Teacher-Implemented Self-Regulated Strategy Development Instruction for Story Writing with Year Two Students in New Zealand

By

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ABSTRACT

Writing is a complex skill and many students struggle to learn to write. Self-Regulated Strategy Development (SRSD) for writing is an intervention strategy that can increase students' writing performance. However, there is limited research on the use of this intervention with younger primary-school students and most of the existing research has been implemented by researchers or research assistants, rather than by actual classrooms teachers, which therefore limits the ecological validity of the research. The two studies included in this thesis investigated teacher-implemented SRSD writing instruction. Study 1 evaluated a 5-week intervention programme consisting of 19 lessons. Study 2 evaluated a 17-week intervention with 61 lessons. Studies 1 and 2 both used a mixed-methods design to investigate the effectiveness and social validity of the teacher-implemented Self-Regulated Strategy Development (SRSD) program on the story-writing performance with Year 2 students (6- to -7-year-old children) in New Zealand. In the quantitative strand, I conducted a quasi-experiment in which students either received SRSD writing instruction or their regular writing instruction. I collected student writing samples before and after the intervention and teachers completed a questionnaire on the social validity of the intervention. A mixed-model ANOVA with SRSD instruction as the between-subjects variable and time as the within-subjects variable indicated that students in the treatment condition had larger improvements relative to students in the comparison condition on measures of holistic quality, number and quality of story elements, and length of composition. In the qualitative strand, I conducted interviews with the classroom teachers to ascertain their perceptions of intervention. Results suggested that the intervention was beneficial for the students. In addition, teachers perceived the intervention as appropriate and reported that they enjoyed implementing the intervention. These results suggest that teacher-implemented SRSD interventions can be effective at improving early primary students' writing performance and is socially valid for use by teachers in Year 2 classroom settings.

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DECLARATION BY THE AUTHOR

This thesis is comprised of my original work conducted for fulfillment of a PhD under the supervision of Associate Professor Matthew McCrudden (Pennsylvania State University; formerly of Victoria University of Wellington) and Professor Jeff Sigafoos (Victoria University of Wellington). None of the research included within this thesis has been previously submitted for another degree or diploma. Research conducted by other authors has been carefully referenced in text.

The research included in this thesis was approved by the Victoria University of Wellington Human Ethics Committee under the project: Writing in Primary School (Reference Number 22856, see Appendix C). My primary supervisor, Associate Professor Matthew McCrudden, and secondary supervisor, Professor Jeff Sigafoos, provided input into the design of Studies 1 and 2, and edits on all chapters. Associate Professor Matthew McCrudden also provided assistance with the data analysis and provided feedback/edits on the publications and submitted manuscripts arising from this thesis research. Aside from this input, I designed and conducted the studies presented in this thesis and wrote the thesis.

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CHAPTER 1
INTRODUCTION

This introduction will consist of nine main sections. First, I will provide an overview of the importance of writing, as both an academic and functional skill. Second, I will focus on components of fluent/competent writing. Third, I will explain the extent and nature of writing difficulties in students. Fourth, I will outline approaches to the teaching of writing. Fifth, I will define evidence-based practice and outline arguments for adopting evidence-based writing interventions. Sixth, I will describe self-regulation strategy development (SRSD) and the evidence-base supporting this approach. Seventh, I will distinguish the difference between efficacy and effectiveness research. Eighth, I will identify the need for, and issues related to designing effectiveness research. Finally, I will conclude by introducing the two studies reported in the thesis.

Importance of Writing

Writing is an important skill for participating in society and is a form of expressing thoughts and feelings to others, but it is a difficult skill to master. As students' progress through school, writing becomes a vital tool both for learning and demonstrating knowledge and understanding (Harris et al., 2015). Individuals who do not sufficiently master basic writing skills may have difficulty participating in daily activities that involve communicating in school (e.g., written assignment), work (e.g., writing a report) and personal (e.g., email) contexts (Koster et al., 2015).

For many years, researchers focused on ways to improve students' mathematics and reading outcomes, whereas less effort has been directed towards improving students' writing performance. However, writing is a skill that underpins learning in numerous domains and there is a need to identify ways to develop students' writing skills. Writing is an important part of life and can impact success in secondary school, university, and future employment. It is important to provide quality writing instruction in primary grades to minimize barriers to their learning and to support the development of their writing skills.

Components of Fluent/Competent Writing

For students and individuals who are competent writers, the process of writing is a flexible, goal-directed activity supported by a rich knowledge of cognitive processes and strategies for planning, text production, and revision (Harris et al., 2008). Writing involves more

than just the physical act of transcribing words onto a page; there are thought processes, structure conventions, grammar, and spelling that all play a part in the writing process. Competent writers organize information and use established writing conventions to communicate successfully through written language. Skilled writers self-regulate the writing process, are goal orientated, resourceful, and reflective (Harris et al., 2008). Further, writing is integral to learning. Writing about a topic can enhance students' learning of the associated content and enable students to effectively communicate their knowledge of the topic and their critical thinking about the topic through their writing (Bangert-Drowns et al., 2004; Graham & Perin, 2007). Therefore, it is important to facilitate students' self-regulated behavior, motivation, knowledge, and skills pertaining to writing to promote their learning and development (Graham, 2006).

Extent and Nature of Writing Difficulties in Students

Countries similar to New Zealand, such as Australia, the United Kingdom, and the United States of America, have found that achievement in writing is lower than in reading and mathematics (Australian Curriculum, Assessment and Reporting Authority, 2017; Department for Education, 2012; National Center for Educational Statistics, 2012). Writing is often referred to as the neglected "R." Student writing performance data from the USA reflects this view (Gilbert & Graham, 2010). For example, among students in the 8th and 12th grades (13-year-olds and 18-year-olds), only 30% perform at or above their expected level of proficiency (National Center for Educational Statistics, 2012). In the Netherlands, elementary schools reportedly devote relatively little time to writing instruction and by the end of primary school (Grade 6) most students are not capable of writing texts that sufficiently convey a single, simple message (Kühlemeier et al., 2013). Further, students showed limited progress in their writing competencies from Grade 4 to 6 (Kühlemeier et al., 2013). In Portugal, writing instruction is also noted as receiving inadequate attention and many students are reported to have severe problems with respect to the development of writing skills, which persist at the university level (Festas et al., 2015).

Writing proficiency is a persistent problem in New Zealand (Parr & Jesson, 2016). According to the most recent report of the National Standards in Writing (2016), only 71% of Year 1 to 8 students are achieving at or above the national writing standard for their age group (Ministry of Education, 2020). This figure has stayed consistent for at least five years. This suggests that current writing instruction practices are not improving students' writing outcomes

at the national level. The results were substantially lower for ethnically, racially, economically, and academically diverse populations. Indigenous Māori and Pasifika are overrepresented in the group of lower achieving students (Chamberlain & Ministry of Education, 2013). Data indicate that approximately 30% of students lack the necessary skills to participate effectively in our society, and this gap is disproportionately wider for Māori and Pasifika students (Ministry of Education, 2020). Additionally, the difference between boys' and girls' performance in literacy in New Zealand is significantly different, with boys having a 65% higher risk of needing a literacy intervention than girls. This disparity between genders is higher than the international average (Schluter et al., 2018).

Harris et al. (2008) identified five areas that students find the most challenging when learning to write: (1) generation of content, (2) creation of an organizing structure for compositions, (3) formulation of goals and higher-level plans, (4) quick and efficient execution of the mechanical aspects of writing, and (5) revision of text and reformulation of goals. These areas would seem obvious priorities when aiming to develop students' writing skills.

Approaches to the Teaching of Writing

Writing programs in schools look different from school to school, district to district, and country to country. Many social factors (culture, politics, community, schooling) appear to shape how writing is taught and valued (Bazerman, 2016). Most of what researchers know about writing instruction practices comes from surveys (e.g., Gilbert & Graham, 2010; Tse & Hui, 2016), observational studies designed to describe how writing is taught (e.g., Applebee & Langer, 2011; Rietdijk et al., 2018), and mixed method studies that provide description of writing instruction through both interviews and observations (e.g., Hertzberg & Roe, 2016; McCarthy & Ro, 2011). When comparing these studies, Graham (2019) concluded that while some teachers provide students with effective writing programs and exemplary instruction, other teachers could improve the ways in which they teach writing. Teachers may be familiar with a broad array of instructional methods, activities for composing, and adaptations for struggling writers; however, some teachers could devote more time to writing within the classroom schedule (Graham, 2019). Additionally, some teachers are not teaching persuasive and expository writing and others are overemphasizing basic writing skills (grammar, handwriting, and spelling) in the place of writing processes like planning and revising (Graham, 2019).

One way to promote the development of writing skills is by providing students the opportunity to write frequently (Graham et al., 2013). For instance, Graham and Perin (2007) found that effective literacy teachers had students write frequently across the curriculum, and to write for many different purposes (e.g., entertain, inform, and persuade). Further, evidence from experimental and quasi-experimental designs suggests that increasing the amount of time that elementary students write improves their writing (Graham et al., 2013). Another way to promote the development of writing skills is by teaching effective writing strategies in the early years of schooling. This may improve the students' probability of becoming competent writers in the future (Graham et al., 2017). This might minimize the need for remedial writing interventions and additional writing support in the future when writing habits become more difficult to remediate (Harris et al., 2003).

It appears that some teachers base their instructional decisions about how to teach writing on their own experiences as students, such as the experiences they had when they received writing instruction. Additionally, teachers often adopt instructional practices that have been actively promoted by others as effective, but which have little or no research evidence to support their use (Graham & Harris, 2016). In order to improve writing achievement for all students, especially those who are disadvantaged, one could argue that changes need to be made to the way we are teaching writing (Graham, 2019). After 2016, New Zealand abolished the National Standards which required schools to report the number of students at, above, and below the national standard. There are still standards for students' writing, but there is no longer an age-related standard and the data are not reported in a consistent way to the Ministry of Education. This change has been perceived by some as having positive consequence for writing instruction. For example, it has been suggested that there is now more possibility for students to develop at their own pace, rather than being benchmarked against the progress of peers (Ministry of Education, 2019). However, there could also be possible negative consequences. For example, without a standard measure, it is difficult to determine whether there are changes in the general level of writing literacy across the nation over time.

The national education curriculum in New Zealand is fairly general and broad and therefore allows schools and teachers to adapt and implement the curriculum to meet the needs of their local context (Parr & Jesson, 2016). New Zealand teachers seem to have considerable discretion in terms of deciding what to teach and how, including how to teach writing. This

variation might help to explain why many students appear to struggle with writing proficiency (Ministry of Education, 2019). Writing (English) is a compulsory subject through Year 12 (children aged 15-16 years). This would seem to indicate that the New Zealand educational system does in fact place a high value on writing. Indeed, no other subject is compulsory through Year 12. The fact that writing is compulsory, and yet writing proficiency is below international standards, suggests a need for research to explore alternative methods of teaching writing skills.

Evidence-based Practice and Arguments for Adopting Evidence-Based Writing Interventions

Evidence-based practice involves using evidence synthesized from a sufficient quantity of high-quality research studies to inform practice (Thomas, 2004). Historically, in education, instructional programs and practices have been driven more by ideology, faddism, politics, and marketing than by research evidence (Slavin, 2008). Generally, research has been cited after the fact to provide support for already adopted educational programs, which therefore can create widespread adoption of programs that have limited evidence to support their use (Slavin, 2008). Systematic reviews are considered to be a good source of information for finding quality research-based practices because systematic reviews synthesize and appraise the findings of many different research studies in a way that is explicit, transparent, replicable, accountable, and potentially updateable (Oakley, 2000; Slavin, 2008). For this reason, the U.S. Department of Education has sponsored several efforts to synthesize research on educational programs (Slavin, 2008).

There are several reasons for adopting evidence-based practices in writing. First, it provides guidance for supporting the best possible outcomes for students. Evidence has to adhere to rigorous criteria to be considered acceptable, such as (a) treatment fidelity, (b) reliable and valid measurement of behavioral outcomes, (c) adequate control of variables, (d) freedom from contamination, (e) adequate follow-up, (f) replicated in more than a single study, and (g) cost effectiveness (Mitchell, 2010). Second, teachers can gain information about different types of writing instruction and their consequences, which can lead to more informed decision making about the most effective ways to teach the students. Third, the evidence from similar environments can predict accurately students' writing outcomes. Teachers will thus be more likely to predict accurately the outcomes to be expected from various practices. Lastly, using evidence may also inform teachers about writing instruction practices to avoid due to the lack of

evidence supporting their use. Overall, systematic reviews and meta-analyses can be helpful in enabling teachers to compare a range of evidence-based writing interventions and select an intervention that represents a best fit for their students (e.g., Graham & Harris, 2018; Graham et al., 2012; Graham & Perin, 2007; Koster et al., 2015).

