qualitative findings (Tashakkori & Teddlie, 2009).

I heeded warnings, however, that using multiple research instruments could lead to conflicting findings (Denscombe, 2014). To resolve incongruities, reflexive practices were elicited based on several pragmatic principles: that knowledge is fallible; that knowledge is based upon action and reactions; and that intersubjective agreement can validate knowledge claims (Hammond, 2013). Conflict in the data was seen as an opportunity to explore new avenues (Denscombe, 2014) and involve colleagues in my enquiry. Some criticise mixed-methods research for its convenience and weak

philosophical foundations (Shan, 2021; Giddings, 2006), validity issues (Wilkinson & Staley, 2019), and note how inexperienced researchers face difficulties mastering multiple methods (Doğan Şahin & Öztürk, 2019). Nonetheless, examples of mixed-method research demonstrate its suitability for addressing complex issues in education (Ramírez-Montoya & Lugo-Ocando, 2020; Sammon & Davis, 2017; Plano Clark, 2019).

3.4 Sample

This study's involved Year 6 learners aged ten and eleven from a mainstream English-medium primary school. Following ethical approval by the university's ethics committee (Appendix F), a consent form was distributed to parents/guardians to seek consent for participants' involvement in the research and use of their data (Appendix A). The letter communicated that all learners would participate in RT as part of the school's literacy curriculum but following British Educational Research Association [BERA] (2018) guidelines, all parties were informed of the right to withdraw their involvement at any point. Of the 76 learners in Year 6, permission was obtained for 41 participants.

Nonprobability sampling techniques were used to select participants from a limited population for classroom research, as larger, more representative samples are unlikely to be obtained (Cohen, Morrison, & Manion, 2018). Since I was interested in how RT affects a heterogenous class of learners, convenience sampling offered a representative range of reading abilities within my setting. Convenience sampling was chosen for two methods: pre- and post-test standardised reading comprehension assessments and a learner questionnaire. On the other hand, purposive sampling of participants was based on predetermined characteristics determined by a theoretical framework (Etikan, Musa, & Alkassim, 2016). From the baseline NGRT scores, six participants were handpicked to represent three groups of readers (identified in Chapter 2): poor comprehenders (PC), poor

decoders and comprehenders (referred to as poor-in-both, PIB) and typically developing readers (TD) (Cain, Oakhill, & Bryant, 2004; Cain & Oakhill, 2007; Oakhill & Cain, 2012; Catts, Adlof, & Weismer, 2006). To compare decoding ability and comprehension skills, the NGRT placed learners into a stanine based on their sentence completion and passage comprehension scores. These stanines were used to assign learners to the three groups Figure 3: a stanine score below 5 indicated poor decoding or comprehension skills. Selection bias was considered an ethical risk but by aligning the sample with groups 'rationalised' from a sound theoretical framework, it can be argued that the risk is reduced (Collins, 2017, pp. 286-287). The proportion of learners in each group are presented in Table 1.
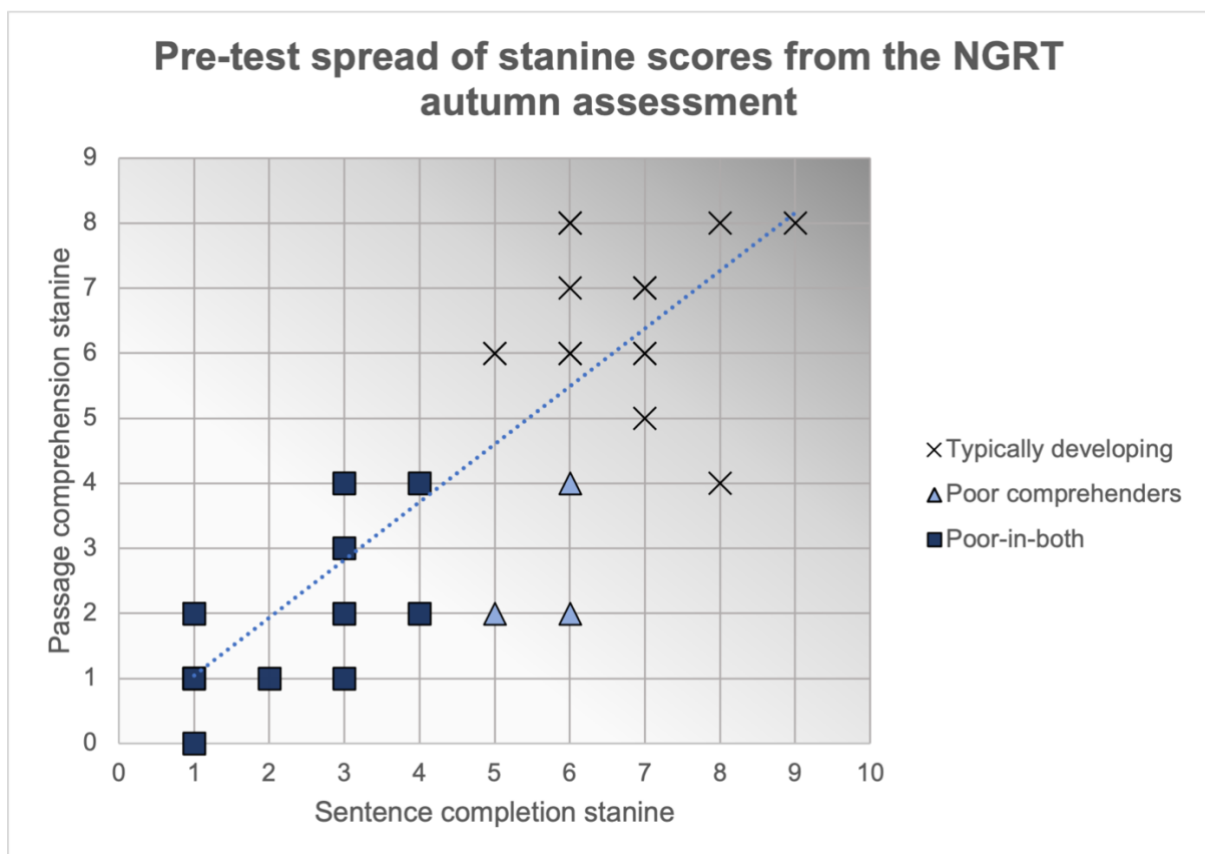
Figure 5. Pre-test NGRT stanine scores. The graph was used to identify thresholds for each subgroup based upon a comparison between their scores in the test.

Table 1. The number and percentage proportion of learners assigned to each group.

Group of readers	*n*	Percentage proportion
Typically developing	17	54.8%
Poor comprehenders	4	12.9%
Poor-in-both	10	32.3%

3.5 The Reciprocal Teaching intervention

In September 2022, Year 6 learners were introduced to RT in mixed-ability reading groups for a total of eight 20-minute sessions guided by their class teacher. Following that, each group participated in additional RT sessions without teacher guidance to apply the strategies independently. In total, each group received ten sessions guided by a teacher and ten sessions in independent groups. The four strategies were modelled using lessons adapted from Oczkus (2018). During each guided session, teachers would introduce a focus strategy and model its use in context before assigning the four roles to the group. Due to time constraints and the large numbers of learners, each group contained six to eight learners, larger than the groups in Palincsar & Brown's (1984) study. Picture books, narrative chapter books, and a variety of expository texts were used and using resources available to each class included role cards, sentence stems, graphic organisers, sticky notes, and classroom displays.

3.6 Data collection methods

3.6.1. Standardised reading assessments

The GL Assessment New Group Reading Test (NGRT) is a digital assessment used by my school each year to track progress, so this study's

participants were familiar with it. Pre- and post-intervention assessments were administered to measure changes in participants' reading comprehension scores. The test measures decoding skills and reading comprehension through sentence completion and passage comprehension sections. Drawing upon a large sample of UK schools (GL Assessment, 2018), the NGRT is a valid and reliable measure of reading for schools and researchers (Cockerill, Thurston, & O'Keefe, 2023; O'Hare, et al., 2019). Despite a trend in the literature of small effect sizes when using standardised measures of reading versus researcher-developed assessments (Okkinga et al., 2018; Rosenshine & Meister, 1994), the NGRT offered two advantages over alternative tests. Firstly, it adapts its questions to meet the reading level of its users, addressing criticism that fixed question types fail to measure the efficacy of reading interventions for readers of all abilities (Collins, Lindström, & Compton, 2018) This aligns with Cain & Oakhill's (2006) findings that assessments sensitive to learners' capabilities produce more accurate profiles of student's reading skills. Secondly, the NGRT report tracks learners' progress by providing standard age scores (SAS) and reading ages within their class, in addition to national percentile rankings in both decoding and comprehension skills. Subsequently, the results of the RT intervention were quantified and analysed over time to answer my research questions.

Although convenient, standardised reading assessments have limitations due to inconsistencies in measuring numerous constructs within reading comprehension. Research has revealed inconsistencies in what assessments measure (Keenan, Betjemann, & Olson, 2008) and inadequacy capturing the relationships between assessment characteristics (text, genre, and task) and the reader's cognitive processes and prior knowledge (Catts & Kamhi, 2017). Moreover, Ricardo García & Cain (2014) discovered that assessment-generated reader profiles are dependent

on test variables that measure decoding and listening comprehension. These limitations suggest a possible problem with the fidelity of the NGRT; as a result, a standardised assessment alone was insufficient. Two additional methods were developed to capture the interactive nature of RT.

3.6.2. Semi-structured observation

According to Rozsahegyi (2019, p. 24) observations are an act of conscious 'looking' at the interactions between learners and a change introduced to the teaching and learning environment. Given the central role of dialogue in RT and the shortage of qualitative studies that examines its effects, I observed a group of six learners using RT whilst reading a chapter from *The Explorer* by Katherine Rundell. Observations capture real-time actions (Klingner, 2004), drawing on rich data from naturally unfolding situations to reveal ecologically valid patterns and trends (Cohen, Morrison, & Manion, 2018). However, an unstructured approach to observations has potential drawbacks. My role as a classroom teacher, in particular, could have resulted in participant bias, where my knowledge of the learners influenced my interpretation of events (Bell, 2010). Creating an observation schedule defined predetermined constructs and used a rating scale to provide an objective interpretation of an event (Gitomer, 2021). Wragg (1999), on the other hand, emphasises that to understand language and gestures requires personal insight and insider knowledge of the specific context in which they occur.

A semi-structured observation method was employed balance open reflections and overtly structured (or even biased) interpretations. Indeed, Rozsahegyi (2019) believed that using this method allowed her to objectively 'look' for evidence while also seeking meaning from interactions. I adapted Oczkus' (2018,

p. 302, Appendix B) observation rubric of the four RT strategies to record the number of times a strategy was used and score its use on a rating scale at four levels of proficiency: beginning (1), developing (2), proficient (3), and exemplary (4). Scoring criteria were used to make a best-fit judgement every time a learner used a strategy. During the observation, notes were taken of events felt to be of interest. A video recording was made and stored securely using a school subscription to *IRIS Connect*, an online password-protected evaluation tool that protects personal data, in line with General Data Protection Regulation (GDPR) guidelines (BERA, 2018, pp.24-25). Once the data was transcribed and analysed, the video recording was deleted.

3.6.3. Learner questionnaire

The research finally involved a questionnaire to gather learners' opinions about RT and assess their knowledge of *comprehension-monitoring* strategies. Cohen, Morrison, & Manion (2018) advise 'operationalising' questionnaires to ensure that the questions are purposefully designed to address key constructs identified in the research objectives. As a result, my questionnaire was divided into three sections (Appendix C) and adapted from pre-existing measures and scales to assess reading comprehension. Part 1 was adapted from Pereira-Laird & Deane (1997)'s *Reading Strategy Use Scale* and used a Likert-type scale (from never to always) to ask how frequently participants used the four *comprehension-fostering* strategies. Part 2 combined adaptations of the *Metacognitive Strategies Index* (Mokhtari & Reichard, 2002) and the *Reading Strategy Questionnaire* (Oxford et al., 2006) to assess the learners' *comprehension-monitoring* knowledge. Participants were asked to choose the strategy most appropriate to use before, during, or after reading. Part 3 used another Likert-type scale (from strongly disagree to strongly agree) to elicit the overall

thoughts of the participants on the intervention. An open question at the end encouraged participants to share their thoughts about RT, anticipating an opportunity to capture unexpected perspectives from the learners. Participants were informed of their right to withdraw consent at any time and sample questions were provided to familiarise learners with the style of questions. Microsoft Forms was used to securely administer the questionnaire to 28 participants present.

Self-report questionnaires are a valuable tool that can supplement additional research methods to assess the effectiveness of a reading intervention (Klingner, 2004). However, self-reporting methods pose risks, especially when poorly designed. For example, due to the 'captive situation' of the classroom, participants may under- or over-report their metacognitive ability (Schellings & Van Hout-Wolters, 2011) or feel pressured to answer in a certain way, introducing an ethical risk to the research (Bartram, 2019). To address these concerns, I followed Bell's (2007) guiding principles for designing questionnaires for children by shortening questions, using straightforward language, avoiding ambiguous scales, and testing the questionnaire with colleagues. Additionally, Microsoft Immersive Reader was made available to specific learners to improve accessibility.

3.7 Data analysis methods

3.7.1. NGRT

The mean scores for the whole sample and three groups were calculated using pre- and post-test SAS generated by the NGRT. Descriptive statistics were generated in Microsoft Excel to compare mean scores and visualise the participants' progress. Furthermore, reading ages were compared over time using a formula to produce ratio gains, i.e., the change in reading age over time (Topping & Lindsay, 1992):

$$\frac{Reading\ age}{Time} = Ratio\ gain$$

I acknowledge that my results are not scientifically replicable due to the non-randomised sample and pragmatic approach to this research. Consequently, the ratio gains offer a different perspective on the impact of the intervention in my context, which Lavan and Talcott (2020) claim is meaningful for small-scale research without a control group.

3.7.2. Observation

The observation schedule scores were totalled to determine the frequency and proficiency scores for each participant. Following the transcription of the video recording, I conducted a thematic analysis of the participants' interactions and of the notes taken during the observation using Braun and Clarke's (2021) six-phase process. Themes emerged from the dialogue using initial semantic-level coding to identify explicit meaning and latent-level coding to reveal underlying meaning. Subsequently, I discovered that the data could be linked to specific concepts from the research question while also allowing for unexpected meaning to emerge from a more objective perspective.

3.7.3. Learner Questionnaire

The questionnaire was divided into three sections and analysed individually. Part 1 involved calculating a percentage proportion for each point of the Likert scale to quantify the self-reported frequency of strategy use for the entire sample and groups. Learners' perspectives regarding various aspects of the intervention in Part 3 were quantified using the same method. Learners' metacognitive knowledge was analysed in Part 2 by calculating the percentage of learners who chose the most appropriate strategy for each statement before, during, and after reading. Further analysis calculated the percentage within each group.