There are several factors that contribute to teachers' willingness to use evidence-based practices. First, teachers are more likely to change their teaching practices when they encounter credible evidence. Andrews (2004) argued that when teachers gain access to credible evidence about new approaches to enhance their student's learning, they are more likely to change their practices by adopting those effective approaches. Second, the school culture might influence the willingness of the teacher participants to adopt an intervention. If the whole school is participating in the study, for example, there may be less resistance to participation than if teachers were isolated from peers in this endeavor. Third, having teachers collaborate with researchers may be an effective model for advancing the implementation of evidence-based interventions to promote student writing outcomes (McKeown, FitzPatrick, et al., 2019). This collaboration may also help to lower teachers' inhibitions against using certain types interventions if they see that other teachers have been able to successfully implement an intervention and found it acceptable. Further, by supporting teachers in the implementation of evidence-based interventions, it may help to boost teachers' self-efficacy and increase their sustained use of effective interventions (Johnson et al., 2013). Lastly, providing professional development for teachers can support their adoption of evidence-based practices. Twelve of the 13 studies in the literature review (Chapter Two) provided professional development for teachers and this appeared to be an important factor in the success of teacher-implemented writing interventions. Overall, teacher involvement in implementing evidence-based writing interventions can be effective for developing students' writing and may also lead to positive changes for teachers.

A current focus of the Ministry of Education in New Zealand is to raise the achievement and reduce the disparity between cultural groups in literacy learning, especially the disparity between Māori and Pasifica students and Pakeha (Parr & Jesson, 2016). To achieve this aim, schools have received increased funding to schools for literacy programs. However, schools' governing bodies may need support in using this funding to adopt and effectively implement evidence-based interventions if they are to be more successful at improving students' writing

performance. One barrier to this is that it appears that many teachers lack the knowledge of how to determine if a writing practice is evidence-based and this has affected the classroom-based implementation of writing research (Parr & Jesson, 2016). Another issue is that pre-service teacher training does not seem to focus on developing competences with respect to implementing evidence-based interventions (Parr & Jesson, 2016). Consequently, teachers may rely upon their own intuition and experiences for teaching writing, rather than implementing evidence-based writing interventions.

Self-Regulated Strategy Development (SRSD) as a Type of Evidence-Based Writing Intervention

Self-Regulated Strategy Development (SRSD) is a research-based approach for teaching writing (Harris et al., 2008; Harris et al., 2019). SRSD instruction focuses on teaching writing strategies and strategies for the self-regulation of the writing process. It has multiple components, including interactive, knowledge based, scaffolded, explicit learning of knowledge and strategies for genre-specific and general aspects of writing (Harris et al., 2019; McKeown, FitzPatrick, et al., 2019). It aims to address students' writing difficulties, and their attitudes and beliefs about writing, through structured and explicit instruction. There is extensive research demonstrating that this approach consistently helps students become more effective writers (Harris et al., 2008). Indeed, SRSD has been successfully used with students from early primary to high school. However, in most of this research, the SRSD procedures have been implemented by researchers. The program was originally developed to help students with learning difficulties and who were struggling with writing. However, over the years research on SRSD has increasingly focused on general population students, which has shown positive results. SRSD covers a range of genres including story-writing, persuasive writing, narrative writing, and expository writing.

Currently, over 50 writing SRSD instructional studies have been published involving students from both primary and high school levels of education. The data show that SRSD has been used successfully in whole class, small group, and individual formats, (Harris et al., 2008). More recently studies have shown that teachers have been able to implement SRSD and have reportedly found it to be beneficial in their classrooms (Harris et al., 2012; Harris et al., 2015; McKeown, FitzPatrick, et al., 2019). Overall, data suggest that SRSD can produce significant improvements in students writing strategies, self-regulation strategies, as well as in their abilities

to generate and organize writing content, and improve planning and revising (McKeown, FitzPatrick, et al., 2019). Based on extensive research, SRSD can be classified as an evidence-based practice (Harris et al., 2008). However, there is relatively limited research with students in the early years of primary school, particularly Year Two students.

SRSD includes explicit interactive teaching of strategies for genre specific and general writing, the knowledge needed to use these strategies, and strategies for self-regulating strategy use (Harris et al., 2015; Harris et al., 2019). When initially implementing SRSD instruction, teachers read, critique, and discuss (with students) sample texts that highlight what students will be learning. Together, they evaluate each sample text and discuss its strengths and what could be improved (Harris et al., 2008; Harris et al., 2019). These activities are intended to build learner background knowledge, vocabulary, and knowledge of genre specific characteristics of effective writing (Harris & Graham, 1996; Harris et al., 2019). The teachers and students collaborate to set clear learning outcomes (e.g., identify all the parts in a story) and establish criteria for meeting these (e.g., recalling all seven parts of a story without support). Further, students receive self-regulation supports (e.g., self-statements to support students when they are unsure) which are aimed at helping them plan, monitor, and evaluate their learning (Bandura, 1994; Harris et al., 2008). Students learn to plan their writing activities, monitor their performance, evaluate their previous and current performances, and react to their performance outcomes, and this helps students' development of motivation, positive attitudes toward writing, and belief in themselves as capable writers. (Bandura, 1986; McKeown, Brindle et al., 2019; Schunk & Zimmerman, 2007). Instruction is scaffolded so that responsibility for applying the writing and self-regulation strategies gradually shifts from the teacher to the student. SRSD aims to teach students to self-regulate effectively their progress towards a learning goal and adjust their thoughts and actions as needed to reach their goals. In addition, students' beliefs about writing are explicitly targeted and development of writing self-efficacy accredits to effort and strategy use, and motivation (Harris et al., 2008; Harris et al., 2015; McKeown, FitzPatrick et al., 2019).

There are six stages of SRSD instruction. The first is to *develop background knowledge*. During this stage students develop any pre-skills (e.g., vocabulary, concepts) needed for using the writing and self-regulation strategies. For example, if students are learning to write stories they would learn a story-writing strategy such as the WWW What=2, How=2 strategy (i.e., writing about who, when, where, what, what, how and how). They are taught to understand the

vocabulary related to the story parts (i.e., who, when, where, what, what, how). They learn the POW strategy (i.e., Pick my idea, Organize my notes, Write and say more). Additionally, at this stage students would be introduced to self-instructions relevant to composition. An example would be "I will count to 10 to calm down if I get upset while I am writing" (Harris et al., 2008).

The second stage is *Discuss it.* In this stage, the teacher and the students discuss the significance and benefits of the writing and self-regulation strategies to be learnt. Each step in the writing strategy is discussed, as are any mnemonics used (e.g., WWW What=2, How=2). The role of the strategy is discussed in detail so that students understand that this strategy will help with their writing (e.g., "Good stories have all these parts."). When students know more about the strategy and how it works, it may help to set the stage for the development of positive attitudes towards writing. This stage is about strategy mastery and participation/collaboration (Harris et al., 2008). Another important aspect of this stage involves analyzing exemplars to see how many elements are included in the stories. Discussions are used to help students identify the parts in stories other than their own.

The third stage is *Model it.* In this stage the teacher models the writing strategy and self-instructions, while thinking aloud when writing. It is considered important in this stage to model what to do when difficulties arise. For example, the teacher models strategies for overcoming barriers when writing so that students are aware of strategies that they can use when they are writing independently and encounter those same barriers (Harris et al., 2008). Any graphic organizers or self-statement templates that the students will be using as supports need to be modelled during this stage.

Memorize it is the fourth stage. During this stage students should memorize the steps in the writing strategy (e.g., POW), and the meaning of any mnemonics used (e.g., WWW What=2, How=2). Although the strategies and mnemonics should have been introduced prior to this stage, it is important that by the fourth stage that all students have memorized the strategies because "a strategy that cannot be recalled cannot be used" (Harris et al., 2008, p. 12).

Stage five is *Support it.* This phase includes teachers supporting or scaffolding student strategy use. This is the stage when students' employ the strategy, self-instructions, and other self-regulating procedures as they write. The teacher provides as much support and assistance as necessary. Supports will gradually fade as students are effectively using writing and self-regulation strategies without teacher assistance. This stage usually takes the longest, especially

for students who struggle with writing. It is important to allow adequate time at this phase of the intervention so that students master the strategies. Research has found that without this stage, struggling writers show little to no improvement even after all four previous stages have been mastered (Graham & Harris, 2003; Harris & Graham, 1993; Harris et al., 2003).

The final sixth stage is *Independent performance.* The stage is simply student writing independently without teacher support. Here, they are meant to be continuing self-statements in their heads and use the strategy independently. Within this phase plans for maintenance (e.g., re-visiting lessons when needed) and generalization (e.g., transferring skills from one writing genre to another) continue to be implemented and students and teachers should be collaboratively evaluating strategy effectiveness and writing performance (Harris et al., 2008).

For this thesis, I specifically focused on story writing and used the combination of writing strategy mnemonic POW (i.e., Pick your idea, Organize your notes, Write and say more, and the story writing strategy WWW What =2, How =2 (i.e., Who is the main character? When does the story take place? Where does the story take place? What does the main character do or want to do, what do other characters do? What happens then? What happens with other characters? How does the story end? How does the main character feel? How do other characters feel?; Harris et al., 2008). These mnemonics were on a poster given to each child to support their memorization of the strategies. Students were also given a graphic organizer to support strategy development. The graphic organizer consisted of seven boxes for the seven parts of the story that are needed. This graphic organizer was intended to act as a scaffold which was slowly taken away (faded) once students were confidently able to plan without the support. To wean students off the graphic organizer the teacher models writing the mnemonic at the top of a blank piece of paper and tells students to do the same and then make their own note pertaining to the seven parts. When student are able to remember the mnemonic without support then they no longer need to write it on top of their paper, and can just write notes as their planning. Story rockets were used for students to self-assess their performance. These rockets had seven boxes to make up the rocket representing the seven parts of the story, and stars around each rocket representing million-dollar word (interesting adjectives). Once students had finished their stories, they used the rocket to self-check that they had all the parts by coloring in a square for each part that they had included in their stories. Then they colored a star for each million-dollar words (interesting adjectives) they found in their story. This self-regulated process allowed the students to evaluate

their writing and add more to their stories if they were missing any of the parts. All these materials used were sourced from Harris et al. (2008). In study two the graphic organizers and rockets were adapted to only show that writing components that the students were working on for that lesson.

Efficacy Versus Effectiveness Research

Efficacy is the performance of an intervention under more ideal and controlled circumstances (Singal et al., 2014). Within writing research, and in SRSD particular, the efficacy of a writing intervention refers to the multiple studies which have been implemented by trained researchers and research assistants and mainly at the small-group or individual-student level. Under these more ideal conditions, researchers have the ability to take the students out of the classrooms and implement the intervention in a more controlled space under more controlled conditions than would ordinarily be found in the general classroom environment. Within efficacy trials it is also more practical to be able to do randomized control studies, which considered the gold standard for establishing evidence-based practices (Thomas, 2004). Effectiveness studies, in contrast, explore the performance of an intervention under more 'real-world' conditions (Singal et al., 2014). For instance, an effectiveness study on a writing intervention would be conducted in the regular classroom with the general classroom teacher implementing the intervention.

Efficacy and effectiveness interventions are ends on a continuum as it is virtually impossible to design a pure efficacy study or a pure effectiveness study (Singal et al., 2014). A problem that may occur with more efficacy-based research is that it may overestimate the effects of an intervention, whereas studies that are more at the effectiveness end of the continuum could be seen as generally more likely to be affected by a number of contextual factors that may moderate the effects of intervention such as a teacher's fidelity of implementation and influence of larger groups of students (Singal et al., 2014). Effectiveness study can be more relevant for classroom teachers as it relates to real classroom situations.