Integration, as discussed earlier in the chapter, is a distinguishing feature of mixed methods research that can provide a comprehensive view of the research problem (Plano Clark, 2019). Each method employed in this study was carried out as part of an eight-step mixed-methods process (Figure 6), adapted from Burke Johnson & Onwuegbuzie (2004), within a pragmatic framework in which quantitative and qualitative tools were analysed concurrently. According to Bazeley (2016), the challenge for today's researchers is to carry these integrated elements through to their interpretations and reporting in order to avoid isolated and superficial merging of results. Throughout the analysis stage, I identified 'points of integration' (Plano Clark, 2019, p.108) when planning my research for meaningful and rigorous integration.
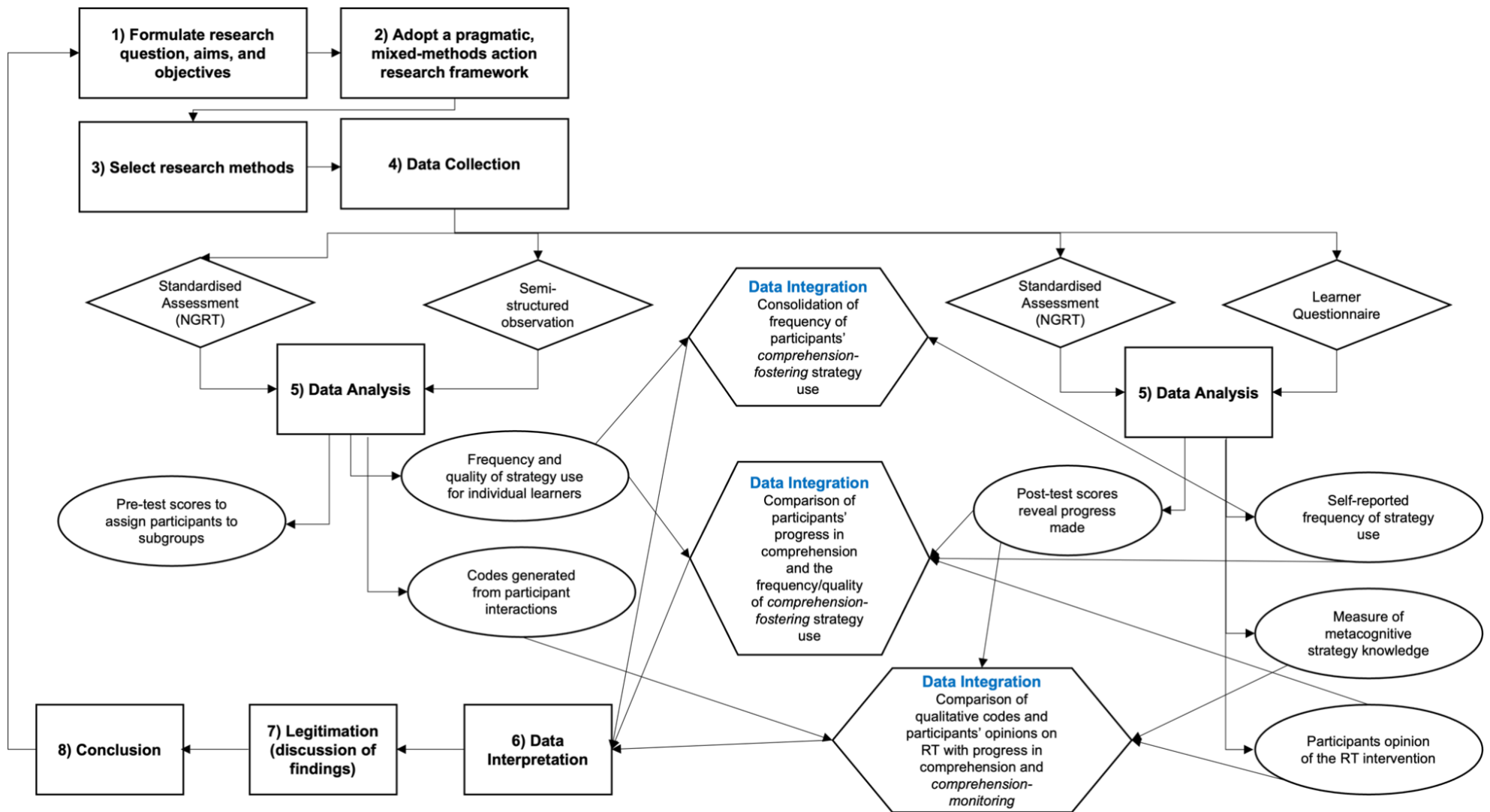
Figure 6. A representation of how the mixed research process model (adapted from Burke Johnson & Onwuegbuzie (2004) was adapted to integrate quantitative and qualitative data collection, analyses, and interpretation.

CHAPTER 4: RESULTS

This chapter presents and discusses relevant qualitative and quantitative findings in tandem, including the use of joint displays. Joint displays present tables, graphs, and quotations side by side to draw comparisons between integrated qualitative and quantitative data (Fetters & Tajima, 2022). The first two key themes that emerged from the integrated analysis are illustrated by joint displays, while the third theme presents qualitative and quantitative evidence separately. The data in this chapter was chosen to best answer the research objectives, although individual results for each method can be found in the appendix and will be referred to as necessary. The first of three joint displays, Figure 6, contains evidence drawn from the NGRT assessment and questionnaire that illustrates the overall progress of the sample and groups of readers.

4.1. Theme 1: Overall impact on the reading progress of groups of readers

According to the results of the NGRT assessments, the mean SAS of the entire sample increased by 6.6 points from 94.9 in the pre-test to 101.5 in the post-test following the RT intervention The data set (Appendix D) was subjected to descriptive statistics in order to calculate the progress made by each group identified prior to the intervention: typically developing readers (TD), poor comprehenders (PC), and poor-in-both readers (PIB). The table and graph in the joint display (Figure 6A) illustrate the difference in mean SAS over time. Four PC learners improved by 9.8 points to 103.5, bringing them closer to the national average than their pre- test score. Similar improvements were observed for the 17 learners assigned to the PIB group, whose mean score increased by 8.6 points to 86.8. On the contrary, TD readers increased their score by only 1.3 points to 114.1. Therefore, the gap between the lowest-performing group and the highest-performing group therefore narrowed from a difference of 34.6 points to 27.3.

A. Pre- and post-test SAS for the NGRT assessment for the whole sample and identified subgroups of readers.

	Pre-test	Post-test	Difference
Whole sample	94.9	101.5	6.6
Typically developing	112.8	114.1	1.3
Poor comprehenders	93.8	103.5	9.8
Poor-in-both	78.2	86.8	8.6
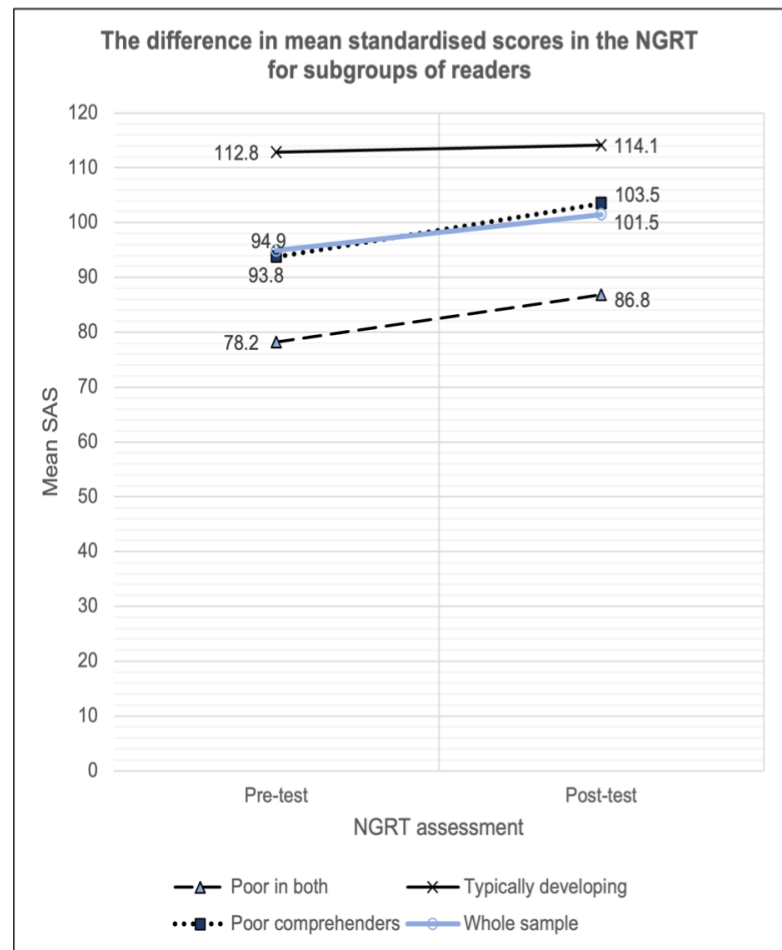
B. Written responses from Part 3 of the learner questionnaire in answer to *'Something I would like to tell you about Reciprocal Reading is…'*

B1. Positive Responses

'I feel confident with Reciprocal Reading.' *(TD)*

'Reciprocal Reading is very good and smart strategies [sic.].' *(PIB)*

'Reciprocal Reading is really fun and I think it has had a real impact on me.'' *(TD)*

'It's very fun.' *(TD)*

'I enjoy finding out new words and how to read them because it makes me better at reading.' *(PIB)*

Reciprocal reading has helped me to be more confident when reading out loud to other people and it has inspired me to tell other people about it too. Thank you for doing Reciprocal Reading it has helped me lots. *(TD)*

B2. Negative Responses

I do enjoy Reciprocal Reading, However, I don't find it a challenge and it does not really help me in many ways. What I would like is if I had more of a challenge. I would find it slightly more difficult if I had to be all the 'jobs,' e.g., clarifier, questioner and others. But I would 100% prefer to do this in pairs OR [sic.] in teams. I know this helps me in some ways but not in the ways I would like such as... knowing more words? My last thing to explain is how I don't really find the texts we get INTERESTING [sic.] and would preferably use novels rather than descriptive tests or 'small snippets' of other texts. *(TD)*

Personally, rather than do Reciprocal Reading in a group I would much rather read on my own and write predictions and question[s] on my own. I am not trying to stop Reciprocal reading from happening as I feel many people benefit from it. However, I believe that it doesn't help all people. Some of the actual texts are far too easy for me, I like the more long and dramatic books. Some of the texts are quite interesting however not always some things you may need to know in life. *(TD)*

C. Responses from Part 3 of the questionnaire about learners' progress in reading following the intervention.
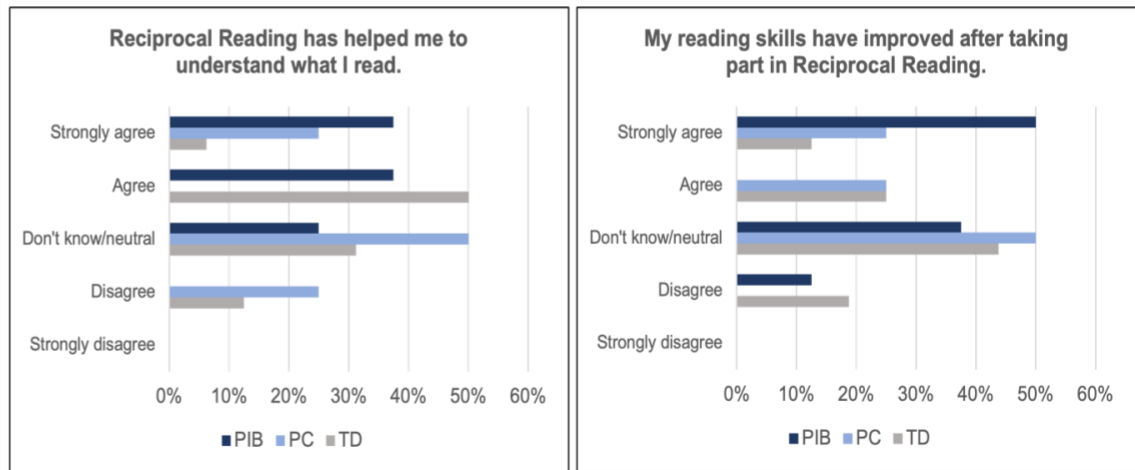
Figure 7. Joint display of data illustrating overall progress following the RT intervention.

To measure the impact of the intervention in relation to the length of its implementation, ratio gain scores were also calculated from the NGRT. Brooks' ratio gain descriptors (Appendix D, cited in Lavan & Talcott, 2020, p.236) show that RT had a 'significant' impact on PC readers and a 'useful' impact on PIB readers. For TD readers, however, only a 'modest' ratio gain of 1.4 - the threshold for significance in Brooks' descriptors - was discovered.

The results of the NGRT are reflected in the learners' responses in the questionnaire's open-ended questions. Many learners from all groups felt that RT was fun and that the four strategies helped them improve their reading skills (Figure 6B.1); however, some responses from TD learners (Figure 6B.2) felt that RT was not challenging enough and that reading alone or using all four strategies themselves would be preferable. Furthermore, these students felt that the texts used in the RT sessions were too simple. Figure 6C shows the results of questions asking learners to rate their agreement with statements about RT support these findings. In contrast to 63% of TD readers who were either neutral, unsure, or disagreed with this statement, half of PIB learners strongly agreed that RT had improved their reading skills. Moreover, while 76% of PIB learners agreed that RT helped them understand what they read, only 56% of TD learners agreed. Differences in opinions gathered from the questionnaire between the PIB and TD groups reflect the progress of the NGRT measures: PIB students were more optimistic about the intervention's impact on their reading. The PC's opinions were more difficult to determine, in part due to the mixed opinions of a small sample. The NGRT scores of the selected participants for the observation are presented in Figure 7 and reflect the trends described for the whole sample.
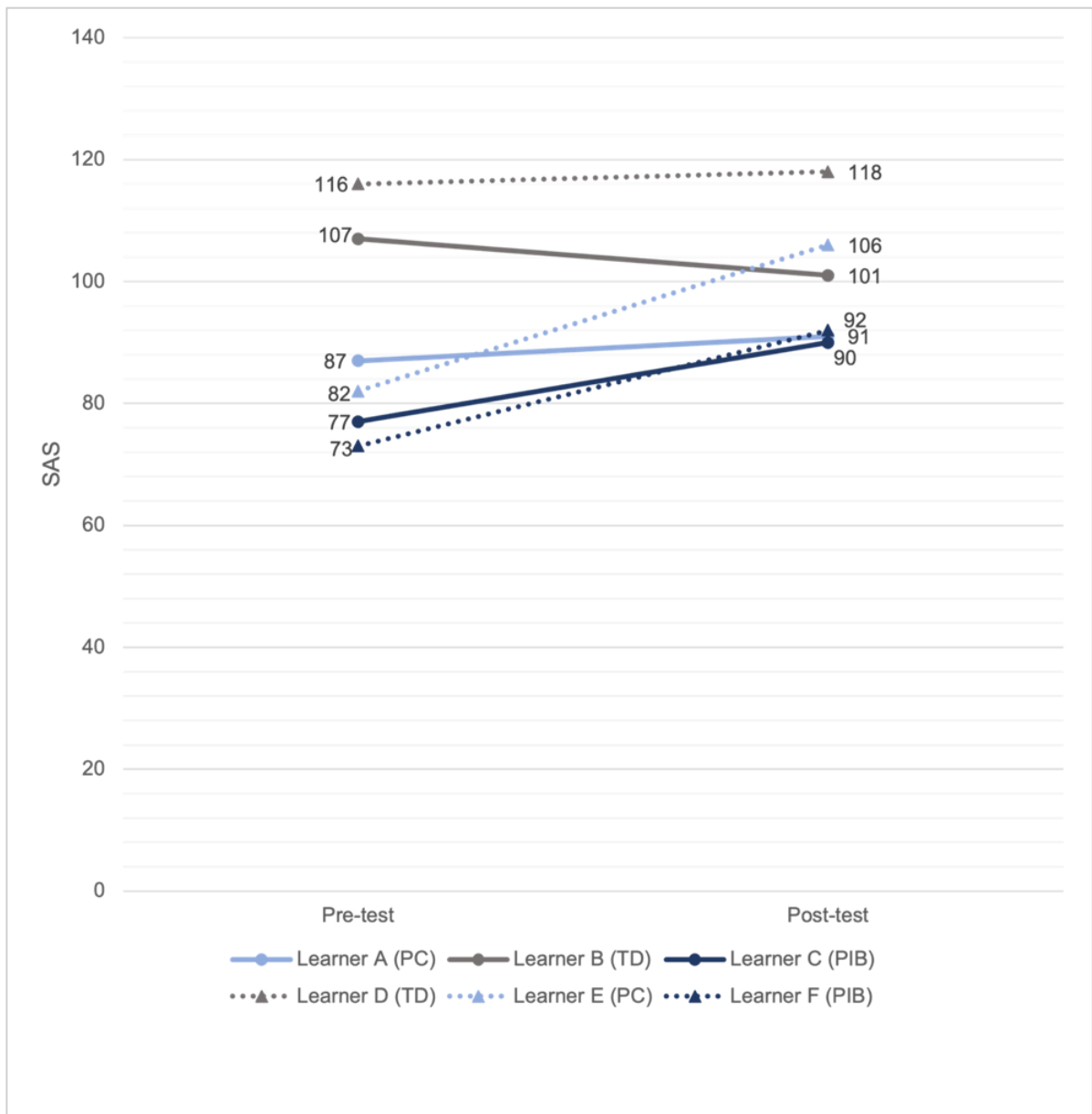
Figure 8. NGRT scores for the selected participants of the observation.

Two additional joint displays are now presented to show differences in the *comprehension-fostering* and *comprehension-monitoring* strategies across groups. Figure 8 depicts results from the predicting, clarifying, and summarising strategies and Figure 9 depicts results from the questioning strategy.

A. Quality of *comprehension-fostering* strategy use based on a ratings scale (1-5) for each participant during the observation

Learner F (PIB)
Learner E (PC)
Learner D (TD)
Learner C (PIB)
Learner B (TD)
Learner A (PC)

Proficiency score (0, 5, 10, 15, 20, 25, 30, 35, 40)

■ Predicting   ■ Questioning   ■ Clarifying   ■ Summarising

Learners' self-reported frequency of strategy use

B1. Clarifying

Always / Often / Sometimes / Rarely / Never

0% 50% 100%

■ TD   ■ PC   ■ PIB

B2. Predicting

Always / Often / Sometimes / Rarely / Never

0% 50% 100%

■ TD   ■ PC   ■ PIB

B3. Summarising

Always / Often / Sometimes / Rarely / Never

0% 50% 100%

■ TD   ■ PC   ■ PIB

C. Proportion of participants selecting the most appropriate comprehension-monitoring strategy

After / While / Before

0% 20% 40% 60% 80% 100%

■ PIB   ■ PC   ■ TD

C1. Finding evidence:

LEARNER D	I predict that the pilot is ill because like, why would he... not, not necessarily why, but if, if you like, if you're head like really hurts...
LEARNER B	That's what you like think 'urgh.' (Mimes having a headache)
LEARNER D	Yeah. He might have fainted.
LEARNER B	Or something happened to him.
LEARNER D	And also because he is old.
LEARNER B	Yeah.
LEARNER E	Yeah, he's sick, he's old, and 'cause of that the plane might be getting out of control.

C2. Checking earlier predictions:

LEARNER B	Choke. OK. It made him choke. OK, any predictions? I think we did make a prediction that something bad was gonna happen 'cause they dipped down.
LEARNER D	Yeah. They're going down. (*Learner B* nods) Erm... maybe something bad is gonna happen to the passengers?
LEARNER B	Yeah. It dipped down, they're going down.
LEARNER D	And also like 'someone screamed.'

D. Decoding strategies, context clues, use of dictionary, gestures, synonyms and antonyms

LEARNER C	OK. Is it gri-, gri-
LEARNER B	Where are you? Grim? (Scans text) Grimacing? Yeah, we can clarify that.
LEARNER D	So why don't we like break up the word? 'Grim-'
LEARNER C	Look around it, look around it! '...and she kept tugging it down and-'
LEARNER B	I think it's about how you can look.
LEARNER C & D	Yeah
LEARNER B	'Cause it says 'tugging it down.' (Acts out pulling down. *Learner C* searches through a dictionary and *Learner B* notices) So... Oh, you've got the dictionary.

LEARNER C	Does anybody get what 'soared' means?
LEARNER B	Yeah (Gestures)
LEARNER C	(Gestures) Flying!
LEARNER B	It's ascended, like it's not going down.
LEARNER E	(Gestures) It fastly [sic.] ascended.
LEARNER D	It's not ascended, it's like-
LEARNER E	No, that's descended.
LEARNER D	It's like you're going... it's like you shoot up.
LEARNER C	So that's ascending (acts out upward movement) and that's descending (acts out downward movement)
LEARNER D	I was gonna say they were gonna crash, but now like (...) Because when I heard they soared higher into the clouds I thought maybe they might not crash.

E1. Main ideas:

LEARNER F	(*Learner E* holds *Learner F's* sticky note) So the plane's flying.
LEARNER B	Yeah.
LEARNER F	And then the boy's getting nervous.

LEARNER F	Yeah, so he's kind of getting sided [excited]. And then he has like another friend.

E2. Use of written notes:

LEARNER F	Let me just summarise a bit more. (Continues writing)

LEARNER E	(To *Learner F* who is writing on his sticky note) Done? I'll read it. (Takes sticky note from *Learner F*)
LEARNER F	(To *Learner E*) So they are at the airport, and then the plane's controls... (takes back sticky note and continues writing)

> **The predictor is the best part.**
> *(TD reader, Part 3 of the questionnaire)*

> **(...) the hardest part about being the predictor is trying to put it in my own words.**
> *(TD reader, Part 3 of the questionnaire)*

> **(...) not many people like being a summariser.**
> *(TD Learner, Part 3 of the questionnaire)*

Figure 9. Joint display for predicting, clarifying, and summarising.

4.2. Theme 2: Frequency and proficiency in strategy use

4.2.1. Overall progress

Integrated findings in Figure 8A from the structured observation and *comprehension-fostering* measure in the questionnaire (Part 1) show a significant difference in the frequency and quality of the four RT strategies used by the six participants. Specifically, the TD participants (Learners B and D) received 36 and 35 points across all four strategies, respectively. In comparison, the combined scores of the PC and PIB participants were 52. Thus, PC and PIB readers used the strategies less frequently and with less proficiency than their typically developing peers. A similar pattern was observed for the *comprehension-monitoring* measure in the questionnaire (Part 2), which asked learners to select the best strategy to use before, during, and after reading (Figure 8C). However, the most appropriate strategy was chosen by 66% of the total sample. The TD group received the highest proportion of correct responses (69%); PC and PIB readers received a lower proportion of correct responses (45% and 43%).

4.2.2. Predicting, clarifying and summarising

The analysis of dialogue throughout the observation demonstrated how TD learners used *comprehension-fostering strategies* more frequently and with greater depth, but also provided examples of PC and PIB learners successfully using the strategies. The most significant differences were found in the predicting strategy. Learners B and D (TD), for example, selected evidence from the text to support their predictions (Figure 8C1) and clarified their understanding by checking predictions made prior to reading the next section of the text (Figure 8C2). Interactions between these learners resulted in a better understanding of the plot by inferring that 'something bad' would happen to the pilot because of the author's descriptions. Indeed, 41.7% of TD learners reported making

predictions 'often' or 'always' in the questionnaire, compared to only 25% of PIB learners (Figure 8B2). However, during the RT session, Learner E (PC) synthesised his peers' inferences after listening to their discussion: 'Yeah, he's sick, he's old, and 'cause of that the plane might be getting out of control.'

Throughout the observed RT session, all participants (except Learner A) successfully used the clarifying strategy to understand unfamiliar words in the text. At times, Learner C (PIB) independently identified words to clarify, prompting the group to make sense of the word together, for example, by suggesting a decoding strategy, by reading around the word to find contextual clues, using hand gestures to demonstrate meaning, or considering the word's synonyms or antonyms (Figure 8D). This assurance is reflected in the questionnaire results, with 40% of all responses across groups stating that they 'always' or 'often' use the clarifying strategy (Figure 8B.1). Moreover, clarified words sparked further debate by altering the learners' understanding of the text. For example, once the meaning of the word 'soared' was clarified, Learner D realises that the plane in the story might not crash after all.

Learner F (PIB), who received the lowest SAS in the NGRT assessment and possessed the group's poorest decoding skills, frequently participated as the summariser. Learner F could select some of the main ideas (Figure 8E.1) and keep track of the plot with written notes (Figure 8E.2). Learner F understood the gist of the story and made some inferences about the characters despite missing important details and some coherence. Detailed results from the questionnaire's *comprehension-monitoring* measure (Appendix E) revealed consistently high scores by the PC and PIB groups, especially in their knowledge of clarifying and summarising skills.

A. Self-reported frequency using the questioning strategy

Legend: TD ■ PC ■ PIB

B. A breakdown of responses for the frequency of each questioning strategy

	Never	Rarely	Sometimes	Often	Always
I ask questions so I understand the main ideas of a text using who, what, where, when and why.	7.1%	21.4%	50.0%	14.3%	7.1%
I ask questions to help me understand how the characters feel in the text.	35.7%	28.6%	17.9%	14.3%	3.6%
I answer questions about the text by finding evidence or using my prior knowledge.	19.0%	23.8%	33.3%	16.7%	7.1%

C. Low-level literal questioning versus inferential questioning:

LEARNER B	(...) do you have any questions *Learner A*?
LEARNER A	Where are they going?
LEARNER B	Yeah, OK.

LEARNER F	Is it like a commercial airplane or is it like these small aeroplanes, only like-?
LEARNER B	I think it's a small aeroplane.
LEARNER D	I think it's one of those small ones.
LEARNER B	Yeah, look at the front cover. It's one of those small ones.

LEARNER B	Fred's getting nervous is he? *(Learner B scans through pages in the book)* Wait, it did say...
LEARNER F	Yeah because he's like twitching his fingers.
LEARNER B	Oh yeah. Well done.
LEARNER F	That shows that he's like nervous.
LEARNER B	That's true. *Learner A*, do you have any questions?
LEARNER C	Yeah she does. *(Learner C points to sticky note)*
LEARNER B	What does it say?
LEARNER A	Who is Fred?
LEARNER B	OK. *(Learner A and C laugh)*.

D. Unexplored questions:

LEARNER B	OK, *Learner A*, do you have any questions?
LEARNER C	*Learner A*, your time to shine.
LEARNER A	(Quietly) Why did the-
LEARNER B	What?
LEARNER C	(To *Learner A*) Why did the pilot...
LEARNER A	Why did the pilot stop the plane?
LEARNER C	Why did the pilot stop the plane? Why did the pilot stop the children...plane? (Points at Learner A to indicate it was their question)
LEARNER B	(To *Learners A & C*) OK, that's interesting. Any words to clarify?

E. No response:

LEARNER B	Let's stop there. *(To Learner A)* Do you have any questions about that so far? [pause] Do you?
LEARNER A	No.

LEARNER B	Do you have any questions about the text or the front cover or?
LEARNER A	No.
LEARNER B	OK, who wants to read first?

" (…) the one I find the most useful is questioning. "

(TD Learner, Part 3 of the questionnaire)

Figure 10. Joint display for questioning.

4.2.3. Questioning

Contrary to the successful application of the three previously discussed strategies, questioning was underutilised across all groups. Integrated findings illustrate this in several ways. To begin, questioning was reported as the least frequently applied strategy with 76% of all responses stating that they 'never', 'rarely,' or only 'sometimes' used the strategy (Figure 9A). A breakdown of the three questioning strategies from Part 1 of the questionnaire (Figure 9B) revealed that only 50% of learners used basic questions to understand the main ideas of a text. 35.7% of learners 'never' asked inferential questions about characters, and 19% stated that they 'never' answered questions about the text by searching for evidence or using their prior knowledge. Furthermore, responses in Part 2 of the questionnaire (Appendix E) revealed that learners had a poor understanding of appropriate questioning strategies to monitor comprehension while reading. The analysis of the dialogue corroborates these findings. Learner A (PC), who was assigned the role of questioner, reluctantly asked literal questions that were prompted by their peers (Figure 9C). Moreover, these questions, which required only simple recall from the text, did not elicit additional discussion of the text. The group rarely attempted to answer the questions posed, with the group's leader (Learner B) moving on to the next strategy or reading the next section of the text (Figure 9D). When asked if they had thought of a question, Learner A responded 'no' several times (Figure 9E) and in the few instances where Learner A did contribute, I experienced difficulties transcribing their talk due to the learner's reticent responses. Others in the group, on the other hand, successfully used spontaneous questions to monitor their understanding of the text and infer character feelings (Figure 9C).

By the time the observation took place, near the end of the school year, the students were participating in RT sessions without the guidance of an expert adult. Interactions between the learners during the observation are now presented consecutively

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with questionnaire findings to demonstrate the dual role social factors played in enabling successful comprehension and introducing barriers to understanding.

4.3. Theme 3: Social factors influenced reading comprehension

4.3.1. Motivation and confidence

Many learners were motivated to apply the strategies they had been taught during the observation. Learner B, who was assigned the role of leader, made certain that everyone understood their roles at the start of the session:

LEARNER B:	OK. (Refers to role card) 'Remind each member what their role is.' So, what does the summariser do?
LEARNER F:	Summariser finds all the information and writes it down only in a short sentence.
LEARNER B:	Perfect. What does the clarifier do?
LEARNER C:	Go over words you don't know.

The leader's role was to manage the reading pace by pausing at key points to check comprehension, allowing all participants to apply their strategies: 'Let's stop there. (To Learner A) Do you have any questions about that so far?' Even when the dialogue was interrupted, Learner B recognised the importance of allowing all learners to share and encouraging turn-taking:

LEARNER F:	I writed [sic] a new one (lifts sticky note up) I writed [sic] this one. They are in danger.
LEARNER B:	(Looking at cue cards) Does anyone need help with their jobs?
LEARNER C:	Can I just say one thing?
LEARNER B:	Yeah.
LEARNER F:	They're very, very much in danger. (Learner B indicates to Learner C to wait & Learner C looks disappointed)
LEARNER B:	Learner F, you carry on.
LEARNER F:	They're much in...they're very much in a dangerous area, 'cause it's like a forest and lots of animals like snakes and stuff [sic].

As shown in Theme 2, the TD participants (Learners B and D) were self-motivated to share their thoughts after applying the strategies. Learner B's self-direction motivated others, including Learner F (PIB), to share successful strategy use. When necessary, other students, such as Learner E (PC), confidently suggested words to clarify. This prompted the rest of the group to check that everyone understood the meaning of the identified word:

LEARNER E: *There's a word you might wanna clarify.*
LEARNER C: *What [sic.] one?*
LEARNER E: *'Concentration.'*
LEARNER B: *It just means like concentrating on something.*
LEARNER C: *Does everyone understand that?*
LEARNER D: *Concentration.*
LEARNER F: *Concentration is concentrating everything into one thing.*
LEARNER B: *Focus.*
LEARNER C: *Yeah! Does everybody get everything on that bit now?*
LEARNER F: *Yeah. (Learner C puts thumbs up)*

Learner A (PC), the questioner, appeared to be less motivated to participate than their peers. As mentioned in Theme 2, Learner A struggled to formulate questions and was hesitant to share them with the group despite being prompted. Learner C (PIB) influenced Learner A in several ways. On the one hand, Learner C attempted to assist Learner A in developing questions, encouraging her to share them and occasionally speaking on their behalf:

LEARNER A: *(Quietly) Why did the-*
LEARNER C: *(To Learner A) Why did the pilot...*
LEARNER A: *Why did the pilot stop the plane?*
LEARNER C: *Why did the pilot stop the plane? (…) (Points at Learner A to indicate it was their question)*

When asked if they had any questions towards the end of the session, Learner C whispered to Learner A that they 'can just say not.' In addition to the observational findings, the questionnaire results (Table 2) indicate that Learner A was less confident applying strategies when compared to their peers. Opinions gathered from the questionnaire also revealed that some were negatively affected by behaviours they observed during sessions without teacher supervision:

> *'I don't really enjoy Reciprocal Reading because whenever we read they talk and we get lost.'*
>
> *'No one in my group does anything and messes about.'*
>
> *'(…) it is good but usually people argue about which role they are and not many people like being a summariser.'*

Table 2. Responses from the participants of the observation to the statement 'I feel confident using the four Reciprocal Reading strategies.