The meta-analyses previously mentioned (e.g., Graham & Harris, 2018; Graham et al., 2012; Graham & Perin, 2007; Koster et al., 2015) provide an overview of many writing interventions and their efficacy. Each of these meta-analyses focused on different age groups: students in Grades 1 to 12 (Graham & Harris, 2018), elementary students (Graham et al., 2012), adolescent students (Graham & Perin, 2007), and students in Grades 4 to 6 (Koster et al., 2015), respectively. Across these meta-analyses, interventions to develop writing strategies had one of

the highest effect sizes (ES= 1.26; Graham & Harris, 2018; ES = 1.02; Graham et al., 2012; ES = 0.82; Graham & Perin, 2007; ES = 0.96; Koster et al., 2015). Other forms of writing instruction that had large effect sizes were approaches involving provision of peer assistance (ES = 0.89; Graham et al., 2012; ES = 0.70; Graham & Perin, 2007) and strategies involving goal setting (ES= 0.80; Graham & Harris, 2018; ES = 0.76; Graham et al., 2012; ES = 1.00; Graham & Perin; ES = 2.03; Koster el al., 2015). Interventions focused on grammatical instruction had the least effect sizes in four meta-analysis (ES = -0.17; Graham & Harris, 2018; ES = -0.41; Graham et al., 2012; ES = -0.34; Graham & Perin, 2007; ES = -0.37; Koster et al., 2015). The majority of the studies included in these analyses involved the researcher or research assistants implementing the interventions and could therefore be seen as efficacy studies. Additionally, most of the studies in these meta-analyses occurred in the USA and there were nine studies including participants in Grade 1 (equivalent to Year 2 in New Zealand) and five of these were focused on transcription instruction (ES = 0.55; Graham et al., 2012). No studies included kindergarten aged students (equivalent to Year 1 in New Zealand). There is relatively little research on writing interventions with students outside of the USA or, in the lower primary year levels.

In contrast to efficacy research, there is less research that could be viewed as effectiveness studies into the effects of writing interventions. There is a limited amount of research into the developmental and evaluation of teacher-implemented writing instruction (Finlayson & McCrudden, 2019). In Chapter Two, 13 writing studies are examined in which teachers served as implementers, with their students within the classroom context that used experimental or quasi-experimental designs. Many of the studies that are reviewed in Chapter Two showed effect sizes similar to those obtained in researcher-implemented studies, as well as providing evidence that teachers can implement socially valid and effective writing programs with fidelity (Harris et al., 2015; Harris et al., 2012; McKeown, FitzPatrick, et al., 2019). These studies provide evidence surrounding the effectiveness of implementing these interventions within real-world situations.

Need for Effectiveness Research in Writing Instruction

There is a need for effectiveness studies to examine the effects of teacher-implemented writing instruction interventions. The majority of the classroom-based research on writing interventions has been researcher-implemented, which has been extremely valuable for establishing the efficacy of writing interventions. However, once an intervention has shown its

efficacy and the researcher leaves the school, a teacher may be unable to implement the intervention due to lack of training, time, or funding. As such, an intervention may not be sustainable once the researcher is no longer at the school, particularly if the invention was implemented in small groups or one-to-one settings compared to a whole class setting with 20 or more students. Thus, it is important to determine whether writing instruction can be effectively translated into a classroom context by elementary school teachers in a sustainable way. Further, effectiveness studies can help identify the amount of training that is needed to implement a writing intervention with fidelity. This is important as many teachers want to know the expectations of them when committing to professional development.

Effectiveness studies may also influence teachers' willingness to modify how they teach writing. Currently, many teachers are rely on 'teaching lore' and may not be motivated to learn new ways of teaching writing (Harris & Graham, 2016). However, teachers may be more likely to adopt evidence-based teaching practices that are teacher-implemented because they can relate to the teachers and may see similarities to their own contexts. In addition, teacher-implemented studies might not only promote writing outcomes for the students during the study, but for other students who are taught by that same teacher in the future. This means that implementing evidence-based writing instruction in cooperation with teachers might help to support writing instruction for future generations of students.

Overview of Thesis Chapters

The next chapter will present a literature review which was published in the journal of *Reading and Writing Quarterly* in 2019. It focuses on the limited research which has been done in the area of teacher-implemented writing interventions. The next two chapters contain two studies both which are under review at the time of submitting the thesis. Study one submitted to *Reading and Writing: An interdisciplinary Journal,* and study two submitted to *Reading & Writing Quarterly.* The final chapter in the thesis is a general discussion of both studies and how they contribute to the body of writing research.

The first study used a mixed-methods intervention design to investigate the effectiveness and social validity of a teacher-implemented SRSD story writing intervention on the writing performance of Year 2 students in a whole-class setting. It was a 5-week prescribed intervention guided by the following questions: (1) Does a teacher implemented SRSD intervention improve students' writing performance? and (2) Is the intervention socially valid from a teacher

perspective? In the quantitative strand, I conducted a quasi-experiment in which students either received SRSD writing instruction or their regular writing instruction. I collected student writing samples before and after the intervention and teachers completed a questionnaire on the social validity of the intervention. In the qualitative strand, I conducted interviews with the classroom teachers to gain deeper insights into their perceptions of the intervention. Prior to the intervention the teachers participated in a low-intensity training program to learn how to implement the SRSD intervention.

The second study built on the findings from Study 1. I again used a mixed-methods intervention design to investigate the effectiveness and social validity of a 17-week teacher-implemented whole-class SRSD story writing intervention, but this intervention was conducted with a different cohort of Year 2 students. In the quantitative strand, I conducted a quasi-experiment in which students either received SRSD writing instruction or their regular writing instruction. I collected student writing samples before and after the intervention and teachers completed a social validity questionnaire after the intervention. In the qualitative strand, I interviewed the classroom teachers to gain deeper understandings of their perceptions of the intervention. This study included the two teachers from the treatment group of the first study and this time the teachers were involved in the planning of the intervention and embedded the instruction into their regular classroom program. This study was led by the teachers and was integrated into the curriculum and school climate more thoroughly. The teachers took more ownership over the study and adapting the program to suit the needs of the students while also retaining the underpinning principles of SRSD research (e.g., discuss it, model it, memorize it, etc.). The teachers devoted more time to teaching the principles of the mnemonic, breaking the learning into smaller compact units before combining them together. For example, they spent 10 lessons on learning how to describe a character before adding setting and time to their stories. This meant that they were allowing all students more opportunities to gain mastery at each section. The reasons for these changes came from the concerns and ideas raised at the teacher interviews conducted at the end of Study 1. This study was guided by similar questions: (1) Does a 17-week teacher-implemented whole-class SRSD writing intervention promote student writing outcomes in a Year 2 classroom? (2) To what extent was the writing intervention socially valid?

These two studies aim to contribute to the body of research in writing in several ways: First, by demonstrating the effectiveness and social validity of teacher-implemented writing

interventions; Second, that students as young as six can participate effectively in SRSD interventions and have similar improvements in writing performance seen in other studies with older primary students; Third, understand teacher perspectives of the SRSD intervention and how to improve the intervention to be successful for future use; Fourth, gain insights into teacher opinions and knowledge of teacher writing to year two students; Finally, to demonstrate that teacher-implemented SRSD can improve writing performance for the diverse students in New Zealand.

CHAPTER TWO
TEACHER-IMPLEMENTED WRITING INSTRUCTION FOR ELEMENTARY STUDENTS: A LITERATURE REVIEW

This chapter is the following published paper:

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Statements of Contributions of Joint Authorship

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ABSTRACT

Researcher-implemented writing interventions have been shown to improve student writing performance. However, there has been limited research on teacher-implemented writing interventions, which are more likely to be sustainable in a classroom. The purpose of this review was to examine the effectiveness of teacher-implemented writing interventions in regular-classroom environments with elementary aged students. The inclusion criteria resulted in the identification of 13 experimental research studies. Classroom teachers implemented a range of writing strategies. However, explicit strategy instruction, including self-regulated strategy development, was the most commonly used approach that improved students' writing achievement. Practical implications of the results are discussed, and directions for future research are provided.

Keywords: writing, instruction, teacher-implemented, elementary school

INTRODUCTION

Writing is an important part of life both in and out of educational settings and the workplace. For instance, people in Western cultures regularly use email, text messaging, and social media to communicate with others. However, individuals who do not sufficiently master basic writing skills may have difficulty participating in daily activities that involve communicating in school (e.g., written assignment), work (e.g., writing a report) and personal (e.g., email) contexts (Koster et al., 2015). Further, many individuals show limited or no improvement in their writing skills once they have learned how to structure a simple sentence (Salahu-Din et al., 2008). This is a concern as writing is an important part of life and can impact success in secondary school, university, and future employment.

Given the importance of writing, it is essential to support the development of writing skills at a young age, particularly for students who struggle with or dislike writing. Writing problems are typically easier to remediate when students are younger because they are less likely to have formed negative attitudes towards writing and are more confident in their ability to improve (Harris et al., 2002; Saddler et al., 2004). One way to help students develop their writing skills is through explicit writing instructional interventions (Harris et al., 2012).

A number of meta-analyses on writing instruction, but with different foci, have demonstrated the benefits of supporting the development of writing skills. Some have focused on the effect of strategy instruction interventions on students' writing performance. For example, Graham (2006) found that strategy instruction had a large positive effect on writing performance across elementary and secondary students (2^{nd} grade to 12^{th} grade) and was robust across a range of variables (e.g. grade –level, type of strategy taught, or genre of instruction). Other meta-analyses have focused on particular approaches to teaching writing. For example, Graham and Sandmel (2011) investigated interventions that used a process approach to writing (known as writers' workshop, which includes planning, writing, revising, and, writing for purpose). They examined 29 studies to evaluate whether the process approach to writing improved the quality of students' writing and motivation to write. Their results showed a modest positive effect on the overall quality of students' writing.

Further, four comprehensive meta-analyses have focused on the use of experimental and quasi-experimental study designs that included a range of different types of writing interventions. First, Hillocks (1984) identified 60 studies that included participants from elementary school through university. The findings indicated that instruction in which students interacted with each other and the teacher was more effective than when the teacher predominantly presented information and modeled responses to students. Second, Graham

and Perin (2007) identified 123 studies that included participants from grades 4 to 12. They found that strategy instruction was the most effective type of instruction, which had an effect size of 0.82. Third, Graham et al. (2012) identified 115 writing interventions with students from grade 1 to 6. For a writing intervention to be included in their analysis, a specific intervention had to be tested in at least four studies. Their findings mirrored those of Graham (2006) and were similar to Graham and Perin's (2007); strategy instruction was the most effective intervention (effect size of 1.02). Finally, Koster et al. (2015) identified 32 studies that included students in grades 4 to 6. They found that goal setting had the largest effect size (2.03) but this was based on findings from one study (i.e., Schunk & Swartz, 1993). Nonetheless, the second largest effect size was from strategy instruction (0.96), which was comparable to Graham and Perin (2007) and Graham et al. (2012).

The majority of the classroom-based research on writing interventions has been researcher-implemented in which the researcher themselves directly implement the intervention with participants, which has been extremely valuable for establishing the efficacy of writing interventions. Importantly, these studies have demonstrated the efficacy of researcher-implemented writing instruction. However, once an intervention has shown its efficacy and the researcher leaves the school, a teacher may be unable to implement the intervention due to lack of training, time, or funding. As such, an intervention may not be sustainable once the researcher is no longer at the school, particularly if the invention was implemented in small groups or one-to-one settings compared to a whole class setting with 20 or more students. Thus, it is important to determine whether writing instruction can be effectively translated into a classroom context by elementary school teachers in a sustainable way.

There has been limited research in the area of writing instruction that is implemented by elementary classroom teachers and the support they receive as they aim to develop student writing outcomes. It is critical to review research on teacher-implemented writing instruction in elementary school settings because many elementary teachers report that they receive inadequate training on writing instruction and experience difficulties when implementing evidence-based practices that are based on researcher-implemented writing interventions (Gilbert & Graham, 2010; Graham et al., 2003). Further, recent research by Brindle (2013) indicated that elementary school teachers reported being less prepared to teach writing compared to reading, math, and science, and reported low self-efficacy for teaching writing (as cited in Harris et al., 2015). Thus, it is important to evaluate the findings from writing

interventions that have been implemented by elementary classroom teachers to inform future research and to potentially inform teachers' classroom practices.