Learner A	Don't know or neutral
Learner C	Agree
Learner D	Agree
Learner E	Strongly agree
Learner F	Agree

*Learner B was absent and did not complete the questionnaire.

4.3.2. *Comprehension-monitoring through dialogue*

The role of dialogue in making sense of the text was evident throughout the observation. Interpretations of the text were frequently confirmed by others in the group, leading to additional questions about the plot or characters:

> LEARNER D: *Um, well it, 'cause it says the Amazon River it could mean that they're going somewhere, maybe like somewhere exotic.*
>
> LEARNER B: *Yeah.*
>
> LEARNER C: *Maybe they're going to the forest?*

As prompted by Learner E in the following example, the group frequently referred to evidence in the text to clarify the events of the story:

LEARNER B: Hold on, I think they come from Brazil.

LEARNER E: Yeah. (To Learner B) 'I know because...'

LEARNER D: No, but it says... (Scans text) No, but it says...

LEARNER B: I think they're leaving the Brazilian airport.

LEARNERS B & D: (Reading from a section of the text) 'The ferocious Brazilian sun.'

LEARNER B: 'Cause they just left and the sun's beaming on them.

In another example, dialogue was able to resolve the group's disagreement over the story to reach a consensus on the main events:

LEARNER E: Guys, they might be landing to find out the den.

LEARNER B: No but cause when it's gonna dip down-

LEARNER E: Yeah but it could dip down to land.

LEARNER B: Yeah but I believe, I wouldn't think that it landing.

LEARNER F: Yeah it's probably crashing.

LEARNER D: And also it says (pointing at text) 'the plane lurched forward away from the river.''

LEARNER B: Yeah.

In a few cases, the group corrected implausible judgements about the text. For instance, the group steers the discussion away from Learner F's incorrect prediction. This resulted in the group's agreement over the text's meaning and Learner F making connections with his earlier summary of the character:

LEARNER C: It's all negative.

LEARNER B: 'Cause usually a plane, when they're driving to the destination they wouldn't cut the engine.

LEARNER D: Yeah. And also, like it gives us a clue of that because like it says 'he was turning the same shade of grey-'

LEARNER D: '-as his moustache.'

LEARNER B: Yeah. When something turns scary- he turns pale.'

LEARNER F: Maybe the pirate's trying to kill them.

LEARNER B: Pirates?

LEARNER F:	No, not the pirates sorry, the pilot!
LEARNER C:	The pilot looked like he was dying as well.
LEARNER B:	He looked like he was scared.
LEARNER F:	Oh.
LEARNER D:	Wait, the pilot might be ill.
LEARNER B:	Could be!
LEARNER D:	And he can't control it.
LEARNER F:	'Cause he's old.

Effective *comprehension-monitoring* is further illustrated by Learner B who confirms an earlier prediction made by the group: 'OK, any predictions? I think we did make a prediction that something bad was gonna happen 'cause they dipped down.' Furthermore, questionnaire responses by the PC and PIB groups recognised the benefits of dialogue for comprehension (Figure 10).
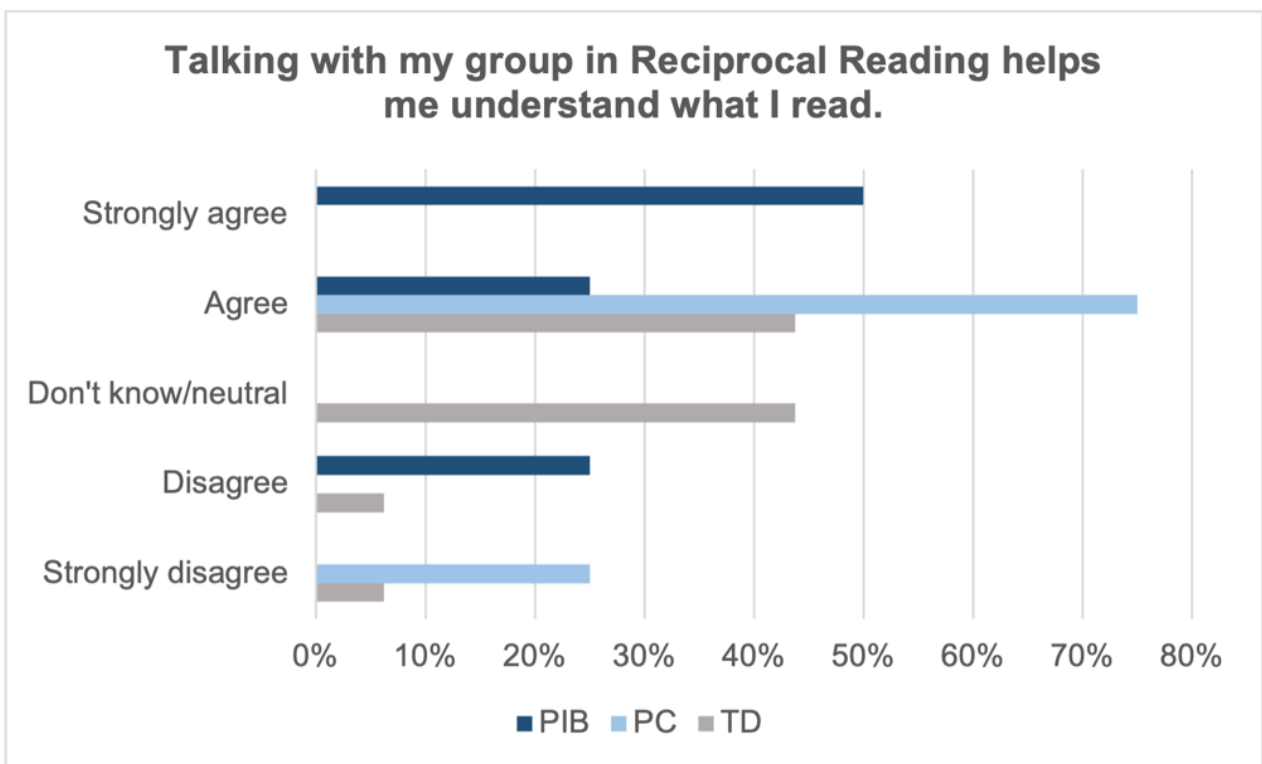
Figure 11. Responses for each subgroup to a statement taken from Part 3 of the questionnaire.

Interestingly, the group contributed a variety of strategies to clarify the word 'grimacing.' Learner D stated that the word was related to 'how you look' because of the actions of the character in the text. However, when using a dictionary, Learner C found the word 'grim' and read aloud an incorrect definition:

LEARNER C: Wait, wait. I found what it meant. (Reading from dictionary) 'Dirt in a layer of a surface or on the skin.'

LEARNER B: OK. Not what we thought, but...

LEARNER E: (To Learner C) What was it?

LEARNER C: (Reads from the dictionary) 'Dirt in a layer on a surface- on a surface, or on skin- or on skin.'

LEARNER B: Right, is everyone happy for me to read?

The definition did not fit into Learner B's understanding of the text, but this dissonance was not discussed further, and the group read on without addressing this error.

4.3.3. Reading aloud and decoding

Several members of the group appeared eager to read aloud in front of their peers. The leader of the group instructed each member to take turns reading and was met with enthusiastic responses. Learner C (PC) placed special emphasis on this aspect of the session, attempting to catch the leader's attention for their turn:

LEARNER C   (Pointing at themselves, mouthing 'me') Can I read?

Learner C was also concerned that the group would not have enough time to finish the chapter:

LEARNER C   You know how we have to get to page seventeen, but we're only on page three?

LEARNER B   Yeah it doesn't matter where we get to.

There was a distinction between TD readers, who prioritised the group's need to slow down and make sense of the text, and poorer readers, who preferred reading aloud. Nonetheless, the group encouraged Learner F, the least fluent reader, by decoding words on their behalf and prompting them to keep track of their place in the text:

LEARNER B	*OK. Learner F, your turn to read when you're ready.*
LEARNER F	*(Writing on sticky note) Now I'm ready.*
LEARNER C	*(Pointing to section of text) 'It was almost dark.' (Learner C and Learner E point to Learner F's page)*
LEARNER F	*Where do we start?*
LEARNER B	*'It was almost.'*
LEARNER F	*'It was almost.' OK. 'It was almost dark when Fred began to worry. The pilot began to flinch-'*
LEARNER B	*Belch.*
LEARNER F	*'-belch, first quietly, then v-*
LEARNER B	*Violently.*

Indeed, after analysing the NGRT's mean stanine scores (Table 3), all groups' passage comprehension scores improved. However, only PIB readers showed a significant increase in mean sentence completion scores. When the questionnaire responses from each group were analysed, the role of reading aloud became less clear: opinions on the statement 'Hearing others read and use their strategies helps me too' in Figure 11 were mixed.

Table 3. A comparison of mean stanine scores for groups of readers from the NGRT

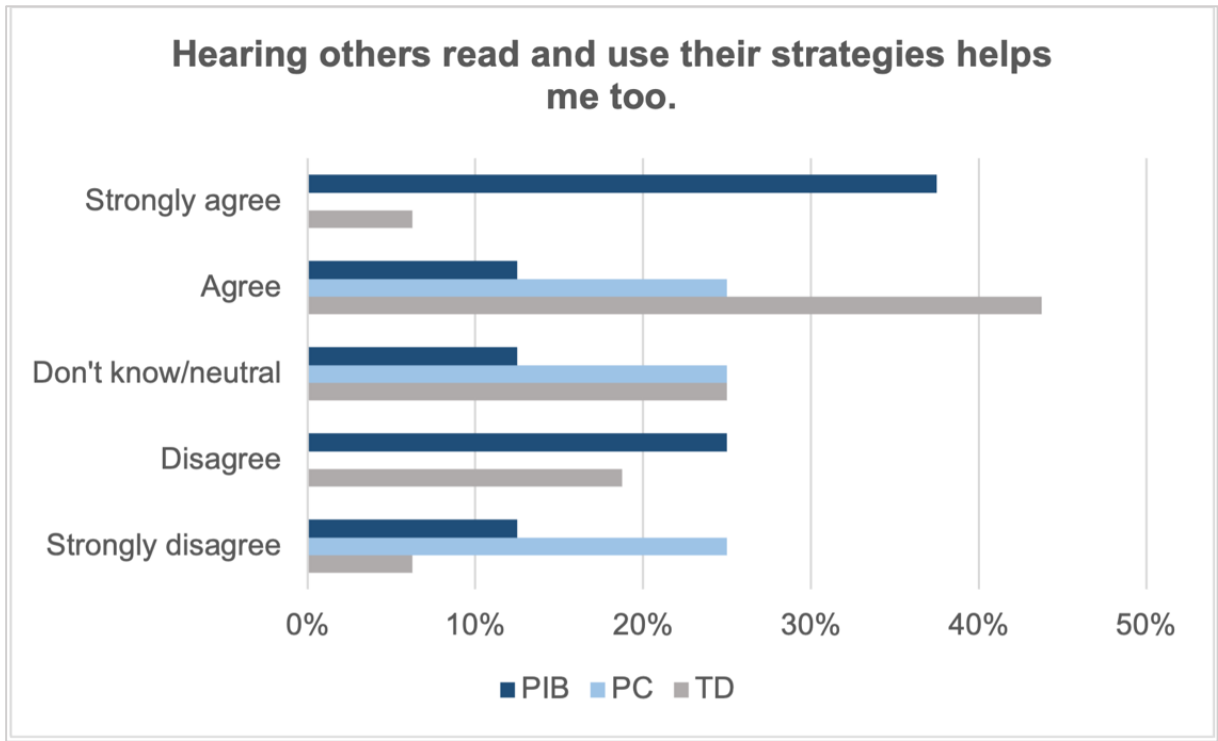|	Sentence completion			Passage comprehension		
	Pre-test	*Post-test*	*Difference*	*Pre-test*	*Post-test*	*Difference*
Whole sample	5.2	5.7	0.5	4.8	5.5	0.7
Typically developing	6.52	6.64	0.12	6.76	7	0.24
Poor comprehenders	6.25	6	-0.25	3	5	2
Poor-in-both	2.5	4	1.5	2.1	2.9	0.8

Figure 12. Responses by each group from Part 3 of the questionnaire.

CHAPTER 5. DISCUSSION

Addressing each research question in turn, this chapter discusses the findings in relation to prior research surrounding RT and reading comprehension theory from the literature review.

5.1. RQ1. How does Reciprocal Teaching influence the progress made in the reading comprehension outcomes of learners with varied reading abilities?

The findings of this study suggest that RT was an effective intervention for improving the reading comprehension of two subgroups of Year 6 readers: PC and PIB. In my aim to discover if RT could improve the reading skills of learners in my setting, the PC subgroup improved their standardised scores by 10.3%. This finding is consistent with the original findings of Palincsar and Brown (1984), as well as subsequent reviews of reading interventions that acknowledge the effect of RT on PC (Rosenshine & Meister, 1994; Hattie, 2009). Moreover, my findings are consistent with the progress made by PC students of a similar age involved in RT within a whole-class setting (Lysynchuk, Pressley, & Vye, 1990; Hacker & Tenent, 2002) and small-group RT interventions in the UK (O'Hare, et al., 2019). However, this study further adds to the literature surrounding RT by examining its impact on two additional subgroups, PIB and TD readers.

Participants with the poorest reading skills (PIB) improved the most in their comprehension scores after the intervention (an 11% increase), indicating that RT assists these students in making good reading progress. Schünemann, Spörer, and Brunstein (2013) demonstrated how RT was most beneficial for participants with low to average fluency scores; they believed that the absence of explicit strategy instruction in a reading intervention for this subgroup would be ineffective, highlighting the significance of teaching cognitive procedures for improved comprehension. In a study by Alfassi et al. (2009),

participants exposed to RT made faster progress than a control group, which was attributed to the cognitive processes the strategies provided for these learners. In my research, the progress made by poorer readers corresponds to theoretical models that go beyond the SVR, implying that comprehension is not entirely dependent on fluent decoding. For example, despite participants' poorer decoding skills, the mediating and bootstrapping effects of strategy use may have contributed to comprehension (Kim, 2020).

In contrast, TD readers in this study made only minor improvements in their standardised scores. When combined with learner feedback from the questionnaires, it was possible to infer that where the *comprehension-fostering* strategies met the needs of poorer readers to improve their comprehension skills, RT did not challenge TD readers sufficiently to extend their reading skills. In her mixed-methods study, Westera (2002) found similar trends: the poorest readers improved significantly in both their comprehension and decoding scores. While 90% of participants thought RT was useful, the most competent readers expressed concerns about losing autonomy when selecting texts and were less enthusiastic about continuing with the intervention. Feedback from my questionnaire suggests that RT limited this group of learners to texts that were too simple and provided few opportunities for them to use their entire repertoire of reading strategies. Similarly, Muijselaar et al. (2018) discovered no improvement in standardised comprehension scores for TD primary learners despite increased knowledge of reading strategies. In light of contradictory findings from comparable heterogeneous samples in which RT led to significant gains for all groups of readers (Kelly, Moore, & Tuck, 1994; Alfassi, 2004), additional factors may have played a role. For example, a teacher's reflections on RT suggest that rather than rigidly adhering to the method's original format (as in this present research), imaginatively adapting the method can meet the needs of TD learners. Gilbert argued that 'students need to be pushed conceptually far beyond their parameters and can feel patronised if required to use its [RT's] format rigidly.' (p. 155).

Evidence of successful adaptations were witnessed to scaffold less confident readers by Marks et al. (1993) observed evidence of successful adaptations to scaffold less confident readers; subsequent practise could introduce changes to RT that challenge more proficient readers too. Additionally, by grouping learners with mixed reading abilities, Law (2014) found that more skilled readers benefited from low-scaffolded RT sessions. She suggested that time spent supporting their less skilled peers took time away for TD participants to elaborate on the text's meaning and develop more sophisticated inferences that extended their understanding. Poorer readers, on the other hand, benefited the most from highly scaffolded mixed ability groupings, implying that in the future, learners should be strategically grouped to benefit all.

5.2. RQ2: Following the intervention, how effectively do learners employ *comprehension-fostering* and *comprehension-monitoring* strategies to understand an unfamiliar text?

5.2.1. *Comprehension-fostering*

Observational data and self-reported strategy use from the questionnaire revealed that the study participants used *comprehension-fostering* strategies with varying levels of proficiency across reader subgroups. Palincsar & Brown (1984) examined the strategy use of six PC and found that nearly all learners used all four strategies more frequently and with greater accuracy following RT. The selected sample's strategy use corresponds to these findings in that several learners successfully applied strategies on a regular basis (e.g., Learner D and Learner F), while others contributed less frequently (e.g., Learner A). Along with questionnaire data, it is suggested that certain strategies, namely summarising and clarifying – were used more successfully across the sample by learners from all subgroups, including PIB learners (Learner C and Learner E). Inconsistencies in this

sample's strategy use deviate from Palincsar and Brown's pilot study's findings in this way. Improvements in learners' summarisation skills reflect increased recall of factual, text-explicit information in a study by Johnson-Glenberg (2000), and the inclusion of more main points from the text similar, to Lederer's (2000) findings. On the other hand, questioning was reported to be used at a significantly lower frequency in this research's questionnaire and deployed with comparatively less success during the observation. Teachers of RT have previously reported that students rarely went beyond asking literal questions, despite an instructional focus on generating inferential questions that inhibited discussion (Hacker & Tenent, 2002; Marks, et al., 1993), and learners themselves reported that questioning was a difficult strategy to master (Cockerill, Thurston, & O'Keefe, 2023). These studies suggest that additional modelling and scaffolding may have been beneficial before students independently applied the questioning strategy. Indeed, studies utilising RT have shown the possibility of significant gains in implicit questioning (Johnson-Glenberg, 2000; Alfassi, 2004).

Poorer questioning skills across the sample could be attributed to differences between myself and my teacher colleagues while implementing the proleptic principles of RT. That is, inconsistencies in how strategies were modelled and practised in our individual classes may have resulted in different outcomes for the learners. Teachers observed introducing a new reading intervention in Scotland were found to implement the approach with varying degrees of fidelity; however, increased confidence in their ability to teach reading strategies to their students was reported to have a positive impact on learners' reading skills (Moir, Boyle, & Woolfson, 2019, p. 412). Interestingly, Chambers Cantrell et al. (2013) found that teacher efficacy – a personal belief in one's capacity to transform student learning – predicted better outcomes over implementation fidelity. Considering how the future implementation of RT might teach each strategy with equal quality, practitioners should demonstrate a willingness to engage in professional

development that improves their knowledge and skills for delivering explicit strategy instruction.

5.2.2. Comprehension-monitoring

The questionnaire results indicated that a high percentage of participants had good metacognitive strategy knowledge. In this study, participants' ability to comprehend the overall gist of the text can be attributed to the procedural application of the four strategies discussed above; however, dialogue was the key contributing factor towards the group monitoring and repairing failures in their comprehension. The findings of this research suggest that dialogue is important in the development of *comprehension-monitoring* skills. Consequently, this aspect of *RQ2* is discussed below alongside *RQ3.*

5.3. RQ3: How does social interaction contribute to learners' comprehension of unfamiliar texts during Reciprocal Teaching?

Unlike previous research, which raised concerns about the quality of dialogue during RT sessions (Takala, 2006), the findings of this study present rich, qualitative data demonstrating that learners across subgroups actively participate together in the construction of meaning when reading an unfamiliar text. At times, strategic thinking was employed through dialogue to resolve disagreements or misconceptions about the text, indicating that 'conditional knowledge' of reading strategies had improved (Paris, Lipson, & Wixson, 1983). These results are consistent with previous research in metacognitive instruction that resulted in improved comprehension (de Jager, Jansen, & Reezigt, 2005; Houtveen & van de Grift, 2007). Specifically, learners in the present study were found recalling and gauging the accuracy of their predictions, referring to evidence in the text to support their claims, and making sense of unfamiliar vocabulary using context clues. In

particular, the leader's role functioned to guide the dialogue and connect ideas. These reading behaviours represent processes in the C-I Model of comprehension, in which problems encountered are resolved by integrating meaning at the word- and text-levels with prior knowledge to construct a cognitive representation of the text (Kintsch, 2018). An analysis of qualitative interactions between ten and eleven-year-old learners during an RT intervention by King and Parent Johnson (1998) resembles my findings:

> Students were not merely reading the text in an attempt to extract meaning from the page. Instead, they were elaborating on text ideas, connecting this information to previous knowledge, applying new knowledge to their worlds, thus engaging in powerful and meaningful dialogue. (p. 184)

In this study, learners mirrored the language heard from the 'expert' teacher and applied them collectively through dialogue, implying that discussion led to improved *comprehension-monitoring* skills, which in turn led to increased comprehension. However, by drawing parallels with the preceding study, I believe there is the potential to improve the quality of peer feedback in my setting. In contrast to examples in this research, the participants in King and Parent Johnson's study have well-developed language skills that guide others constructively towards comprehension. Certainly, the lack of experimental conditions in both studies means that no correlation between dialogue and *comprehension-monitoring* can be guaranteed, though descriptive analyses have found a relationship between teacher and peer interaction and successful co-constructed comprehension of a text for PC (Lee & Schmitt, 2014), including heterogeneous class settings (Tarchi & Pinto, 2016). Furthermore, my school's recent work prioritising metacognition in the classroom may have contributed to learners' *comprehension-monitoring* skills in addition to the effects of RT alone.

My findings show that most learners were able to participate in the dialogue at a high level during the RT session, though a small number of learners were quiet or hesitant to participate. PC and PIB readers, in particular, who appeared engaged throughout (e.g.,

Learners E and F), significantly improved their post-test comprehension and decoding scores. The interactive nature of RT may have reduced the cognitive demands for these participants to focus on understanding over fluency, and the involved nature of RT encouraged all members of the group to actively apply strategies and support one another to make meaning. Teachers have previously observed that RT promotes inclusivity as a result of scaffolded interactions between learners (Cockerill, Thurston, & O'Keefe, 2023; Lederer, 2000) or small groups that provide a safe space to prioritise 'unpicking' meaning from a text over reading aloud alone (O'Hare, et al., 2019, p. 56). These studies, along with my own findings, advocate RT as a method for combating the 'reading slump' that older primary learners experience due to underdeveloped fluency. Second, they reflect Vygotskian principles of RT, which suggest that poorer readers' comprehension skills can be improved through socially constructed means. Participation in the social dynamics of RT may help individuals internalise comprehension strategies into their identity as readers (Davis, 2011). However, the relationship that exists in RT between the individual and the immediate social situation can give rise to resistance. Although RT interventions have been shown to benefit quieter children (Cockerill, O'Keeffe, Thurston, & Taylor, 2022, p. 15), Learner A's unwillingness to participate in the observed session, combined with the modest progress in their standardised scores, indicates a form of resistance. In contrast to the goals of others in the group, Learner C's insistence on reading aloud also suggests a lack of concern for the text's meaning. According to Lave & Wenger (1991, p. 29), learning is a process of 'legitimate peripheral participation', in which individuals' mastery of knowledge and skills leads to full participation within a 'community'. So, it might be argued that if Learner A lacked confidence using the questioning strategy (which was identified as the weakest and least-used strategy overall), their full participation would have been hampered.

External social influences are only one possible contributing factor to the differences found in learners' participation in the RT session. Personal motivations, agency, behaviours, and beliefs in one's own competence within a social environment – known as self-efficacy – have an impact on a desired outcome or goal, such as reading (Bandura, 1997). A student's self-efficacy informs their academic self-concept, which includes internalised perceptions of their own cognitive ability as well as perceptions of how others perceive them (Bong & Skaalvik, 2003). It could be argued that participants such as Learner B or C possessed a high level of self-efficacy, being motivated to self-regulate their behaviours and cooperating with peers to achieve the goal of comprehension. Likewise, it might be assumed that Learner A rarely contributed due to low levels of self-efficacy. Interestingly, Park (2011) discovered that when an individual's intrinsic motivation was already low, negative extrinsic influences were detrimental to reading performance. Such findings could explain why Learner A's use of strategies decreased throughout the RT session after Learner C suggested they stop asking questions. Park's findings may also demonstrate the implications of distracting behaviours reported by participants in the questionnaire. Moreover, research that combined RT with self-regulation strategies resulted in sustained gains in reading and improved peer feedback when compared to RT alone (Schünemann, Spörer, & Brunstein, 2013; Schünemann et al., 2017), implying that future implementation of RT in my own setting could benefit from incorporating self-regulation strategies, such as goal-setting and self-evaluation, to promote increased self-efficacy for reluctant learners.

CHAPTER 6. CONCLUSION

This purpose of this study was to evaluate the impact of a reading strategy instruction intervention, Reciprocal Teaching (RT), on reading comprehension outcomes for three different subgroups in my school setting: typically developing readers, poor comprehenders, and poor-in-both readers (referring to comprehension and decoding skills). Additionally, this research arose to challenge the assumption that RT was an intervention best suited to more fluent, high-achieving readers. The study's overarching question was as follows:

How effective is Reciprocal Teaching as a universal intervention for improving reading comprehension in mainstream Year 6 classes?

Rich, qualitative interactions from a RT session were integrated with quantitative data gathered from standardised assessments and questionnaire results. Thematic analysis was undertaken to interpret the integrated data, and the results were discussed in light of the research's three subquestions. The findings and discussion informed three action steps as part of this research's aims to bring about positive change within my specific context.

Action Step 1. *Continue to implement RT for poorer readers, expanding my professional knowledge to be more consistent in the teaching and learning of each reading strategy, but consider adaptations that might appropriately challenge more capable readers.*

It is possible to conclude that RT was an effective approach for improving *comprehension-fostering* and *comprehension-monitoring* skills for poorer readers, but the results show that the intervention had a modest effect for typically developing readers who

needed additional challenge to extend their comprehension skills and raise attainment in their standardised scores.

My study adds to a large body of evidence that demonstrates how explicit teaching of the four *comprehension-fostering* strategies – predicting, questioning, clarifying, and summarising – provides cognitive procedures for struggling readers to use when reading unfamiliar texts. My findings support the original claims made by Palincsar & Brown (1984) that RT is highly effective for poor comprehenders, but they also suggest that higher-order comprehension skills can be taught and applied to gain an understanding of a text through RT for poor decoders. Because of the proleptic principle of RT (the teacher models, scaffolds, and provides feedback until gradually responsibility for applying the strategies is released to the student), many learners in my setting were able to develop independently and apply the strategies without a teacher's 'expert' assistance. My research also indicates that the degree of success in applying *comprehension-fostering* strategies varies across the subgroups. Although learners appeared confident when using the clarifying and summarising strategies, questioning was not used frequently or strategically enough. Furthermore, while the most confident readers applied the strategies more proficiently, the disappointing results in the standardised scores for typically developing readers raises the question of whether RT, in its original form, is best suited to challenge and progress the reading skills of this subgroup in my setting. These findings contradict the assumption that RT was better suited for fluent, high-achieving readers, and raise concerns about the benefits of RT as a universal intervention that can challenge all groups of learners.

Action Step 2. *Identify barriers to participation in RT for individual learners and develop self-regulated learning strategies to support their integration in the intervention.*

Despite their flaws, standardised assessments have been the primary method for assessing the impact of RT for decades. In this study, the use of qualitative methods to observe RT in action contributes detailed interactions that demonstrate how comprehension can be co-constructed through dialogue, which is rarely found in the literature. These interactions add to our understanding of the role of social factors in the development of metacognitive *comprehension-monitoring* behaviours. Several observations revealed how the text was understood through the active participation of group members during discussions to construct an integrated model of the text that reflects Kintsch's (2018) model of reading comprehension. However, I also acknowledge that the proleptic principles of RT were not always effective for all learners. Several intrinsic and extrinsic factors were considered during the discussion to shed light on the difficulties some learners experienced while participating in the dialogue. Poor procedural and conditional knowledge of the strategies, low self-efficacy and self-concept, and negative social influences from peers, highlighted in the previous chapter, have previously been addressed in research that combines RT and self-regulated learning strategies. Assuming that comprehension is achieved by way of the complex cognitive, metacognitive, linguistic, and socioemotional dimensions of multi-component models discussed in the literature review, self-regulation strategies could thus aid participation in improving participation in RT for specific learners.

Although I recognise that the multifaceted nature of comprehension makes individually tailored adaptations difficult for a practitioner to achieve, reflexive actions to address the issues discussed in this dissertation could lead to a better understanding of the barriers to participation for individual learners. Accordingly, case studies using alternative qualitative methods, such as interviews or focus groups, could gather the perspectives of such individual learners in order to investigate the reasons for low levels of participation for targeted samples of learners. Future research should improve upon my

chosen methods; the questionnaires in this study relied heavily upon self-reported Likert-type ratings directed at gathering data on the frequency and knowledge of *comprehension-fostering* and *comprehension-monitoring* strategies rather than gaining insight into learners' perspectives on the interactive elements of RT.

Action Step 3. *To improve outcomes for all learners, embed the use of video-recorded observations to analyse and reflect on my teaching of reading in accordance with the key principles of RT.*

The scope of this research was to understand the impact of RT in my specific school context, which has limitations. Firstly, because of the pragmatic research design and convenient sampling methods, no control group was used to compare the effects of RT on reading. Subsequently, there is no guarantee that the improvements in standardised assessments made by participants in this study can be reliably attributed to the effects of RT alone. For example, as part of my school's regular intervention approaches, certain struggling readers received additional one-on-one or small group reading support that could contribute to gains in reading scores. Furthermore, the study's small sample size, particularly of the poor comprehender subgroup, means that the findings cannot be generalised. Second, if a baseline questionnaire and an additional observation had been undertaken, progress in learners' reading could have been more reliably observed. This additional data would have allowed comparisons to be drawn across two time points to evaluate the progress from different perspectives, introducing extra data to corroborate or even challenge the results of the standardised assessments. However, the qualitative findings from the observation contributed a wealth of knowledge about what the learners were able to do after the RT intervention. I believe that my practice could benefit from an exploration of the methods used in this study to examining how I deliver the RT in the

future. Specifically, future action research might explore the relationship between the aspect of the teacher's instruction (such as scaffolding and feedback) and comprehension.