Further, researchers and teachers may have different dispositions, which may impact how writing is implemented in a classroom. Teachers' knowledge, beliefs, and opinions about writing can affect teachers' approaches to writing instruction. For instance, Graham et al. (2003) surveyed elementary teachers about their instructional adaptations for students who experienced writing difficulties and their personal writing practices in general. The findings indicated that teachers' own interest in writing, and how valuable they thought it was for their students, was related to the amount of time they devoted to writing instruction. For instance, teachers who valued writing less devoted less time to writing instruction (approximately 35 minutes of writing instruction per day) than teachers who valued writing more, who devoted approximately 50 minutes a day to writing instruction. Thus, teachers' dispositions towards writing may affect how they teach writing to their students.

With this in mind, it is beneficial to provide teachers with information about evidence-based, practical writing instruction that can improve students' writing. It is also important for teachers to view this research as credible and believe that they are capable of implementing these teaching practices (Foster, 2014). Teachers may view teacher-implemented writing interventions as more credible because the context in which the instruction is provided more closely resembles actual classroom instruction. And, they may believe they are capable of implementing these teaching practices if they see similarities between themselves and teachers who were involved in the research.

The purpose of this literature review was to provide a comprehensive review of writing instruction interventions that have been implemented by elementary classroom teachers in which the teachers received training or instruction from researchers on the implementation of an intervention. In this review, we evaluate the results from teacher-implemented writing interventions on writing performance in elementary-aged students. Thus, our review was guided by the following research question: Do teacher-implemented writing interventions improve students' writing performance?

METHOD

We developed six inclusion criteria to identify articles relevant to our research question. First, the article had to be published in peer-reviewed journal from 2000 to 2018. Second, the study had to include participants in grades K-6. Third, general education students had to be participants in the study. This could entail studies that included only general

education students, studies that had both general education students, and studies that had students with learning disabilities or second language learners. Studies that only included students from special education centers, writers with learning disabilities, or second language learners were not included. Fourth, the intervention needed to be implemented by the general education classroom teacher (i.e., the student's regular classroom teacher). Fifth, the study had to use an experimental or quasi-experimental design. Lastly, the study needed to include measurement of writing performance at pre- and post-intervention.

We used computer database sites ERIC, PsycINFO, and Google Scholar to search for articles that met these criteria. We used the following search terms: *writing, teacher implemented, general population, and elementary.* The next step was to conduct an ancestral search that involved reviewing the relevant studies cited in the articles that were found in the database search. Other studies were collected from reading reference sections in meta-analyses (i.e., Graham et al., 2012; Koster et al., 2015). We identified 46 studies in the initial search.

Coding and Intercoder Agreement

The first author made an initial decision as to whether each study from the initial pool of 46 met the inclusion criteria. A research assistant was trained to apply the inclusion/exclusion criteria by working through one randomly selected study with the first author. Then, the research assistant independently assessed each of remaining 45 studies against the inclusion/exclusion criteria. Agreement as to whether a study should be included or excluded was obtained on 43 of the 45 studies (95%). To resolve the discrepancies, the first author and the research assistant discussed the two studies in which there was initial disagreement until they reached consensus. The overall result was then 33 studies were excluded and 13 studies were included for analysis in the present review. There were two main reasons studies were excluded. First, studies that did not measure student writing outcomes were excluded given that we were interested in evaluating whether teacher-implemented writing interventions improve students' writing performance. Second, studies that did not use experimental or quasi-experimental study designs were excluded. We were interested in comparing writing outcomes for students who received some writing intervention to students who received regular writing instruction or some other form of writing intervention.

Once we identified the 13 articles that met the inclusion criteria, the first author developed an initial summary of the 13 included studies. The research assistant independently

checked the accuracy of these summaries using a checklist that included the initial summary of the study and five questions about relevant details from the study. The five questions were: (1) Is this an accurate description of the participants?; (2) Did the authors assess generalization?; (3) Is this an accurate summary of the certainty of evidence?; (4) Is the method of implementation clearly defined?; and (5) Is the outcome of the study an accurate portrayal of results? In cases where the research assistant believed a summary needed greater accuracy, the co-authors edited the summary to improve its accuracy.

We used this approach to ensure the accuracy of the study summaries and to provide a measure of inter-rater agreement on data extraction and analysis. There were 65 items on which there could be agreement or disagreement (i.e., 13 studies x 5 questions per study). Agreement was reached on 63 out of 65 items (97%). In the two instances in which aspects of the summaries lacked accuracy, changes were made to more fully describe participants, design of the study, target behaviors, procedural details, and study outcomes.

RESULTS

We synthesized the findings from the 13 studies with respect to participants and setting, research design, dependent variables, measures, and general outcomes. Overall the main theme was that strategy instruction was effective at improving student writing performance independently of student age, gender, or ethnicity, or the length of intervention.

Participants and setting

Student participants. There was a total of 6,094 student participants across the 13 studies. With respect to gender, ten of the studies reported the participants' gender. In these studies, 2,613 (42.9%) were male and 2,614 (42.9%) students were female. Four of the studies, which included 838 (13.7%) participants, did not specify gender.

With respect to grade level across the 13 studies, 187 (3.07%) students were in grade 2, 325 (5.33%) in grade 3, 2,093 (34.3 %) in grade 4, 1,717 (28.2%) in grade 5, 1355 (22.2%) in grade 6. An additional 388 (6.37%) students were in grades 4 – 6, but the articles did not indicate the specific grade level. No students were in grade 1 in any of the studies.

Ethnicity was reported in six out of the 13 studies. In these six studies there was a total of 2,581 participants. The exact percentages of students of different ethnicities were not provided, but the designations included: White American, African American, Hispanic, Dutch, Arabic, Turkish, Frisian, English, Spanish and Asian.

Eight studies indicated whether students had disabilities and if these students were included in the intervention. Three studies specifically mentioned that students with

disabilities were excluded from the study. Of the remaining five studies in which students with disabilities were included, 327 out of 1032 (31.7%) participants received special education support for a variety of reasons (i.e., ADHD, epilepsy, learning disabilities, health impairments). Five studies did not mention if they included special education students. Four studies noted if students were receiving reduced or free lunches (111 students out of 497, or 22%, received this service).

Teacher participants. There was a total of 338 teacher participants. With respect to gender, six of the 13 studies reported the teachers' gender. In these studies, 173 (51.2%) were female and 40 (11.8%) were male. The other seven studies did not report teacher gender (*n* = 125 or 37%). With respect to teaching experience, ten studies reported years of teaching experience, which ranged from one to 32 years. The average across all studies was 10.4 years teaching experience. The remaining three studies did not report the teachers' years of experience (*n* = 150 or 44.4%). None of the studies reported information about the teachers' ethnic backgrounds.

Setting. All studies were conducted in elementary schools. Seven of the 13 studies were conducted in the United States (US) and the other six studies were conducted outside of the US. Of the other six studies, three (50%) were conducted in the Netherlands, and one each (16.67%) was conducted in Belgium, Spain, and Canada.

Eight out of the 13 studies reported details on their specific settings. Of these eight studies, three (37.5%) were conducted in urban settings, two (25%) were conducted in a suburban setting, one (12.5%) study was conducted in rural settings, one (12.5%) study was conducted in urban and rural settings, and one (12.5%) study was conducted across urban, rural, and suburban settings. Three studies reported the schools' public or religious affiliation. Out of 53 schools in the three studies, 31 (58%) had religious affiliations. One study distinguished between public and private schools. In this study 20 (52.6%) schools out of 38 were private schools.

All 13 studies reported the instructional arrangement for the writing instruction: 12 (92.3%) use whole-class instruction (Tier 1) and one (7.69%) used small group instruction (Tier 2).

Research Design

Twelve (92.3%) of the 13 studies used comparison group designs, and the other study (7.69%) used a multiple baseline design. Of the studies that used comparison group designs, three used randomized control group designs and nine used quasi-experimental designs.

Measures

Several measures related to writing were used in the 13 studies. All studies had student writing performance as a dependent variable, which was part of the inclusion criteria. Other student measures included reading performance, spelling performance, motivation and effort, and user frequency (i.e., how many times they used a strategy that was explicitly taught). Nine out of the 13 studies included measures related to the teacher. These included measures of the social validity of the intervention, their beliefs about teaching writing, the skills the teachers learned, their attitudes towards teaching writing, and their self-efficacy for teaching writing (i.e., their beliefs in their own ability to teach writing effectively).

Writing Interventions

Type of intervention. Table 1 provides a description of the writing interventions that were used in the identified studies. As can be seen from Table 1, a variety of interventions were implemented.

Nine studies used writing strategy instruction as all or part of their intervention plan. Specifically, four of these studies used self-regulation strategy development (SRSD) to improve writing performance (Harris et al., 2015; Harris et al., 2012; McKeown et al., 2016; McKeown et al., 2018), which is a procedure used across a range of learning strategies. It consists of the following steps: develop background knowledge, discuss it, model it, memorize it, support it, and independent performance (Harris et al., 2015). For example, Harris et al. (2012) used SRSD to teach 2nd and 3rd graders how to write stories using mnemonics and graphic organizers.

Three additional studies incorporated aspects of SRSD with other forms of writing instruction. For instance, in De Smedt and Van Keer (2018), 5th and 6th graders received explicit writing instruction along with either peer assistance or with individual writing practice. Reitdijk et al. (2017) integrated three approaches to the teaching of writing: communicative writing, process writing, and writing strategy instruction with grade 4 to 6 students. Torrance et al. (2007) developed a cognitive self-regulation instruction intervention aimed at improving 6th graders writing performance.

Two studies used Tekster, an intervention that provides explicit strategy instruction (Bouwer et al., 2018; Koster et al., 2017). This program is designed as a comprehensive program for writing for the upper elementary grades. It combines strategy instruction, and the teaching of self-regulation skills with observational learning, explicit instruction, and guided practice to address both the focus of instruction (i.e., teaching students explicit strategies to

improve their writing) and the mode of instruction (i.e., how the materials are taught to students, either presented, or modelled peer assistance; Koster et al., 2017). This program includes elements of strategy instruction that are similar to those used in SRSD.

The other four studies used different approaches to teaching writing. One study incorporated digital mediums into the intervention. Meyer et al. (2010) used ePEARL a web-based, student-centered electronic portfolio software designed to support the phases of self-regulation. With this intervention, 4th to 6th graders received individualized support from the computer system, which enabled students to learn at different paces.

Another intervention used the six traits analytic writing model to design writing instruction for 3rd, 4th, and 5th graders (Collopy, 2008). This model targets three aspects of subject specific pedagogy: teachers' conceptualization of the subject matter of writing, teachers' knowledge of how to assess students' writing and use the results of those assessments, and teachers' repertoire of instructional strategies for teaching writing. This intervention has six traits that should be included in writing: ideas, organization, conventions, voice, word choice, and sentence fluency. Numerous instructional strategies were used to teach each of these six writing traits to students.

Drop everything and Write was another strategy used to teach writing (Joshi et al., 2008). In this study, the students and teachers communicated with each other via writing in 30 minute periods in which speaking was not permitted. They were told that their writing would not be graded and not to worry about spelling. During this period the students did a range of tasks (e.g., silent reading, reading comprehension, reading related tasks), which could be done in small groups or individually, but all communication had to be through writing.

Tienken and Achilles (2003) wanted to change teacher practices from presentational mode (i.e., teacher-led lectures, the study of models or exemplars, teacher-generated assignments) to an environmental mode (i.e., the teacher is an instructor and students have high levels of interaction concerning problems they are likely to encounter in real life). The teachers were given professional development sessions that focused on changing teacher behavior to an environmental approach. This was done through job-embedded training in which the researcher observed the teachers and gave instructional feedback to promote change in teacher behavior.

Length of the Intervention. The length of the intervention was reported in 11 of the 13 studies. Of these 11 studies, there was a range in the length of the intervention. Seven studies lasted 10 weeks or less, and ranged from one lesson a week to four lessons a week.

Three studies were between four months and eight months in duration, and one study lasted an entire school year. The length of each lesson ranged from 20 minutes to 75 minutes across these 11 studies.

Description of Teacher Training. Teacher training was identified in 12 of the 13 studies. In these studies, there is a variety of types of professional development sessions to develop teachers' skills in teaching writing. Of the 12 studies that discussed the training, five studies had teachers attend a two-day workshop before the implementation of the intervention. One study had six, two-hour and 45-minute sessions, and another study also had six, four-hour sessions. Two studies had half day training sessions, and one study had one and a half hours of training. Two additional studies indicated that there was teacher training but did not report specific details on duration.

Of these 12 studies, seven had follow-up support and guidance throughout the intervention. For instance, McKeown et al. (2016) used a coaching component to give support and on-going feedback to the teachers.