In the opening chapter of this dissertation, I highlighted how teaching children to read for *understanding* was regarded as one of the fundamental tasks of education. The unique analysis of three subgroups of readers in this mixed methods study demonstrated that RT can be an effective approach to achieving this goal, particularly for struggling readers. My findings challenge an assumption that RT benefits competent readers the most; in fact, the findings support prior research by demonstrating how, after being taught four key *comprehension-fostering* reading strategies, struggling readers can access higher order cognitive procedures to interpret new texts, despite their lack of decoding skills. Thus, my discussion of the results questions casts doubt over whether RT can meet the needs of all learners in a heterogenous classroom without adaptations to its original design. Furthermore, compared to mostly quantitative studies and reviews presented in the literature review, this research drew upon qualitative methods to reveal how learners were able to co-construct meaning and monitor their comprehension of unfamiliar texts primarily through dialogue and active group participation. These interactions contribute to our understanding of the cognitive and social dimensions of RT in action. Equally, the findings highlight the importance of reflexive in practice to identify and support individual learners who experience barriers to participation in the intervention. This research provides a realistic insight into the implementation of RT within a natural classroom setting by highlighting the strengths, potential disadvantages, and three action steps that address the study's shortcoming. Given that RT has only recently emerged as a method of teaching reading in the UK, I hope my findings will serve to inspire and support fellow teacher-practitioners who are introducing an innovative method of teaching reading comprehension in their own unique settings.

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APPENDICES

APPENDIX A. Parental consent form and participation information letter.

Title of the research project: Evaluating the Impact of a Reciprocal Teaching Intervention for learners with diverse reading abilities in the Upper Primary Phase.

Please read the participant information attached before completing this form.

		Please tick or initial the box
1)	I confirm that I have read and understood the participant information dated 13th February 2023 for the above research. I understand that I can ask the researcher any questions before and during the research.	
2)	I understand that my child's participation in any observations or questionnaires is voluntary and that he/she is free to withdraw without giving a reason at any time during the research.	
3)	I agree to my child being video or audio recorded for the observations.	
4)	I understand that all data collected during the research will be stored in a secure and confidential manner complying with the General Data Protection Regulation (GDPR) and University protocols. All data will be used only for the purposes explained in the participant information. I give permission for the data to be published anonymously.	
5)	I understand that I can request for my child's data to be withdrawn from the research up to the time of its publication.	
6)	Upon its completion, I would like to be informed of the results of this study.	

I agree to …... (child's name) taking part in the above research.

Name of parent/carer………………………….... Signed ………………….......... Date……….

___

If you DO NOT wish for your child to participate in the research for any reason and would like their data to be withdrawn, please tick or initial this box.

Information Sheet for parents/guardians of children participating in classroom research

Title: *Evaluating the Impact of a Reciprocal Teaching Intervention for Learners with Diverse Reading Abilities in the Upper Primary Phase.*

Dear parent(s)/guardian(s),

As part of my master's studies, I am undertaking a classroom research project which will investigate the impact of an approach to teaching reading in Year 6. The purpose of this form is to provide you with information about the project as the parent of a child who has been invited to participate in the research so you can make an informed decision before giving consent on behalf of your child. Please read the information below and scan the QR code or complete the consent form overleaf.

What is the purpose of the research?

I invite your child's participation in a study that implements Reciprocal Reading, an approach to teaching reading comprehension. The purpose of this project is to investigate whether Reciprocal Reading is an inclusive teaching method that can improve reading comprehension skills and outcomes for all children.

What will the research involve?

The research involves your child's class teacher collecting data at school in three different ways: online standardised reading assessments (these form a part of the school's regular assessment practices); observations of the children as they take part in Reciprocal Reading sessions; questionnaires to gain the views of the children about Reciprocal Reading.

Does my child have to take part?

All children will experience Reciprocal Reading as part of the literacy curriculum at school, but participation in the data collection is voluntary and consent must be provided from yourself on behalf of your child. Your child will also be asked to complete an assent form, but only if both you and your child agree will their participation proceed. You and your child have the option to withdraw from the research, including after the completion of the project **up until May 31st.**

Will mine and my child's data be kept confidential?

Any data collected is for research purposes or to support your child's progress in reading. This means that only name and signature is gathered to record your consent, and this will be stored securely in accordance with the General Data Protection Regulation (EU) All assessment, observation, or questionnaire data will be stored securely using the school or university cloud-based services and access to personal data will be highly restricted to the researcher and classroom teachers. Personal data will be erased upon the completion of the project and your child's data will be anonymised, so there will be no way to identify the data.

What will happen to the results of the research?

The results will be published in a dissertation and made available for other teachers and researchers to view, but only once it has been ensured that no individual can be identified from it. The university will review and check the study.

What are the possible disadvantages of the research?

I do not anticipate any negative consequences for your child in taking part; in fact, there is evidence that shows Reciprocal Reading is a beneficial approach to improving reading comprehension. If there is a problem, please contact myself or your child's class teacher to discuss your child's experiences.

APPENDIX B. Rubrics for Reciprocal Teaching strategies ratings scale measure adapted from Oczkus (2018)

Strategy	Exemplary (4)	Proficient (3)	Developing (2)	Beginning (1)
Predicting	• Use of text features and layout as evidence to make logical predictions. • Uses background knowledge to make predictions. • Provides reasons for predictions based on plot, character, or genre. • Checks predictions by discussing in detail after reading to change or confirm.	• Makes logical predictions. • Makes predictions based on text clues and background information. • Usually gives reasons for predictions based on plot and character. • Checks predictions throughout reading by confirming or changing.	• Makes simple but sensible predictions. • Sometimes uses text clues and background knowledge to make predictions. • Makes some predictions that are not logical. • Sometimes gives evidence for predictions using clues about the plot or character. • Requires some prompting to make predictions.	• Predictions sometimes make sense. • Does not use text clues, including images and headings, to make predictions. • Predictions are not text-based. • Has trouble making predictions even when prompted.
Questioning	• Consistently asks a mix of questions, including recall of the main events and ideas; inferential questions; and critical thinking questions (e.g., analysis, evaluation) to discuss beyond the text. • Asks questions about the theme and deeper meaning of the text.	• Asks several levels of questions, including literal recall questions about the main ideas or relevant details; and inferential questions. • Wonders about the text and beyond. • Asks questions about the author. • Asks critical thinking questions (e.g., analysis, evaluation)	• Asks simple recall questions using the five Ws and how. • Asks simple I wonder questions that relate to the text. • Asks questions about the main idea. • With prompts, asks inferential questions.	• Has trouble formulating simple literal recall questions. • Asks questions about details rather than important ideas. • Asks questions that are not relevant to the text.
Clarifying	• Identifies words and ideas that are unclear. • Uses a range of strategies for decoding difficult words and making sense of unfamiliar vocabulary (e.g., chunking, root words, read-around, context clues) • Identifies and identified high-level ideas, such as metaphors, idioms, and symbolism.	• Identifies words to clarify. • Sometimes identifies ideas and sections to clarify. • Uses more than one strategy to decode or understand a word meaning (e.g., reread, chunking, read-aroud).	• Identifies words to clarify with some prompting. • Relies on one or two strategies to decode a word or find its meaning. • Does not always recognise if meaning has been lost.	• Does not stop to clarify words. • Requires prompting to clarify words. • Uses one strategy or requires modelled strategy-use to clarify unfamiliar words. • Does not realise when meaning has been lost.
Summarising	• Retells the text in their own words, incorporating new vocabulary. • Chooses most important events, points, and key details. • Summarises points in the correct order. • Uses the text layout and features (e.g. headings, images) to summarise..	• Chooses the most important ideas or points. • Leaves out unimportant details. • Usually summarises in the correct order. • Usually uses the text layout to summarise. • Rereads and scans the text for key words and clues.	• Needs prompting to separate main ideas and unimportant details. • Includes some events in order. • Leaves out some important events and ideas. • Needs prompting to reread and scan to find key words or clues.	• Does not recall the main points or ideas. • Has trouble sequencing main events. • Includes unimportant details. • Needs heavy support to respond to the text. • Does not reread or use clues from the text.

APPENDIX C. Learner questionnaire.

Part 1. Frequency of *comprehension-fostering* strategy use.

How often do you use the following strategies when you read, either in school or at home?					
	Never	*Rarely*	*Sometimes*	*Often*	*Always*
I use the layout of the text, such as the title, pictures and subheadings to predict what it will be about.					
I ask questions so I understand the main ideas of a text using who, what, where, when and why.					
I try to understand difficult words by sounding them out or chunking them into smaller parts.					
I scan the text to choose the most important parts or ideas.					
I use clues in the text about the plot and characters to predict what might happen next.					
I ask questions to help me understand how the characters feel in the text.					
I look for clues in the text (e.g., read around the word) to help me understand difficult words.					
I order the main points or events in a text.					
I link what I read with my prior knowledge about the topic to predict what might happen next.					
I answer questions about the text by finding evidence or using my prior knowledge.					
I use a dictionary to find the meaning of new words.					
I can summarise a text by retelling the main ideas or parts in my own words.					

Part 2. *Comprehension-monitoring* strategy knowledge.

Before I begin reading, it's a good idea to:
a) See how many pages are in the book.
b) Look up all of the difficult words in the dictionary.
c) Make some predictions about what will happen in the text.

Before I begin reading, it's a good idea to:
a) Decide on why I am going to read the text.
b) Reread some parts to see if I can figure out what is happening if things don't make sense.
c) Ask for help with the difficult words.

Before I begin reading, it's a good idea to:
a) Retell all of the main points that have happened so far.
b) Ask myself questions that I would like to have answered in the text.
c) Think about the meanings of words which have more than one meaning.

Before I begin reading, it's a good idea to:
a) Scan and skim the text to get an overall idea of the topic.
b) Make sure I can pronounce all of the words before I start.
c) Think of a better title for the text.

Before I begin reading, it's a good idea to:
a) Decide on how difficult the text might be and change my reading speed to match.
b) Read the last sentence so I will know how the text ends.
c) Check to see no pages are missing.

While I read a text, it's a good idea to:
a) Read the text very slowly so I will not miss any important parts.
b) Check to see if the pictures have anything missing.
c) Ask myself questions about the text to see if it is making sense to me.

While I read a text, it's a good idea to:
a) Stop and summarise the main points to check I understand the part I have just read.
b) Read only the beginning and the end of the story.
c) Skip parts that are too difficult for me.

While I read a text, it's a good idea to:
a) Check to see if I can answer any of the questions I asked before I started reading.
b) Read the title to see what the text is about.
c) Add missing details to the pictures.

While I read a text, it's a good idea to:
a) Check to see if the characters are real.
b) Use clues in the text to help me make lots of predictions about what will happen next.
c) Ignore the pictures because they might confuse me.

While I read a text, it's a good idea to:
a) Check how many pages I have left to read.
b) Reread the whole text to check I haven't missed any of the words.
c) Keep track of my predictions by checking if they were right or wrong.

While I read a text, it's a good idea to:
a) Find all of the adjectives in each paragraph.
b) Use the contents page to find the part I want to read first.
c) Link my prior knowledge with new words and ideas I read in the text.

While I read a text, it's a good idea to:
a) Change the ending so that it makes sense.
b) Reread some parts or read ahead to figure out what is happening if things don't make sense.
c) Check every difficult word in the dictionary.

While I read a text, it's a good idea to:
   a) Underline all of the topic words in the text.
   b) Check whether new parts I have read fit in with ideas in the rest of the text.
   c) Summarise the whole text in my own words.

After I read a text, it's a good idea to:
   a) Retell the main points of the whole text in my own words.
   b) Read the text again to be sure I said all of the words right.
   c) Practice reading the text out loud.

After I read a text, it's a good idea to:
   a) Read the title and look over the text to see what it is about.
   b) Ask questions to check where the story takes place.
   c) Think about why my predictions were right or wrong.

After I read a text, it's a good idea to:
   a) Think about what I have learned from the story and what the author wanted me to know.
   b) Read the best parts aloud.
   c) Break down difficult words into smaller chunks.

After I read a text, it's a good idea to:
   a) Practice reading the story silently.
   b) Think about how I would have acted if I were the main character in the story.
   c) Look over the pictures to see what will happen in the text.

Part 3. Learner opinions regarding Reciprocal Teaching

Decide if you **strongly disagree, disagree, don't know, agree,** or **strongly agree** with each sentence about Reciprocal Reading:

	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree
I enjoy taking part in Reciprocal Reading.					
I feel confident using the four reading strategies after taking part in Reciprocal Reading.					
Reciprocal Reading has helped me to understand what I read.					
Talking with my group in Reciprocal Reading helps me understand what I read.					
My reading skills have improved after taking part in Reciprocal Reading.					
Hearing others read and use their strategies helps me too.					

APPENDIX D. New Group Reading Test (NGRT) results for the whole sample and ratio gain scores

Participant	Gender	Reader subgroup	Pre-test SAS	Post-test SAS	Score difference
1	M	TD	112	104	-8
2	M	TD	128	124	-4
3	F	PIB	73	73	0
4	M	PC	107	108	1
5	F	TD	107	109	2
6	F	TD	119	122	3
7	F	PIB	81	92	11
8	M	PIB	92	104	12
9	F	TD	114	109	-5
10	M	TD	108	105	-3
11	M	PIB	75	73	-2
12	F	TD	114	115	1
13	F	TD	108	110	2
14	M	TD	108	111	3
15	M	TD	120	127	7
16	M	PIB	82	93	11
17	M	TD	106	117	11
18	M	TD	108	122	14
19	F	PIB	69	83	14
20	M	TD	107	101	-6
21	M	TD	108	103	-5
22	M	PIB	88	88	0
23	M	TD	116	118	2
24	M	TD	118	122	4
25	F	PC	87	91	4
26	F	TD	116	121	5
27	F	PIB	72	80	8
28	F	PC	99	109	10
29	F	PIB	77	90	13
30	M	PIB	73	92	19
31	M	PC	82	106	24

	Average months gained	Ratio gain	Impact
Whole sample	18.1	2.3	Useful
Typically developing	11.8	1.4	Modest
Poor comprehenders	25.8	3.2	Substantial
Poor-in-both	23.0	2.9	Useful
Ratio gain impact criteria (descriptors by Brooks, cited in Lavan & Talcott, 2020)			
Modest	Useful	Substantial	Remarkable
1.4 – 2.0	2.0 – 3.0	3.0 – 4.0	4.0 +

APPENDIX E. Proportion of participants choosing the most appropriate *comprehension-monitoring* **strategy before, during, and after reading in the learner questionnaire.**

	Whole sample	Typically developing	Poor comprehenders	Poor-in-both
Before I begin reading, it's a good idea to…				
Make some predictions about what will happen in the text.	**71.4%**	**81.3%**	**50%**	**62.5%**
Decide on why I am going to read the text.	**32.1%**	**56.3%**	**25%**	**0%**
Ask myself questions that I would like to have answered in the text.	**21.4%**	**25.0%**	**25%**	**12.5%**
Scan and skim the text to get an overall idea of the topic.	**82.1%**	**93.8%**	**75%**	**62.5%**
Decide on how difficult the text might be and change my reading speed to match.	**78.6%**	**87.5%**	**50%**	**75%**
While I'm reading, it's a good idea to…				
Ask myself questions about the text to see if it is making sense to me.	**53.6%**	**62.5%**	**50%**	**37.5%**
Stop and summarise the main points to check I understand the part I have just read.	**89.3%**	**93.8%**	**100%**	**87.5%**
Check to see if I can answer any of the questions I asked before I started reading.	**53.6%**	**75%**	**25%**	**25%**
Use clues in the text to help me make lots of predictions about what will happen next.	**89.3%**	**93.8%**	**100%**	**75%**
Keep track of my predictions by checking if they were right or wrong.	**71.4%**	**87.5%**	**50%**	**50%**
Link my prior knowledge with new words and ideas I read in the text.	**89.3%**	**87.5%**	**100%**	**87.5%**
Reread some parts or read ahead to figure out what is happening if things don't make sense.	**82.1%**	**81.3%**	**100%**	**75%**
Check whether new parts I have read fit in with ideas in the rest of the text.	**50%**	**62.5%**	**0%**	**50%**
After I read, it's a good idea to…				
Retell the main points of the whole text in my own words.	**67.9%**	**87.5%**	**50%**	**37.5%**
Think about why my predictions were right or wrong.	**60.7%**	**62.5%**	**50%**	**62.5%**
Think about what I have learned from the story and what the author wanted me to know.	**75%**	**87.5%**	**50%**	**62.5%**
Think about how I would have acted if I were the main character in the story.	**64.3%**	**75%**	**50%**	**50%**