One study used a job-embedded format that followed a communication/change structure (Tienken & Achilles, 2003). For job-embedded training, the trainer comes into the classroom and provides the teachers with feedback on their teaching and suggestions to improve the effectiveness of their teaching. The professional development in this study focused on changing teachers' behaviors and creating an organizational change within the schooling community (Tienken & Achilles, 2003). This study was successful at raising student achievement and motivating teachers to change their behaviors.

Treatment Fidelity. Treatment fidelity was explicitly mentioned in nine out of 13 studies. Of these nine studies, eight studies used observations to evaluate the teachers' implementation of the intervention. A trained research assistant observed a number of lessons and used a checklist to determine if teachers demonstrated certain behaviors. In addition to teacher observations, four of the studies also used log books whereby teachers recorded how many lessons they had implemented. Two other studies used a checklist for the teachers to identify when they had completed certain lessons. Rietdijk et al. (2017) measured the attendance of teachers at professional development sessions and combined this data with observations to draw conclusions about how effective implementation was. One study (Meyer et al., 2010) did not observe participants, but instead asked teachers to complete a self-report treatment fidelity questionnaire twice during the intervention. Similarly, Koster et al. (2017) used a post-intervention questionnaire in which teachers self-reported their implementation of

their writing instruction and they needed to indicate if they had adapted any of the lessons and to explain why they made adaptations.

Three studies collected students' writing books to assess the number of lessons the students completed. This was to check that teachers were implementing the lesson plans correctly and also to ensure the students were participating in the lessons (Bouwer et al., 2018). Rietdijk et al. (2017) measured students' on-task behavior to determine student responsiveness, which was measured by time on task (i.e., time students spent listening to the teacher, or writing in their books). Harris et al. (2015) video recorded a percentage of the lessons and used a masked research assistant to score the expected student behaviors. They used a 5-point Likert-type scale with one representing not evident, three minimal, and a score of five indicating well done, for a list of teacher behaviors expected to be seen.

General Outcomes

Student Outcomes. Across the vast majority of the studies, findings generally indicated that students improved in their writing skills over and above the comparison group (Bouwer et al., 2018; Harris et al., 2012; Joshi et al., 2008; Koster et al., 2017; McKeown et al., 2018; Meyer et al., 2010). Favorable outcomes were particularly evident for students who struggled academically when explicit instructional components (e.g., SRSD) were used to teach writing (Harris et al., 2015; McKeown et al., 2016). For instance, writing performance improved when SRSD writing instruction was taught, or a model that included elements of SRSD (Bouwer et al., 2018; Harris et al., 2015; Harris et al., 2012; Koster et al., 2017; McKeown et al., 2018; Reitdijk et al., 2017; Torrance et al., 2007). Harris et el. (2015) was the only study that looked at Tier 2 (small group) SRSD writing interventions for at-risk writers, within a whole class setting. The results showed significant improvement for experimental students compared to their control comparisons.

Joshi et al. (2008) was different to the other studies because during the 30-minute instructional sessions, students were only allowed to communicate via writing. Students in the treatment group showed greater improvements in vocabulary, comprehension, and spelling, as well as improvements in quality of writing than students in the comparison group.

The Meyer et al. (2010) study incorporated digital mediums to teach writing. Their results showed that students made larger gains than their comparison group peers in writing skills and had greater motivation. This intervention allowed students to receive individualized support from the computer system and students could learn at different paces.

Some writing interventions showed mixed results. For instance, in Collopy (2008), the writing performance for students in the experimental group did not differ from students in the comparison group. McKeown et al. (2016) followed struggling writers and average writers within classrooms using a multiple-baseline design with multiple probes. Although the outcomes were mixed, the results showed that students used more story elements after the intervention. This study also highlighted that that overall growth in a classroom's mean score can mask students whose writing performance who do not improve (McKeown et al., 2016).

Social Validity. Social validity was measured in six of the 13 studies. These six studies reported positive outcomes. Overall, the data suggested that all teachers were interested in continuing to use the writing instruction that they were trained in. Harris et al. (2012), McKeown et al. (2016), and McKeown et al. (2018) used interviews to measure the social validity of SRSD interventions and to gain insights into how the teachers felt about the interventions. Collopy (2008) and Harris et al. (2015) used surveys to measure social validity. Koster et al. (2017) used an explanatory sequential mixed methods design to examine whether the teachers implemented the program as intended and triangulated log books, post intervention questionnaires, and observations with focus group interventions with the teachers. The results from the study indicated that the teachers viewed all elements of the study positively (Koster et al., 2017).

In addition, two of the studies measured social validity from the students' perspectives. Harris et al. (2015) used a questionnaire and their results suggested that students viewed the intervention favorably. McKeown et al. (2016) interviewed the students about the intervention and students commented on how it had positively impacted their writing performance and they had learned how to organize their ideas.

DISCUSSION

There has been limited research on teacher-implemented writing interventions in elementary classrooms. The aim of this review was to identify evidence-based instructional practices implemented by classroom teachers for students in elementary grades. The main finding from the present review was that the teacher-implemented writing interventions generally promoted students' writing performance, although there were varying degrees of improvement across the studies. In nearly all of the studies, the different forms of writing instruction improved students' writing performance compared to students in a comparison group, which received their regular writing instruction program, or compared to other types of treatments (De Smedt & Van Keer, 2018; Rietdijk et al., 2017). The limited number of

studies that met the inclusion criteria limits the generalizability of these findings; however, it does suggest that such interventions might hold promise for future research and practice.

One explanation for this finding is that students in the treatment conditions received teacher-implemented writing instruction that mirrored effective, evidence-based researcher-implemented writing instruction (De Smedt & Van Keer, 2018; Harris et al., 2015; Harris et al., 2012; McKeown et al., 2016; McKeown et al., 2018). Many of the teacher-implemented interventions shared common features with the researcher-implemented interventions, such as explicit strategy instruction. For instance, Graham et al. (2005), which was researcher-implemented, and Harris et al. (2012), which was teacher-implemented, both used explicit strategy instruction (i.e., self-regulated strategy development). In both cases, students' writing performance showed improvements relative to comparison groups. In fact, nine of the 13 studies in the review included explicit strategy instruction. Importantly, in all of these studies, the writing instruction improved students' writing performance compared to other forms of writing instruction, and these studies had large sample sizes. Several meta-analyses have identified strategy instruction as the most effective feature of writing interventions (Graham & Perin, 2007; Graham et al., 2012; Koster et al., 2015). Thus, it appears that teacher-implemented writing instruction that includes these features can promote student writing outcomes and this finding is corroborated by meta-analyses conducted on researcher-implemented writing instruction.

One study showed minimal effect (McKeown et al., 2016) and another study showed no effect (Collopy, 2008) of writing instruction on students' writing performance. In McKeown et al. (2016), one of the three teachers who implemented writing instruction was not responsive to the coaching throughout the intervention; she did not make changes to her teaching and her lessons differed from what had been planned. This indicates that teachers need to be willing participants for the interventions to be successful. In Collopy (2008), students in both the intervention and comparison groups showed improved writing performance over the course of an entire school year. The author identified some possible reasons for no differences between the groups. Many of the students had writing scores above the state average, drew from predominantly middle-class communities, and the school district was successful in attracting highly-qualified teachers; thus, other factors might have contributed to writing performance beyond the writing instruction. Further, professional development and treatment fidelity were measured using participant surveys so it is unclear the extent to which the intervention was consistently implemented across teachers.

There were several additional findings from the reviewed studies (see Table 2). First, all but one of the studies were implemented at the level of the whole classroom (Tier 1). Only one study was implemented in small groups (Tier 2), and no studies were implemented on a one-to-one basis (Tier 3). This finding could be related to the availability of resources. It can be difficult for general education teachers to implement one-to-one or small-group interventions when they are responsible for a class of 20 or more students. Therefore, an intervention that can be delivered in a whole-class setting may be more practical in a general education classroom. Further, more research is needed to explore whole-class interventions that are supplemented with small-group interventions to investigate whether such an approach can effectively support students who are struggling with writing.

Second, the majority of studies included participants in grades four to six (approx. 9-12 years of age). Only two studies included participants from the early elementary grades. At some level, this is to be expected because there is limited research on researcher-implemented writing interventions with students in the early elementary grades in whole-class settings. However, there is some researcher-implemented research with elementary students in small-group or one-to-one settings, although these studies typically focus on writing outcomes for students with special needs (Asaro-Saddler, 2014; Harris et al., 2006; Hooper et al., 2013; Lane et al., 2006; Zumbrunn & Bruning, 2013). A potential reason for few whole-class interventions is that researchers have not developed whole-class writing instruction programs to be implemented with younger students.

Third, the different forms of whole-class writing instruction were effective in a variety of settings with students from different backgrounds. The studies took place in a number of countries, in urban, suburban, and rural settings. Further, students appeared to be responsive to writing instruction independently of gender. This finding is important because males typically struggle with certain aspects of writing and have poorer attitudes towards writing instruction compared to females (Beard & Burrell, 2010; Edwards & Jones, 2018; Graham et al., 2012). Thus, the findings appear to have some generalizability to different settings with diverse groups of general education students.

Fourth, the length of the intervention did not appear to influence its effectiveness. That is, students in longer interventions did not have better results than students in shorter interventions. The shorter interventions lasted approximately six weeks, whereas some of the longer interventions lasted up to 12 months. However, it is unclear whether there is an optimal duration for an intervention. Nonetheless, it is possible for teachers who can dedicate

limited amounts of time to a writing intervention to have a positive impact on student writing outcomes.

Fifth, teacher training and support were important to the success of the interventions. The teachers spent approximately two days engaged in professional development before implementing an intervention in which they developed their lessons and the materials they needed to implement the interventions correctly. Further, it was important for teachers to receive support, such as coaching, observations, and feedback, throughout the intervention. For instance, in Tienken and Achilles (2003), teachers received job-embedded professional development in which trainers provided individualized feedback and instruction that was tailored to meet their level of experience and understanding. Measures of treatment fidelity indicated that when teachers implemented the interventions as expected, student writing performance improved. Conversely, in McKeown et al. (2016), when one of the teachers did not implement the intervention as expected, student writing performance did not improve. Overall, the findings from the review indicated that the majority of teachers were successful at implementing writing instruction interventions and that support during the intervention helped them to adapt their practice in a way that ensured treatment fidelity and promote student writing outcomes.

Lastly, the research indicated the importance of teacher data, including teachers' self-efficacy for teaching writing, their attitudes and opinions towards writing instruction, treatment fidelity, and social validity. Teacher data provided valuable insights into variables that related to the implementation of the interventions and possible reasons for different student outcomes. For example, in McKeown et al. (2016) classroom observations of the implementation of the writing interventions indicated that one teacher did not implement the anticipated instruction and students in her class did not show the writing gains that students did whose teachers had high treatment fidelity. In Harris et al. (2012), the teacher questionnaire responses provided positive evidence of social validity at the end of the intervention, which indicated that they found the goals of the intervention were socially significant for themselves and their students, the procedures were acceptable, and the outcomes were important. This suggests that the intervention was sustainable; that is, the teachers would be willing to continue the instruction beyond the conclusion of the research project. Thus, teacher data played a key role in understanding the impact of the interventions, it can be used to inform future research, and to potentially increase the adoption of evidence-based writing instruction by classroom teachers.

Limitations and Directions for Future Research

There are several limitations and directions for future research. First, there were more students from later elementary grades than from early elementary grades, and fewer studies overall that focused on students from early elementary grades. Thus, the findings primarily pertain to the beneficial effects of writing instruction with older elementary students. Nonetheless, the studies that included early elementary students indicated that writing instruction was beneficial. Thus, future research could focus on the effects of writing instruction on early elementary students. This is especially important because writing difficulties that begin early and persist become more difficult to remediate in later years of schooling (Ennis & Jovette, 2003).

Second, important demographic information about the teachers and students was not reported in many of the studies. Student populations are becoming culturally and linguistically diverse. It would be important to include this type of information in future research so that it is possible to understand more about the participants and the context in which writing instruction is provided.

Third, teacher training was identified as an integral part of the intervention process; however, once the initial support was provided before the intervention, many of the studies did not provide teacher support (e.g., coaching) during the intervention. Five of the studies reported evidence of social validity; the overall theme was that teachers viewed the interventions positively and would continue with the interventions after the study had ceased. Thus, future research could focus on the nature of the support that teachers receive for implementing a writing intervention, and its relation to student writing outcomes and teachers' perceptions of the social validity of the intervention.

Lastly, writing instruction was delivered at the whole-class level, with one exception (Harris et al., 2015) which used small-group instruction. However, data at the group level can differ from data at the individual level. For instance, lower achieving students who are involved in whole-class interventions may not show improvements, although their average and higher achieving peers may show improvements. In such situations, the performance by lower achieving students may be masked by their peers' performance. Researchers need to monitor these students' performance so that additional support can be provided if needed. In McKeown et al. (2016), the teachers indicated that greater instructional differentiation was needed for lower achieving students in whole-class settings. The majority of the studies in this literature review reported group-level data (e.g., groups means). Future research could

monitor performance by higher-, average-, and lower achieving students throughout an instructional intervention and identify ways to address the different needs of these students.

Research to Practice

This literature review has described a range of approaches to improve student writing performance. These studies, and researcher-implemented studies that informed these studies, provide guidance for teaching practices (Harris et al., 2012; Harris et al., 2015; Harris et al., 2006). We provide three recommendations for teaching writing instruction based on the research in this literature review. First, it is beneficial if writing interventions include some form of explicit strategy instruction. Independently of the type of intervention used, explicit strategy instruction was one of the most effective methods of improving students' writing performance (Graham 2006; Graham et al., 2012). Explicit strategy instruction may be particularly beneficial for struggling writers in elementary grades. Single strategies can be taught on their own, or taught in combination with other strategies. Second, teachers benefit from training and support before and during the implementation of a writing intervention. Training sessions before an intervention should not be too time-intensive (e.g., two-day workshop). There were a number of studies that found that a two-day workshop was enough time to prepare teachers to implement an intervention effectively (Harris et al., 2012; Harris et al., 2015; McKeown et al., 2016). During an intervention, teacher support can be provided by doing classroom observations of teaching practices and by providing teachers feedback about their implementation of an intervention. Finally, writing interventions need to be flexible enough for teachers to adjust instruction to meet the needs of students with different abilities, especially for student who require additional support to progress with their peers. In doing so, it will allow all students the opportunity to receive quality writing instruction and have the potential to improve their writing outcomes.

Conclusion

This literature review provides useful insight into writing interventions that are being implemented by general classroom teachers in schools. In the elementary grades the writing intervention literature is scarce, however they make a valuable contribution to the development of writing interventions that are sustainable in schools. Despite the positive impact of strategy instruction on student's writing it is not widely used in classrooms. More research needs to be done on how to integrate effective writing instruction interventions into classrooms to maximize students writing performance long term.

REFERENCES

Asaro-Saddler, K. (2014). Self-regulated strategy development: Effects on writers with autism spectrum disorders. *Education and Training in Autism and Developmental Disabilities, 49,* 78-91.

Beard, R., & Burrell, A. (2010). Writing attainment in 9- to 11-year-olds: Some differences between girls and boys in two genres. *Language and Education, 24,* 495-515. doi: 10.1080/09500782.2010.502968

Bouwer, R., Koster, M., & van den Bergh, H. (2018). Effects of a strategy-focused instructional program on the writing quality of upper elementary students in the Netherlands. *Journal of Educational Psychology, 110,* 58-71. doi:10.1037/edu0000206

Collopy, R. (2008). Professional development and student growth in writing. *Journal of Research in Childhood Education, 23,* 163-178. doi: 10.1080/02568540809594723

De Smedt, F., & Van Keer, H. (2018). Fostering writing in upper primary grades: A study into the distinct and combined impact of explicit instruction and peer assistance. *Reading and Writing: An Interdisciplinary Journal, 31,* 325-354. doi:10.1007/s11145-017-9787-4

Edwards, G., & Jones, J. (2018). Boys as writers: Perspectives on the learning and teaching of writing in three primary schools. *Literacy, 52,* 3-10.

Ennis, R., & Jolivette, K. (2014). Existing research and future directions for self-regulated strategy development with students with and at risk for emotional and behavioral disorders. *The Journal of Special Education, 48,* 32-45.

Foster, R. (2014). Barriers and Enablers to Evidence-Based Practices. *Kairaranga, 15,* 50-58.

Gilbert, J., & Graham, S. (2010). Teaching writing to elementary students in grades 4-6: A national survey. *Elementary School Journal, 110,* 494-518. doi: 10.1086/651193

Graham, S. (2006). Strategy instruction and the teaching of writing. In C. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *Handbook of Writing Research* (pp. 187-207). New York: Guilford.

Graham, S., Berninger, V., & Abbott, R. (2012). Are attitudes toward writing and reading separable constructs? A study with primary grade children. *Reading & Writing Quarterly, 28,* 51-69. doi: 10.1080/10573569.2012.632732

Graham, S., Harris, K. R., Fink-Chorzempa, B., & MacArthur, C. (2003). Primary grade

teachers' instructional adaptations for struggling writers: A national survey. *Journal of Educational Psychology, 95,* 279-293. doi: 10.1037/0022-0663.95.2.279

Graham, S., Harris, K., & Mason, L. (2005). Improving the writing performance, knowledge, and self-efficacy of struggling young writers: The effects of self-regulated strategy development. *Contemporary Educational Psychology, 30,* 207-241.

Graham, S., McKeown, D., Kiuhara, S., & Harris, K. R. (2012). A meta-analysis of writing instruction for students in the elementary grades. *Journal of Educational Psychology, 104,* 879-896. doi:10.1037/a0029185

Graham, S., & Perin, D. (2007). A meta-analysis of writing instruction for adolescent students. *Journal of Educational Psychology, 99,* 445-476. doi:10.1037/0022-0663.99.3.445

Graham, S., & Sandmel, K. (2011). The process writing approach: A meta-analysis. *Journal of Educational Research, 104,* 396-407. doi:10.1080/00220671.2010.488703

Harris, K.R., Graham, S., & Adkins, M. (2015). Practice-based professional development and self-regulated strategy development for Tier 2, at-risk writers in second grade. *Contemporary Educational Psychology, 40,* 5-16.

Harris, K., Graham, S., & Mason, L. (2002). POW plus TREE equals powerful opinion essays. *Teaching Exceptional Children, 34,* 70-73.

Harris, K., Graham, S., & Mason, L. (2006). Improving the writing knowledge, and motivation of struggling young writers: Effects of self-regulated strategy development with and without peer support. *American Educational Research Journal, 43,* 295-340.

Harris, K.R., Lane, K.L., Graham, S., Driscoll, S., Sandmel, K., Brindle, M., & Schatschneider, C. (2012). Practice-based professional development for self-regulated strategies development in writing: A randomized controlled study. Journal of Teacher Education, 63 (2), 103-119.

Hillocks, G. J. (1984). What works in teaching composition: A meta-analysis of experimental treatment studies. *American Journal of Education, 93,* 133-170.

Hooper, S. R., Costa, L. C., McBee, M., Anderson, K. L., Yerby, D. C., Childress, A., & Knuth, S. B. (2013). A written language intervention for at-risk second grade students: A randomized controlled trial of the process assessment of the learner lesson plans in a tier 2 response-to-intervention (RtI) model. *Annals of Dyslexia, 63,* 44-64.

Joshi, M., Hill, A., Boulware-Gooden, D., & Rupley, W. (2008). Drop everything and write (DEAW): An innovative program to improve literacy skills. *Learning Inquiry, 2,* 1-12. doi:10.1007/s11519-007-0024-y

Koster, M., Bouwer, R., & van den Bergh, H. (2017). Professional development of teachers in the implementation of a strategy-focused writing intervention program for elementary students. *Contemporary Educational Psychology, 49,* 1-20. doi:10.1016/j.cedpsych.2016.10.002

Koster, M.,Tribushinina,E., De Jong, P.F., & van den Bergh, B. (2015). Teaching children to write: A meta-analysis of writing intervention research. *Journal of Writing Research, 7,* 300-324.

Lane, K. L., Graham, S., Harris, K. R., & Weisenbach, J. L. (2006). Teaching writing strategies to young students struggling with writing and at risk for behavioral disorders: Self-regulated strategy development. *Teaching Exceptional Children, 39,* 60-64.

McKeown, D., Brindle, M., Harris, K., Graham, S., Collins, A., & Brown, M. (2016). Illuminating growth and struggles using mixed methods: Practice-based professional development and coaching for differentiating SRSD instruction in writing. *Reading & Writing: An Interdisciplinary Journal, 29,* 1105-1140. doi: 10.1007/s11145-016-9627-y

Meyer, E., Abrami, P., Wade, C., Aslan, O., & Deault, L. (2010). Improving literacy and metacognition with electronic portfolios: Teaching and learning with ePearl. *Computers & Education, 55,* 84-91. doi: 10.1016/j.compedu.2009.12.005

Rietdijk, S., Janssen, T., Weijen, D.V., Bergh, H.V., & Rijlaarsdam, G. (2017). Improving writing in primary schools through a comprehensive writing program. *Journal of Writing Research, 9,* 173-225. doi: 10.17239/jowr-2017.09.02.04

Saddler, B., Moran, S., Graham, S., & Harris, K. (2004). Preventing writing difficulties: The effects of planning strategy instruction on the writing performance of struggling writers. *Exceptionality, 12,* 3-17.

Salahu-Din, D., Persky, H., & Miller, J. (2008). The nation's report CardTM]: Writing 2007. national assessment of educational progress at grades 8 and 12. national, state, and trial urban district results. *NCES 2008-468.*National Center for Education Statistics.

Schunk, D. H., & Swartz, C. W. (1993). Writing strategy instruction with gifted students: Effects of goals and feedback on self-efficacy and skills. *Roeper Review, 15,* 225-230. doi: 10.1080/02783199309553512

Tienken, C. H., & Achilles, C. M. (2003). Changing teacher behavior and improving student writing achievement. *Planning and Changing, 34,* 16.

Torrance, M., Fidalgo, R., & Garcia, J. (2007). The teachability and effectiveness of

cognitive self-regulation in sixth-grade writers. *Learning and Instruction, 17*, 265-285. doi:10.1016/j.learninstruc.2007.02.003

Zumbrunn, S., & Bruning, R. (2013). Improving the writing and knowledge of emergent writers: the effects of self-regulated strategy development. *Reading & Writing: An Interdisciplinary Journal, 26*, 91-110.

Table 1. Description of Studies Included in the Review

Study	Writing Intervention	Participants	Design	General Procedures	Outcomes
Bouwer et al. (2018)	Tekster	1420 4th, 5th, and 6th grade students; 76 teachers	Switching replication design with two groups	Teachers received a 4-hour training session. The intervention lasted 8 weeks; 48 lessons in total. Each lesson was 45-60mins. Group 1 received the intervention for 8 weeks and group 2 served as a comparison group during this period; teachers and students continued with their existing writing programs. During the second 8-week phase, group 2 received the intervention and group 1 returned to the original writing program.	The intervention was equally effective for groups 1 and 2. Students' individual writing quality increased after the intervention. The findings were maintained two months after the intervention.
Collopy (2008)	Six Traits Analytic Writing Model	340 4th grade students; 39 teachers	Quasi-experiment	Teachers had six sessions of Professional Development. Students in the treatment group received the intervention for the entire school year. Students in the comparison group received their general writing instruction.	The treatment and the comparison groups showed improvements in organization, word choice, and sentence fluency. The treatment group improved in voice trait, whereas the comparison group improved in conventions. Neither group improved on idea traits. The intervention had limited impact on student writing achievement.
De Smedt & Van Keer (2018)	Explicit instruction/Peer assisted writing	206 5th and 6th grade students; 11 teachers	Four experimental conditions and one business as usual – Random assignment	Teachers received 1.5 hours of training and a manual. The intervention lasted 5 weeks (approximately 20 lessons). The lessons taught 2 days/week for 50mins each. There were 4 experimental conditions: 1) explicit instruction + individual writing; 2) explicit instruction + writing with peer assistance; 3) matched individual practice comparison condition; 4) matched peer-assisted practice comparison condition), and one control condition that received general writing instruction.	Three of the four experimental conditions showed better writing performance than the control condition. These three groups did not differ. The matched individual practice comparison condition did not differ from the control condition.
Harris et al. (2015)	Self-regulation strategy development (SRSD)	51 2nd grade students; 11 teachers	Randomized control study	Teachers received two days of training. Writing instruction lasted 6 to7 weeks (approximately 19 lessons). Lessons were 3 days/week for 20mins each. SRSD instruction was given in groups (tier two) of two to four students within the classroom during writing	At post-intervention and maintenance students in the treatment group included more story elements and had higher story quality than students in the control group who received the usual classroom writing instruction by the same teachers. Students