APPENDIX F. Ethical approval

Approval for Research Activity

1	Has the research activity received approval in principle? (please check the Guidance Notes as to the appropriate approval process for different levels of research by different categories of individual)	**YES**	☒	**NO**	☐
					Date
2	If Yes, please indicate source of approval (and date where known): *Approval in principle must be obtained from the relevant source prior to seeking ethical approval*	Research Degrees Committee	☐		
		Institute Research Committee	☐		
		Other (write in)	☒	███ 3/10/2022	

Internal and External Ethical Guidance Materials

	Please list the core ethical guidance documents that have been referred to during the completion of this form (including any discipline-specific codes of research ethics, location-specific codes of research ethics, and also any specific ethical guidance relating to the proposed methodology). Please tick to confirm that your research proposal adheres to these codes and guidelines. You may add rows to this table if needed.	
1	**UWTSD Research Ethics & Integrity Code of Practice**	☒
2	**UWTSD Research Data Management Policy**	☒
3	**BERA (2018) Ethical Guidelines for Educational Research, fourth edition**	☒

Details of Research Activity

1	Indicative title:	Evaluating the Impact of a Reciprocal Teaching Intervention for learners with diverse reading abilities in the Upper Primary Phase.		
2	Proposed start date:	January 2023	Proposed end date:	August 2023
3	**Purpose of Research Activity** Reciprocal Teaching (Palincsar & Brown, 1984) is a reading intervention designed to improve learners' ability to comprehend texts and monitor their understanding as they read. The terms *comprehension-fostering* and *comprehension-monitoring* are used respectively to describe these aspects. Reciprocal Teaching involves the instructor modelling four strategies in the guide of reading 'roles': the predictor, questioner, clarifier, and summariser, gradually transferring the responsibility of learning to the students who take on these roles independently during group dialogues. Whilst the literature demonstrates its effectiveness for learners possessing adequate decoding skills – the ability to convert knowledge of written representations into words – but show difficulty in understanding what they read (Hattie, 2009; Rosenshine & Meister, 1991), evidence of Reciprocal Teaching as an inclusive intervention for all is unclear. My research will implement the intervention for Year 6 learners within a mainstream primary school, evaluating its impact on reading outcomes at a universal level by analysing its effect on learners with diverse reading abilities. I propose gathering evidence from standardized assessments, observations, and learner questionnaires to justify whether the intervention is an approach that benefits all learners. Recent research illustrates the potential of Reciprocal Teaching in a UK context. One such study showed learners making 2 months' worth of progress in their reading, but all participants were adequate			

	decoders (O'Hare et al., 2019). Another study, despite a small effect size, was concluded as unreliable owing to an underrepresented sample (Crawford & Skipp, 2014). Cockerill et al. (2022) found teachers responded positively to Reciprocal Teaching as a feasible intervention, but progress in learners' reading were not measured. Subsequently, these findings could not be generalised. My research will contribute to the emerging research of Reciprocal Teaching and its impact on learners with different starting points in their reading ability.
4	**Research Question** The aims of my proposed research can be summarised in the following research question and sub-questions: **How effective is Reciprocal Teaching as a universal intervention for improving reading comprehension in mainstream Year 6 classes?** RQ1: How does Reciprocal Teaching influence the progress made in the reading comprehension outcomes of learners with varied reading abilities? RQ2: Following the intervention, how effectively do learners employ *comprehension-fostering* and *comprehension-monitoring* strategies to understand an unfamiliar text? RQ3: How does social interaction contribute to learners' comprehension of unfamiliar texts during Reciprocal Teaching?
5	**Aims of Research Activity** From my reading around the current literature surrounding Reciprocal Teaching and reading comprehension theory, I have arrived at research aims that address three key issues. 1) I aim to contribute to the small body of research on Reciprocal Teaching in the UK as discussed above. Any findings from the research will be shared with other practitioners, outlined in a plan for disseminating my research. 2) I will evaluate the impact of Reciprocal Teaching on a universal level, judging whether the intervention is a suitably inclusive and equitable approach for improving reading outcomes for readers of diverse abilities within a mainstream setting. This will include poor decoders and typically developing readers to address inconsistent findings from past studies, which have mostly specified adequate decoders as part of their sample of participants (Perfetti, 2007). 3) I aim to capture the cognitive and metacognitive processes in action during the intervention to illuminate how the intervention affects the *comprehension-fostering* and *comprehension-monitoring* knowledge and skills of learners. This angle is arguably missing from the literature around Reciprocal Teaching which usually makes use of quantitative approaches for collecting data. My findings will be analysed and discussed in relation to current theory and debate around teaching and learning practices to share how the components of the Reciprocal Teaching intervention might influence progress in reading.
6	**Objectives of Research Activity** The following objectives are set out to achieve the broader aims of the research outlined above: 1) I will assess learners' reading skills at the beginning and end of the research to compare a baseline with final outcomes. This will provide quantitative data that will demonstrate the effectiveness of the intervention for all learners on their reading comprehension outcomes over time. 2) I will plan and prepare teaching and learning activities that instruct the learners how to use the four reading strategies and monitor their use whilst reading. Opportunities will be provided for learners to practice each strategy and to receive feedback from the instructor. Any relevant resources and display material will be available to support learners. 3) I will observe one group of mixed ability learners as they carry out a Reciprocal Reading session independently. The purpose of the observation is to collect quantitative data that

captures the *comprehension-fostering* and *comprehension-monitoring* processes that take place during interactions through group dialogue.

4) I will distribute questionnaires to collect additional data from the learners at the end of the research to understand the impact of the intervention from the participants' point of view.

5) I will analyse all data collected to draw conclusions on the effectiveness of the intervention for all groups of learners and present my findings in my dissertation. Throughout, I will make connections to the research literature and critically evaluate the effectiveness of my research activity to ensure transparency

6) Finally, I will share my research by drawing up a plan for its dissemination.

	Proposed methods
7	### 1) Standardised Assessments Prior to the implementation of the Reciprocal Teaching intervention, and toward the end of the research project, the New Group Reading Test (NGRT) by GL Assessment will be administered to each participant. The NGRT is a standardised, adaptive online assessment that measures several aspects of reading, including decoding skills and comprehension. My school utilises the NGRT as a normal part of its tracking and assessment practices, so the learners are familiar with its structure and layout. Each test will be administered in the classroom, starting with practice questions to prepare the participants for the test. Each participant will have their own device to complete the assessment, and a pair of headphones to listen to instructions will be provided. Following the assessments, a comprehensive report of the results is produced. Any data collected, including the report, will be stored online using the school's encrypted, password-protected cloud storage service authorised by the Local Authority. Once consent has been received for use of this data, all participants' information will be anonymised. ### 2) Questionnaires A questionnaire will be developed to gather the participants' perspectives on the Reciprocal Teaching intervention and its impact on their reading knowledge and skills. The questionnaire will aim to measure the participants' knowledge of reading strategies and metacognitive awareness, using a combination of qualitative and quantitative question types. The questionnaire will contain approximately 15-20 questions, taking no longer than 30 minutes to complete, and these questions will be tested prior to their distribution. I will create and administer the questionnaires to each participant using Microsoft Forms on the Office 365 suite that is available to all learners in Wales through the online Hwb platform. This platform, which provides every learner with a password protected account, requires each learner to login to their account to complete the questionnaire. Therefore, each response will correspond with a specific learner and remain confidential. I will select the appropriate settings to ensure that the results of the questionnaire can only be viewed by the researcher. I will explain the purpose and structure of the questionnaire to the participants, stating that completion of the questionnaire is voluntary. If any learner has difficulty reading the questions, the Immersive Reader function will be available to which reads aloud the questions and options on the questionnaire without interference from an adult or peers, improving the accessibility and confidentiality of responses. All participants will have the right to withdraw consent for completing the questionnaire, or for their data to be used in the research process, at any time without impacting on their school life, learning, and relationships. ### 3) Observation One group of learners will be selected (see Section G 10-12), following informed parental consent, to participate in an observed session of a Reciprocal Teaching session which will be video recorded. I will be observing the participants as the researcher and their classroom teacher. All learners involved in the observation will be briefed on the purpose of the observation before beginning, and I will state that participation is voluntary. When recording the video, I will use a school subscription to IRIS Connect, a service that allows videos of classroom practice to be recorded on a designated device and subsequently uploaded to a password-protected account. Any videos will be deleted from the device once uploaded to IRIS Connect, and this service will be used to transcribe the dialogue from the observation within a reasonable time frame. The observation will combine qualitative field notes with structured observations to identify specific

	phenomena from a schedule. All written notes recorded will be anonymised and transferred to the university's encrypted, password-protected cloud storage service. All participants will have the right to withdraw consent for participating in the observation, or for their data to be used in the research process, at any time without impacting on their school life, learning, and relationships.
	Location of research activity
8	At the school I work in on a full-time basis only.
	Research activity outside of the UK
9	N/A

	Use of documentation not in the public domain: Are any documents **NOT** publicly available?	**NO**	☐
10		**YES**	☒
11	School-level pupil data will be accessed to inform the research, including data from reading assessments. As a member of the school staff, I have permission from the Headteacher (the gatekeeper) to access and use this data as part of my teaching role. All General Data Protection Regulation guidelines and school policies will be always followed when accessing this data.		

	Does your research relate to one or more of the seven aims of the Well-being of Future Generations (Wales) Act 2015?	YES	NO
12	A prosperous Wales	☒	☐
13	A resilient Wales	☐	☒
14	A healthier Wales	☐	☐
15	A more equal Wales	☒	☐
16	A Wales of cohesive communities	☐	☐
17	A Wales of vibrant culture and thriving Welsh language	☐	☐
18	A globally responsible Wales	☐	☐
	This research relates to developing **a prosperous Wales** by exploring ways in which reading, a key skill for our children's future, is learned in schools. I am undertaking the research to reflect on the best practices to develop reading in my school, being critical of the inclusivity of the approach, which aims for **a more equal Wales.** In implementing an educational intervention, it should provide opportunities for learning regardless of individual circumstances.		

Scope of Research Activity

	Will the research activity include:	YES	NO
1	Use of a questionnaire or similar research instrument?	☒	☐
2	Use of interviews?	☐	☒
3	Use of focus groups?	☐	☒
4	Use of participant diaries?	☐	☒

5	Use of video or audio recording?	☒	☐
6	Use of computer-generated log files?	☒	☐
7	Participant observation with their knowledge?	☒	☐
8	Participant observation without their knowledge?	☐	☒
9	Access to personal or confidential information without the participants' specific consent?	☐	☒
10	Administration of any questions, test stimuli, presentation that may be experienced as physically, mentally or emotionally harmful / offensive?	☐	☒
11	Performance of any acts which may cause embarrassment or affect self-esteem?	☐	☒
12	Investigation of participants involved in illegal activities?	☐	☒
13	Use of procedures that involve deception?	☐	☒
14	Administration of any substance, agent or placebo?	☐	☒
15	Working with live vertebrate animals?	☐	☒
16	Procedures that may have a negative impact on the environment?	☐	☒
17	Other primary data collection methods. Please indicate the type of data collection method(s) below. Details of any other primary data collection method: Standardised reading assessments (GL Assessment, New Group Reading Test) IRIS Connect video recordings	☒	☐

Intended Participants

	Who are the intended participants:	YES	NO
1	Students or staff at the University?	☐	☒
2	Adults (over the age of 18 and competent to give consent)?	☐	☒
3	Vulnerable adults?	☐	☒
4	Children and Young People under the age of 18? (Consent from Parent, Carer or Guardian will be required)	☒	☐
5	Prisoners?	☐	☒
6	Young offenders?	☐	☒
7	Those who could be considered to have a particularly dependent relationship with the investigator or a gatekeeper?	☐	☒
8	People engaged in illegal activities?	☐	☒
9	Others. Please indicate the participants below, and specifically any group who may be unable to give consent. Details of any other participant groups: N/A	☐	☒

	Participant numbers and source Provide an estimate of the expected number of participants. How will you identify participants and how will they be recruited?	
10	How many participants are expected?	Approximately 74 participants will complete the NGRT assessments and questionnaires. Between 5 to 7 of these participants will be selected for the video-recorded observation.
11	Who will the participants be?	The target sample is Year 6 learners aged between 10 to 11, taken from three separate classes of a mainstream primary school. For video-recorded observations of the group dialogues, participants from the researcher's class only will be selected. Three members of the Year 6 teaching staff will be involved in carrying out the intervention in their respective classes. For the observation,
12	How will you identify the participants?	For more reliable results, all Year 6 learners from the school will be asked to be involved in the research. I will distribute an online consent form information attached to communicate the main purpose, aims and objectives of the research and any relevant ethical aspects to parents/carers of the participants. The message will explain that whilst the reading intervention will form a part of the school's reading curriculum, participation in the questionnaires and/or use of participant data from the NGRT assessments is voluntary and parents/carers or the participants can withdraw consent at any time. Informed consent will be sought from the participants' parents/carers and the participants themselves prior to any data being collected and used as part of the research. An introductory lesson in school will explain the purpose of the research to the participants. For video-recorded observations of the group dialogues, a purposive sample will be taken from my class only, stratified according to the reading abilities gathered from the pre-intervention comprehension scores and my own teacher judgement. I will select learners that represent a range of reading abilities and place these into one group to be observed. This approach to sampling means that handpicked participants meet the aims of the research question in a convenient way suitable for classroom-based research, where larger, representative samples are difficult to obtain. The risk this process presents for selection bias has been addressed in Section H. Informed consent will be sought from their parents, explaining the purpose of the observation, any relevant ethical considerations, and how the recording will be stored and used as part of the research. For the participants, I will treat consent for video recordings as provisional, clarifying learner consent verbally before recordings begin, briefing participants on the purpose of the observation. N.B. As part of the school's assessment procedures, the NGRT assessment is carried out twice a year with all learners. Therefore, *only consent for the data to be used* as part of the research will be sought from the participants and their parents/carers. I will clarify this issue with the Headteacher as the gatekeeper in this instance.

	Information for participants:	YES	NO	N/A
13	Will you describe the main research procedures to participants in advance, so that they are informed about what to expect?	☒	☐	☐
14	Will you tell participants that their participation is voluntary?	☒	☐	☐
15	Will you obtain written consent for participation?	☒	☐	☐
16	Will you explain to participants that refusal to participate in the research will not affect their treatment or education (if relevant)?	☒	☐	☐
17	If the research is observational, will you ask participants for their consent to being observed?	☒	☐	☐
18	Will you tell participants that they may withdraw from the research at any time and for any reason?	☒	☐	☐
19	With questionnaires, will you give participants the option of omitting questions they do not want to answer?	☒	☐	☐
20	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	☒	☐	☐
21	Will you debrief participants at the end of their participation, in a way appropriate to the type of research undertaken?	☒	☐	☐

	Information for participants:	YES	NO	N/A
24	Will participants be paid?	☐	☒	☐
25	Is specialist electrical or other equipment to be used with participants?	☒	☐	☐
26	Are there any financial or other interests to the investigator or University arising from this study?	☐	☒	☐
27	Will the research activity involve deliberately misleading participants in any way, or the partial or full concealment of the specific study aims?	☐	☒	☐
28	If YES to any question, please provide full details			
	Specialist iPads will be used as part of the school's subscription to IRIS Connect to make video-recorded observations. The videos are stored securely behind a password-protected account, meaning no video will be saved on to the device itself. Any data recorded will be permanently deleted following the transcription of the observation within a reasonable timeframe.			