				time. The students in the control group received their regular whole-class writing instruction.	in the treatment group were also able to generalize learning to personal narrative at posttest.
Harris et al. (2012)	Self-regulated strategy development (SRSD)	262 2nd & 3rd grade students; 20 teachers	Randomized control design	Teachers received two days of SRSD training. Classrooms were assigned to one of two conditions: story writing instruction or opinion essay writing instruction. Writing instruction lasted 6 to 8 weeks (max of 24 lessons). Lessons taught 3 days/week for 30mins each.	For story writing, students' quality and length did not differ between conditions. However, students in the story writing condition used more story components than students in the opinion essay condition. For opinion essay writing, students in the opinion essay condition scored higher on overall quality and number of transition words than students in the story writing condition.
Joshi et al. (2008)	Drop Everything and Write	91 4th grade students; 4 teachers	Experimental pre- post-design	The intervention lasted 4 months (approximately 48 lessons). Lessons taught 4 days/week for 30mins each. Students and the teacher could only communicate through writing. Students in the comparison group were allowed to talk and participate in the classroom activities both orally and in writing.	Students in the treatment group showed greater improvement on vocabulary, comprehension, and spelling than students in the comparison group. Students in the treatment group included more words in a sentence, had more complex sentences, and they wrote more sentences than students in the comparison group.
Koster et al. (2017)	Tekster	1365 4th, 5th, & 6th grade students; 68 teachers	Quasi-experiment Switching Panels design	There were two groups of teachers. Teachers in group 1 received two training sessions from the researchers and a teaching manual. Teachers in group 2 received training from teachers in group 1. The intervention lasted 4 months, consisted of 48 lessons, each lesson was 45-60mins. Group 2 acted as a comparison for group 1. Group 2 provided their regular writing instruction, then received training from the teachers in group 1 to deliver the intervention.	Students in group 1 improved their writing quality to a greater extent than students in group 2. Once the teachers in group 2 received training and delivered the intervention to students, there was no difference in writing quality between the students in group 1 and group 2. This indicated that the teachers in groups 1 and 2 implemented the intervention with equal effectiveness.
McKeown et al. (2016)	Self-regulated strategy development (SRSD)	53 4th grade students; 3 teachers	Multiple-baseline design and single-case design	Teachers received two days of SRSD training. A multiple-baseline design was used to evaluate writing outcomes for selected average (n = 6) and struggling (n = 6) writers in each classroom. All other students were	At the class-level, the number of story elements changed from pre- to post-intervention, but holistic writing quality did not. The multiple-baseline data revealed that after the intervention five of

				measured pre- and post-intervention. Writing instruction lasted 4 to 5 weeks (max of 17 lessons). Lessons taught 4 days/week for 45mins each.	the six struggling writers used more story elements in their writing. All struggling writers improved the overall quality of their writing. Three of the six average writers included more story elements and improved their writing quality at post-intervention.
McKeown et al. (2018)	Self-regulated strategy development (SRSD)	685 3rd, 4th, and 5th grade students; 24 teachers	Wait-list quasi-experimental design	Teachers received 2 days of training. They agreed to teach SRSD twice a week for at least 30mins. Teachers had the choice as to how long they would teach SRSD. Students in the comparison group received their general writing instruction.	Students in the treatment group had larger gains in writing outcomes (quality, analytic, length) and included approximately three more writing elements in their persuasive writing than students in the comparison group.
Meyer et al. (2010)	ePEARL	388 4th, 5th, and 6th grade students; 32 teachers	Non-equivalent pre-post design	The teachers received a half day of training, with follow-up support, lesson plans, and lesson materials. The intervention lasted between 6 to 8 months. The participants in the comparison group received their regular writing instruction.	Students in the treatment group had greater gains in writing skills (word choice, sentence structure, and conventions of print) than students in the comparison group. Students in both groups showed comparable gains in terms of the content of their writing.
Rietdijk et al. (2017)	Comprehensive Writing Program (1. Communicative Writing, 2. Process Writing, 3. Writing Strategies)	1052 4th, 5th, and 6th grade students; 43 teachers	Experimental design with three conditions	The teachers had six training sessions, each lasting 4 hours. The intervention lasted one school year. There were 42 lesson, each lasting 45mins. There were three conditions: 1) writing program, 2) writing program plus professional development, and 3) control condition in which teachers taught writing as they normally do.	Students in the two treatment conditions showed more writing improvement than students in the control condition. There were no differences in writing performance between the two treatment conditions.
Tienken and Achilles (2003)	Teacher embedded training to change their teaching style	98 4th grade students; 5 teachers	Experimental post-test only control design	Professional development was delivered in small groups. Then teachers received on-going training during the intervention including individualized feedback. The students in the control condition continued their regular classroom instruction.	Students in the treatment group performed better on narrative writing assessment than students in the control group. The teachers in the experimental group changed their teaching style from presentational to interactive.
Torrance et al. (2007)	Cognitive Self-Regulation Intervention (CSRI)	95 6th grade students; 1 teacher	Quasi-experimental pre-post design	The teacher attended several training sessions before the intervention. The intervention lasted 10 weeks, with 1 lesson per week for 60 to 75mins each. Students in the treatment group received CSRI in their language class. Students in the comparison group received	Students in the treatment group spent more time preplanning their writing and had better writing quality than students in the comparison group. The intervention did not affect the time that students spent revising.

	regular writing instruction in their language class.

Table 2. Summary of Main Findings

1. Teacher-implemented writing interventions generally promoted students' writing performance, although there were varying degrees of improvement across the studies. Nine of the 13 interventions included explicit strategy instruction.
2. The majority of the interventions (12 out of 13) were implemented at the level of the whole classroom (Tier 1).
3. The majority of the interventions (11 out of 13) included participants in grades four to six (approx. 9-12 years of age).
4. The different forms of whole-class writing instruction were effective in a variety of settings (e.g.., rural, suburban, urban) with students from different backgrounds.
5. The length of the intervention, ranging from six weeks to 12 months, did not appear to influence its effectiveness, although, it is unclear whether there is an optimal duration for an intervention.
6. Teacher training and support were important to the success of the interventions.
7. Teacher data (e.g., teacher self-efficacy for teaching writing) provided valuable insights into variables that related to the implementation of the interventions and possible reasons for different student outcomes.

CHAPTER THREE

TEACHER-IMPLEMENTED SRSD INSTRUCTION FOR STORY WRITING WITH YEAR 2 STUDENTS IN NEW ZEALAND: A MIXED METHODS STUDY

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Statements of Contributions of Joint Authorship

Finlayson, K: (Candidate)

Writing and compilation of manuscript, researched studies, data analysis, preparation of tables and figures.

McCrudden, M: (Principal Supervisor)

Supervised and assisted with manuscript compilation, data analysis, editing and co-author of manuscript.

ABSTRACT

We used a mixed methods intervention design to investigate the effectiveness and social validity of a teacher-implemented Self-Regulated Strategy Development (SRSD) story writing intervention on writing performance with year two students (6-7-year-olds) in New Zealand. In the quantitative strand, we conducted a quasi-experiment in which students either received SRSD writing instruction or their regular writing instruction. We collected student writing samples before and after the intervention and teachers completed a questionnaire on the social validity of the intervention. A mixed-model ANOVA with SRSD instruction as the between-subjects variable and time as the within-subjects variable indicated that students in the treatment condition had larger improvements relative to students in the comparison condition on holistic quality (ES = 0.70), number and quality of story elements (ES = 1.06), and word count (ES = 0.63). In the qualitative strand, we conducted interviews with the classroom teachers to gain deeper insights into their perceptions of the social validity of the intervention. They indicated that the intervention was appropriate to meet the needs of the students, had acceptable procedures, and meaningful outcomes. Thus, the intervention was effective, and teachers perceived it to have social validity. Limitations and future directions are discussed.

Keywords: elementary story writing, mixed methods intervention design, self-regulated strategy development, writing instruction

INTRODUCTION

Developing student writing proficiency is a challenge faced by schools in many countries (e.g., Harris et al., 2019; Festas et al., 2015) and New Zealand is no exception. Students learn writing skills during their initial years of schooling. As students progress through school, writing becomes a vital tool both for learning and demonstrating their understandings (Harris et al., 2015). It is important to provide quality writing instruction in primary grades to minimize barriers to their learning and to support the development of their writing skills. Teachers can support the development of students' writing skills by developing their knowledge and skills in evidence-based writing practices. However, developing these skills can be time-demanding for teachers and they may revert back to teaching practices they experienced when they were taught to write or to practices advocated by other teachers but have little evidence to suggest that they work (Graham & Harris, 2016). The evidence-to-practice gap within the writing research is vast, although small steps have been taken to bridge this gap in the last ten years (Harris et al., 2012).

Seven meta-analyses have shown that writing interventions that include strategy instruction have the largest effect on writing outcomes for both primary and secondary students (Graham, 2006; Graham & Harris, 2018; Graham, Harris, & McKeown, 2013; Graham & Perin, 2007; Graham & Sandmel 2011; Graham et al., 2012; Hillocks, 1984). Further, Graham et al. (2012) reported that combining strategy instruction with the teaching of self-regulation is more effective than strategy instruction alone (ES = 1.17 vs ES = 1.02) or peer assistance (ES = 0.89) the next highest effect size. There is strong evidence that self-regulated strategy development (SRSD), which is designed to develop both writing and self-regulation skills, is effective for a wide range of students, including those with and without disabilities, and students from primary to secondary school (e.g., Finlayson & McCrudden, 2019; Gillespie Rouse & Kiuhara, 2017; Graham, 2006; Graham & Harris, 2018; Graham et al., 2013; Graham & Perin, 2007; Harris et al., 2012; McKeown, FitzPatrick, et al., 2019; Zumbrunn & Bruning, 2013).

Most writing interventions have been implemented by researchers or research assistants. In a recent literature review that specifically focused on teacher-implemented writing interventions in early elementary classrooms from 2000 to 2018 (among other inclusion criteria), the authors only identified 13 studies in which the writing interventions were implemented by the classroom teacher (Finlayson & McCrudden, 2019a). Of those 13 studies nine used strategy instruction and four used SRSD specifically as a component of the intervention. All nine studies reported positive results, many of which had effect sizes near or

greater than one. Researcher implemented writing interventions provide important information about the effectiveness of writing interventions, but do not necessarily changes how writing is taught by classroom teachers, particularly if teachers are not involved in the intervention (Hancock, 1997). Thus, there is a need for research on teacher-implemented writing interventions to evaluate the effects of such interventions under authentic conditions (Graham & Harris, 2014).

While demonstrating the effectiveness of an intervention is important, it is also important to evaluate the social validity of an intervention. The social validity of an intervention is crucial to its long-term success (Wolf, 1978); stakeholders perceptions of an intervention influence their willingness to adopt it and to persist with its use, independently of the empirical support for an intervention (Schwartz & Baer, 1991). The lack of evidence of social validity can contribute to the research-to-practice gap in schools as teachers are less likely to use an intervention that they believe lacks social validity (Callahan et al., 2008). Further, evidence of social validity is beneficial because it allows researchers and teachers to evaluate the generalizability of an intervention to other contexts and populations (Schwartz & Baer, 1991). Therefore, we investigated not only the effect of a teacher-implemented writing strategy intervention with year 2 students, but also its social validity.

Self-Regulated Strategy Development

SRSD is a multicomponent, mastery-based approach which allows teachers the flexibility to respond to learners' needs (Harris et al., 2003; Harris et al., 2008; Harris et al., 2019; McKeown, FitzPatrick, et al., 2019). SRSD includes explicit interactive teaching of strategies for genre specific and general writing, the knowledge needed to use these strategies, and strategies for self-regulating strategy use (Harris et al., 2015; Harris et al., 2019). When initially implementing SRSD instruction, teachers read, critique, and discuss with students sample texts that highlight what students will be learning. They evaluate each text and discuss its strengths and what can be improved (Harris et al., 2008; Harris et al., 2019). This builds learner background knowledge, vocabulary, and knowledge of genre specific characteristics of effective writing (Harris & Graham, 1996; Harris et al., 2019). The teachers and students collaborate to set clear learning outcomes and establish criteria for meeting these. The six recursive stages (develop background knowledge, discuss it, model it, memorize it, support it, and independent performance) support student motivation, attitudes toward writing, and self-efficacy (Harris et al., 2008; Harris et al., 2019; McKeown,

FitzPatrick, et al., 2019). Progression through these stages is ideally mastery-based and can be revisited as necessary based on student needs.