SECTION H: Anticipated Risks

	Outline any anticipated risks that may adversely affect any of the participants, the researchers and/or the University, and the steps that will be taken to address them.		
1	**Full risk assessment completed and appended?**	Yes	☐
		No	☒
2	**Risks to participants** For example: sector-specific health & safety, emotional distress, financial disclosure, physical harm, transfer of personal data, sensitive organisational information		

Risk to participants:	*How you will mitigate the risk to participants:*
1) Loss of participant confidentiality when data is collected, stored, and used for the purpose of the research. 2) Transfer and storage of personal data. 3) Emotional distress caused by the intervention affects participant well-being, e.g., low self-confidence in reading, or disagreements. 4) Participant bias or coercion during the data collection. 5) Researcher bias in the selection of participants for the observation 6) Disturbance to relationships with staff	1) Any data collected will be anonymised, both in physical and digital formats. No identifiable personal information will be included as part of any aspect of the research. GDPR protocols will be followed, and statements included in any participant information. 2) Where data is required to be stored digitally, it will be done so using the school's secure cloud-based services. Any physical data will be transferred to a digital format and destroyed to reduce the likelihood of personal information being lost or stolen. GDPR and ethical guidelines will be adhered to robustly in the storage and transfer of participant data. 3) School safeguarding and child protection procedures will always be adhered to. The purpose of the research will be explained to the participants to avoid misunderstandings and manage expectations, clarifying their understanding throughout the research process to reaffirm consent. If at any point in the research should a participant experience distress, access to pastoral support will be sought and the research approach revised. Communications with the headteacher and parents/carers will be open, proactive, and transparent. The voluntary nature of the research will be made clear to the participants so they understand they can withdraw consent at any time without giving a reason. Teaching staff will moderate group activities to anticipate, identify and prevent possible causes of emotional distress. Where possible, adaptations will be made so that resources are accessible for all participants (e.g., digital tools for reading questionnaires). 4) Before collecting data, information about the questionnaire or observation will be made available in both verbal and written forms. An opportunity for anonymised summary of key findings or feedback after data collection will be offered to all participants. The participants will be observed in the classroom environment, completing an activity that will be familiar by the time of recording. The observer will reassure the participants that the recording will remain confidential. 5) To mitigate the potential for researcher bias in the selection of participants for the observation, a set of criteria will be established. This, for example, might include test scores produced from the baseline assessment which can identify the range of reading abilities to represent the diversity of the learners in the classroom. 6) The purpose and aims of the research have been shared with the Headteacher and will be communicated with colleagues who are responsible for some of the identified participants. Disturbance to day-to-day activities

		at school will be minimised by carefully planning the research process and communicating with colleagues. The confidentiality and anonymity of colleagues will be guaranteed during the research, and no information from colleagues will be disclosed without their consent. Colleagues will be briefed on the ethical aspects of the research to ensure participants privacy is protected and the voluntary nature of any data collection.
3	If research activity may include sensitive, embarrassing or upsetting topics (e.g. sexual activity, drug use) or issues likely to disclose information requiring further action (e.g. criminal activity), give details of the procedures to deal with these issues, including any support/advice (e.g. helpline numbers) to be offered to participants. Note that where applicable, consent procedures should make it clear that if something potentially or actually illegal is discovered in the course of a project, it may need to be disclosed to the proper authorities	
	N/A	
4	**Risks to the investigator** For example: personal health & safety, physical harm, emotional distress, risk of accusation of harm/impropriety, conflict of interest	
	Risk to the investigator: 1) Allegation of harm from a participant. 2) Allegation of fabrication or falsification of data. 3) Allegation of coercion.	*How you will mitigate the risk to the investigator:* 1) A familiar and suitable environment shared by and visible to colleagues and learners will be used during the observation. Safeguarding and child protection procedures will be adhered to.

		4) Withdrawal of participants from the observation group 5) Loss of confidentiality during transfer of data 6) Negative responses or behaviour of the participants during the research.	2) A familiar and suitable environment shared by and visible to other staff will secure the reliability of the data. I will offer an anonymised summary of key findings during a feedback session to clarify participants' contributions, working with the headteacher, parents/carers, and colleagues involved in the research to promote a shared understanding of the research purpose and aims. Participants have the right to access their personal data at any time and can request for the data to be deleted at any time. Both the NGRT assessment and questionnaires will require participants to use a unique login or code to complete, reducing the risk for falsification. 3) Throughout the research, participants will be briefed that they can withdraw consent and disengage from the research at any time without any negative impact on their learning or relationships at school. All effort will be made for questionnaires and assessments to be accessible to all participants using appropriate resources and tools without compromising confidentiality and privacy. 4) If a participant chooses to withdraw, their data will not be included as part of the research. Should a participant withdraw from the observation, it will be conducted with the remaining participants. If deemed necessary, new participants will be recruited and fully briefed once consent is sought. 5) No identifiable personal information will be included as part of any aspect of the research output. GDPR protocols will be followed, and all data will be stored securely using the university's password-protected Microsoft Office 365 cloud storage. 6) Throughout the research process, I will have an awareness of any individuals who have specific learning or behavioural needs, providing reasonable adaptations to meet their needs. Risk assessments for individuals will be adhered to, and school policy followed should any negative conduct be demonstrated by a participant towards another participant or member of staff.
5	**University/institutional risks** For example: adverse publicity, financial loss, data protection		
	Risk to the University:		*How you will mitigate the risk to the University:*
	1) Reputational damage		1) I will adhere to the UWTSD code of ethics, research standards and commonly agreed standards for good practice. I will comply with GDPR regulations by following UWTSD guidelines and security procedures. I will ensure that my research methodology is robust and that the methods are appropriate. I will adhere to the UWTSD code of conduct and EWC code of conduct for teachers in Wales. I will adhere to

		safeguarding and child protection procedures. I will work with partners at the university (e.g. dissertation supervisor) to promote a shared understanding of the research to avoid misunderstandings and manage expectations.
6	**Environmental risks** For example: accidental spillage of pollutants, damage to local ecosystems	
	Risk to the environment: N/A	*How you will mitigate the risk to environment:*

	Disclosure and Barring Service			
	If the research activity involves children or vulnerable adults, a Disclosure and Barring Service (DBS) certificate must be obtained before any contact with such participants.	**YES**	**NO**	**N/A**
7	Does your research require you to hold a current DBS Certificate?	☒	☐	☐
8	If YES, please give the certificate number. If the certificate number is not available please write "Pending"; in this case any ethical approval will be subject to providing the appropriate certificate number.	██████		

Feedback, Consent and Confidentiality

1	**Feedback** What de-briefing and feedback will be provided to participants, how will this be done and when?
	An opportunity for an anonymised summary of key findings will be offered to participants following the completion of assessments, questionnaires, and observations. At the end of the research process, participants and/or their parents/carers will be invited to view any anonymised output from the research, with an opportunity for feedback planned into the class timetables. Participants' parents/carers will be offered the opportunity to discuss any outcomes or data during parent consultations.
2	**Informed consent** Describe the arrangements to inform potential participants, before providing consent, of what is involved in participating. Describe the arrangements for participants to provide full consent before data collection begins. If gaining consent in this way is inappropriate, explain how consent will be obtained and recorded in accordance with prevailing data protection legislation.
	Before undertaking any data collection, participants in school will take part in an introductory lesson informing them of the research process and what is involved. An electronic consent form, produced on Microsoft Forms using the university's Office 365 suite, and an online message through the school's online communication channel, will be distributed for participants and their parents/carers to read prior to giving consent on behalf of the participants. The electronic form will outline the research process and what is involved. The electronic form will also state that should any parent/carer wish to discuss the research, an appointment can be made through the school to do so, or should any parent require a paper hard copy of the consent form, this can be

| | arranged. The electronic form will be made available through the secure online communication channel, which also provides a translation tool for families who speak a language other than English.

For the video-recorded observations of selected participants, a separate online consent form (also created on Microsoft Forms using the university's Office 365 suite) will be distributed to the participants and their parents/carers. This online consent form will include further detail on what the observation will entail, its purpose, and how the participant's data will be handled and secured. Prior to the observation, participants will be briefed to clarify any misunderstandings. Participant consent for the video recording will be treated as provisional until participants consent is verbally clarified before any recordings commence. A briefing, outlining the participants' rights to withdraw consent and an outline of the purpose of the observation will occur before recording.

At each point data is collected (including the NGRT assessments and questionnaires), I will clarify voluntary nature of participants' consent, making clear that consent can be withdrawn at any time and that any involvement with the research activity will be ended without negative consequences on the participant's school life and relationships.

At the participant's request, any of their data can be deleted. |
|---|---|
| 3 | **Confidentiality / Anonymity**

Set out how anonymity of participants and confidentiality will be ensured in any outputs. If anonymity is not being offered, explain why this is the case. |
| | Once electronic consent forms have been signed and returned, I will store them securely on the university's Office 365 cloud service following GDPR guidelines. Any hard paper copies will be stored securely in school. Following any feedback at the end of the research the online consent forms will be permanently deleted from the university's cloud storage. Any hard paper copies of consent forms that may have been used will be destroyed following feedback as following the school's confidential waste procedures.

Video recordings of participants will be made using the school's specialist equipment as part of a subscription to IRIS Connect, a secure password-protected service that is used as part of the school's monitoring procedures. After securely logging in to IRIS Connect, any video recordings are automatically uploaded to the service. I will permanently delete any video recordings from the device immediately. These videos will be transcribed within a reasonable timeframe and all videos will be permanently deleted from IRIS Connect upon completion of the transcription.

Throughout the process of transferring, transcribing, and analysing data, only participant initials will be used for the researcher to identify participants. The draft and final output of the dissertation will remove any personal information pertaining to the participants or the research setting to ensure anonymity and protect their privacy.

All participant questionnaires and assessments are completed using a unique login (via Hwb) or code generated by GL Assessments to ensure confidentiality.

All participants will be briefed on how their data will be collected and kept confidential. |

SECTION J: Data Protection and Storage

	Does the research activity involve personal data (as defined by the General Data Protection Regulation 2016 "GDPR" and the Data Protection Act 2018 "DPA")?	YES	NO
1	*"Personal data" means any information relating to an identified or identifiable natural person ('data subject'). An identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical,*	☒	☐

	physiological, genetic, mental, economic, cultural or social identity of that natural person. Any video or audio recordings of participants is considered to be personal data.		
	If YES, provide a description of the data and explain why this data needs to be collected:		
2	Video recordings of an observed group of approximately 5-7 participants will be collected to analyse how the intervention has impacted different groups of learners and their ability to independently apply the strategies taught to comprehend a text. Because the intervention utilizes dialogues as part of the comprehension process, studying the interactions between participants will be key in understanding the success of the intervention.		
	Does it involve special category data (as defined by the GDPR)?	**YES**	**NO**
3	***"Special category data"*** *means sensitive personal data consisting of information as to the data subjects' –* *(a) racial or ethnic origin,* *(b) political opinions,* *(c) religious beliefs or other beliefs of a similar nature,* *(d) membership of a trade union (within the meaning of the Trade Union and Labour Relations (Consolidation) Act 1992),* *(e) physical or mental health or condition,* *(f) sexual life,* *(g) genetics,* *(h) biometric data (as used for ID purposes),*	☐	☒
	If YES, provide a description of the special category data and explain why this data needs to be collected:		
4	N/A		

	Will data from the research activity (collected data, drafts of the thesis, or materials for publication) be stored in any of the following ways?	**YES**	**NO**
5	Manual files (i.e. in paper form)?	☒	☐
6	University computers?	☐	☒
7	Private company computers?	☐	☒
8	Home or other personal computers?	☐	☒
9	Laptop computers/ CDs/ Portable disk-drives/ memory sticks?	☒	☐
10	"Cloud" storage or websites?	☒	☐
11	Other – specify:	☐	☐
12	For all stored data, explain the measures in place to ensure the security of the data collected, data confidentiality, including details of backup procedures, password protection, encryption, anonymisation and pseudonymisation:		
	All data will be kept in password-protected online cloud storage on the University Microsoft Office 365 system which will not be shared with any other individual or third party. Audio/visual data, such as video recordings, will be stored using IRIS Connect before being transcribed and permanently deleted. Any data that needs to be accessed using a personal laptop will be done so from the university cloud storage and the device will be password protected. No memory sticks or hard drives will be used. All participants will be given a unique identifier to ensure confidentiality and this list will be kept securely in a password protected folder on the university cloud storage. All responses to questionnaires will be stored securely using Microsoft Forms on the university's Microsoft Office 365 storage.		

	Data Protection		
	Will the research activity involve any of the following activities:	**YES**	**NO**
13	Electronic transfer of data in any form?	☒	☐
14	Sharing of data with others at the University outside of the immediate research team?	☐	☒
15	Sharing of data with other organisations?	☐	☒
16	Export of data outside the UK or importing of data from outside the UK?	☐	☒
17	Use of personal addresses, postcodes, faxes, emails or telephone numbers?	☐	☒
18	Publication of data that might allow identification of individuals?	☐	☒
19	Use of data management system?	☐	☒
20	Data archiving?	☐	☒
21	If YES to any question, please provide full details, explaining how this will be conducted in accordance with the GDPR and Data Protection Act (2018) (and any international equivalents, where appropriate):		
	All data will be encrypted and kept in password protected cloud storage on the University Microsoft Office 365 system which will be available to view by the names person below (23). All data transfers will be encrypted and password protected. All participants will be given a unique identifier to ensure confidentiality and this list will be kept securely in a password protected folder on the university's cloud storage. The data will be stored until the completion of the project and then permanently deleted. In accordance with the DPA2018, participants will have the right to ask to see what data is held relating to them, and this data will be deleted immediately if the participant requests this, in which case the data will not be used in the project. Video recordings of participants will be made using the school's specialist equipment as part of a subscription to IRIS Connect, a secure password-protected service that is used as part of the school's monitoring procedures. After securely logging in to IRIS Connect, any video recordings are automatically uploaded to the service. I will permanently delete any video recordings from the device immediately. These videos will be transcribed within a reasonable timeframe and all videos will be permanently deleted from IRIS Connect upon completion of the transcription.		
22	List all who will have access to the data generated by the research activity:		
	██████ (researcher) (supervisor)		
23	List who will have control of, and act as custodian(s) for, data generated by the research activity:		
	██████ - researcher		
24	Give details of data storage arrangements, including security measures in place to protect the data, where data will be stored, how long for, and in what form. Will data be archived – if so how and if not why not.		
	All data will be encrypted and kept in password-protected cloud storage on the university Microsoft Office 365 system which will available to view by the named person above only (23). The data will be stored until the completion of the project and then permanently deleted. No data will be archived.		
25	Please indicate if your data will be stored in the UWTSD Research Data Repository (see https://researchdata.uwtsd.ac.uk/). If so please explain. (*Most relevant to academic staff*)		
	No		

26	Confirm that you have read the UWTSD guidance on data management (see https://www.uwtsd.ac.uk/library/research-data-management/)	**YES**	☒
27	Confirm that you are aware that you need to keep all data until after your research has completed or the end of your funding	**YES**	☒

SECTION K: Declaration

	The information which I have provided is correct and complete to the best of my knowledge. I have attempted to identify any risks and issues related to the research activity and acknowledge my obligations and the rights of the participants. In submitting this application I hereby confirm that I undertake to ensure that the above named research activity will meet the University's Research Ethics and Integrity Code of Practice which is published on the website: https://www.uwtsd.ac.uk/research/research-ethics/	
1	**Signature of applicant:** ▬▬▬▬	**Date:** 4/11/2022