Evidence suggests that SRSD writing instruction is effective for students with a full range of writing abilities and grade levels (Graham et al., 2012; Harris et al., 2009). The large majority of studies have been implemented by tutors or research assistants and have been provided in one-to-one or small group settings (Harris et al., 2015; Lane et al., 2011). Nevertheless, five teacher-implemented whole-class SRSD intervention studies have been published (Finlayson & McCrudden, 2019b; Festas et al., 2015; Harris et al., 2012; McKeown et al., 2016; McKeown, FitzPatrick, et al., 2019). The results of these studies have been promising, showing improvements in student writing outcomes. Of these studies, one involved year two students (equivalent of 1st-grade; Finlayson & McCrudden, 2019); however, it was exploratory and used a one-group pre-post design. We are aware of only one other study with 1st-grade students (Zumbrunn & Bruning, 2013), although it was implemented by a research assistant with six participants in small groups. We sought to investigate a whole-class intervention in an early primary classroom because it is not always possible to implement interventions to small groups or individuals within a typical school environment.

Writing in New Zealand

The writing curriculum in New Zealand is flexible; schools can develop their own expectations for teaching writing and teachers are free to determine how to teach writing in their classrooms. A strength of this autonomy is that teachers can adapt their writing instruction to meet the specific needs of their students. However, many teachers in New Zealand have limited knowledge of writing pedagogy (Parr & Jesson, 2016) and it is unclear how writing instruction affects student writing outcomes because there is limited evidence-based research from primary schools in New Zealand to inform classroom writing practices. Nevertheless, according to the most recent report, only 71% of Year 1-8 students achieved at or above the standard in writing for their age group (Ministry of Education, 2020) and the disparity between children in New Zealand who show high and low literacy performance is one of the largest in the developed world (Tunmer & Chapman, 2015). Thus, there is a need for research in New Zealand schools to identify evidence-based practices that can promote student writing outcomes.

The purposes of this study were to investigate the effect of a teacher-implemented, whole-class writing strategy intervention on year 2 students' writing performance and to

investigate the social validity of the writing strategy intervention. The teachers and their principal chose to focus on story writing because it overlapped with the school's goals and the national curriculum. The first question was: Does the teacher-implemented SRSD story writing intervention affect students' writing performance? It is important to identify ways to promote student writing outcomes in ways that are practical given the time demands on teachers. We wanted to investigate whether student writing outcomes would improve relative to a comparison group when the teachers received low-intensity professional development on the writing intervention. The second question was: What are the teachers' perceptions of the acceptance of the writing intervention? For an intervention to adopted and utilized in the long term, it is important that the teachers find the intervention to be effective and manageable, among other features. Thus, we wanted to investigate the effectiveness of the writing intervention and its social validity.

METHODS

We used a mixed methods intervention design (Creswell & Plano Clark, 2018). This two-phase design began with the collection and analysis of quantitative data, followed by the collection and analysis of qualitative data. In the quantitative phase, we conducted a classroom-based, two-group, pre-post quasi-experiment. Primary school students in intact classrooms either received SRSD writing instruction (intervention group) or received their regular writing instruction (comparison group) over a 5-week time frame. Students in both conditions wrote three stories before and after the intervention and the teachers completed a social validity questionnaire about the intervention. In the follow-up qualitative phase, we interviewed the teachers to investigate in more detail their perceptions of the social validity of the writing strategy intervention.

Context and Participants

The study took place in three suburban primary schools located on the lower north island of New Zealand. Schools A and B had a decile rating of 10 and School C had a decile rating of 5. New Zealand schools are categorized based on a decile system rating scale from 1 to 10. This is based on the socio-economic status of the community in which the school is situated. Decile 10 schools have the lowest proportion of students from low socio-economic communities whereas decile one schools have the highest proportion.

All students were in year two (6-7-year-olds; equivalent to 1st-grade in US). All classes were co-educational, mixed ability, and inclusive (i.e., had students with and without disabilities). The two treatment classes were in School A (236 students from years 1-6). The

two comparison classrooms were in School B (789 students from years 1-8) and School C (367 students from years 1-6). The students were predominantly New Zealand European (range = 64.8%–77.7%). The intervention began during the third quarter of the school year. Before the intervention, all students received their regular writing instruction for 40 to 50 minutes per day for at least four days a week. This involved 10 to 15 minutes of whole-class instruction, followed by 25-30 minutes of individual writing.

Students. Year 2 (n = 77) students in four classrooms (34 in treatment group and 43 in comparison group) participated in the study (see Table 3). We excluded data from five additional students, all in the treatment group, for a number of reasons: (a) an outside professional diagnosed one student with severe learning difficulties (i.e., intellectual disability, severe autism); (b) three students missed all pre-intervention measures or all post-intervention measures; and (c) one student who missed more than 20% of the class meetings when the intervention was implemented. The average age of students the treatment group was 6.82 years (SD = 0.49) and 6.44 years (SD = 0.50) in the comparison group.

Teachers. Four female teachers participated in the study; all four self-identified as New Zealanders of European decent. The teachers in the treatment condition classrooms had 7 and 25 years of overall teaching experience and three and five years of experience in their current grade level. Teachers in the comparison condition classrooms had 10 and 20 years of overall teaching experience and two and five years of experience in their current grade level. None of the teachers had knowledge of, or experience with SRSD writing instruction. Further, SRSD had not been taught in any of the schools previously; thus, presumably, none of the students had knowledge of, or experience with, SRSD writing instruction. The first author is qualified as a primary teacher, has taught in primary schools for seven years, and is a female of New Zealand European decent. The second author has been a university faculty member for 15 years (10 in New Zealand) and is a male of Irish American descent. The teachers were recruited through snowball sampling. One of the teachers in School A knew the first author, was aware that she was conducting research on writing, and expressed interest in improving her teaching of writing. This teacher recruited additional teachers from among her professional acquaintances. The teacher in the comparison classrooms expressed interest in being involved in the study but were unable to participate in the treatment because of outside time demands.

Quantitative Phase

Writing measures. We developed nine story writing prompts. The students' teachers confirmed the appropriateness of each story prompt. Each prompt included a statement (e.g., It's someone's birthday and a stranger arrives with a present that makes a noise) and a picture (e.g., box in wrapping paper with a bow). We asked students to write a story about the picture and to use the statement to help them generate ideas. The prompts were similar to ones we had used in a previous SRSD study, and they led to similar writing performance in that study (Finlayson & McCrudden, 2019b).

We randomized the writing prompts so that students received three different writing prompts before and after the intervention (Saddler, 2006; Saddler et al., 2004; Zumbrunn & Bruning, 2013). The teachers used the other three writing prompts for practice during the intervention. We used three writing prompts to balance practical and measurement considerations. It took 40 minutes of class time to obtain student responses to each writing prompt across three different class meetings. Having three written responses gave us an estimate of students' story writing ability across multiple data points while balancing the time demand placed on classroom instruction. We scored the stories for holistic quality, number of story elements, and word count. All stories were typed before scoring. Identifying information was removed and the spelling, punctuation, and capitalization in each story were corrected to minimize scoring bias.

Holistic quality. We developed a holistic quality score to assess each story with respect to organization, development, sentence fluency, word choice, and audience awareness, with equal weighting for each feature (McKeown, FitzPatrick, et al., 2019). Each story was scored on an 8-point scale, with 1 representing the lowest quality and 8 representing the highest quality (Graham et al., 2005; Harris et al., 2006). Prior to individually scoring each story, the first author and a trained research assistant determined anchor papers for each of the corresponding numbers in the scale (1 to 8) to assist them with scoring the stories. Each rater independently scored all stories. Interrater reliability was 92%, which was similar to other SRSD studies (Harris et al, 2012; Harris et al., 2015; Harris et al., 2019; McKeown, FitzPatrick, et al., 2019). Differences were resolved through discussion to achieve 100% agreement on each item.

Story elements. We scored each writing sample for seven essential story components: (1) characters, (2) setting, (3) time, (4) goals of the main character, (5) actions of the main character, (6) ending, and (7) the characters' feelings (Zumbrunn & Bruning, 2013). Each component received a score of 0 (absent), 1 (present but not developed), or 2 (developed).

Overall scores could range from 0 to 14. The first author and a trained research assistant used samples of student writing to devise scoring rubric and criteria. Then scorers marked 20 samples together. To do this, each scorer independently scored a student sample and then discussed their scores. Interrater reliability was 88% during training. Then scorers independently marked the remaining samples, interrater reliability was 79%. This was lower than previous research (Harris et al., 2012; Harris et al., 2015; Harris et al., 2019; McKeown, FitzPatrick, et al., 2019). However, scorers met to discuss all differences until there was 100% agreement on all scores.

Story length. We determined story length by counting the number of words written for each story, which was summed using the word count function in Microsoft Word which has been used in other SRSD studies (Harris et al., 2012; McKeown, FitzPatrick, et al., 2019; Zumbrunn & Bruning, 2013). A research assistant typed the student writing samples on a computer. The length of each story was recorded and checked for reliability by another research assistant with 100% accuracy.

Additional materials. We provided each student in the treatment group a graphic organizer (i.e., a sheet with the seven parts of a story to use for planning their stories), a rocket graph chart (i.e., a self-assessment chart that students used to record their performance), self-statement explosions sheet (i.e., a sheet for students to write encouraging self-statements for overcoming difficulties), and a mnemonic chart (i.e., description of WWW + What = 2, How = 2), sourced from Harris et al. (2008). They already had a writing book as part of their regular classroom materials.

Intervention Rating Profile for Teachers (IRP-15). The IRP-15 is a 15-item scale that assesses teachers' perceptions of the social validity or acceptability of an intervention (Witt & Elliott, 1985), with a focus on teachers' acceptance and willingness to continue teaching the strategies to these students and other students after an intervention. The IRP-15 was designed to provide a measure of general acceptability and has been shown to have high reliability ($\alpha = .98$; Martens et al., 1985). The teachers rated their level of agreement with the statements (e.g., I would suggest the use of this intervention to other teachers) on a 6-point Likert-type scale (1= *strongly disagree* to 6= *strongly agree*) after the intervention. We assessed the teachers' perceptions of the acceptability of the intervention using their total score. Higher scores reflect greater acceptability of the intervention.

Intervention. All three school principals, the four teachers, and students' caregivers provided consent prior to the start of the study. Student assent was obtained one-on-one with the researcher or research assistant verbally prior to their participation in the study.

The teachers in the treatment group received training in SRSD before the intervention and support during the intervention. The first author sourced and prepared the lesson plans and all resources for the intervention to minimize teacher preparation time (see Harris et al., 2008 for SRSD instructional materials). The lessons were adapted to fit within a 40-minute time frame and to have students practice writing nearly every day. Some of the lessons in Harris et al. (2008) require more time to implement than was available in the class schedules so these lessons were halved and taught over two lessons. Additionally, students in New Zealand are expected to write individually every school day; some of the lessons did not provide students the opportunity to write each day so the lessons were adapted to include individual student writing each day. These adaptations were made to reflect current practices in the school. A handbook was developed with all the teaching lessons in a step-by-step guide.

After the teachers in the treatment group had completed the training, they began instruction in their classroom. Sessions typically involved reading story exemplars and critiquing them based on the story writing criteria. Students were taught two mnemonics POW (Pick your idea, Organize your notes, Write and say more) and the story writing strategy WWW What =2, How =2 (Who is the main character? When does the story take place? Where does the story take place? What does the main character do or want to do, what do other characters do? What happens then? What happens with other characters? How does the story end? How does the main character feel? How do other characters feel?; Harris et al., 2008). Each child received a poster with these mnemonics to help them learn these strategies. The mnemonic was used in previous SRSD studies with similarly aged participants in which writing performance improved (Finlayson & McCrudden, 2019b; Harris et al., 2006; Zumbrunn & Bruning, 2013). Lessons also included elements of self-regulation pertaining to writing: goal-setting, self-instructions, self-monitoring, and self-assessments and self-reinforcement (Harris et al., 2012).

The intervention followed the basic SRSD structure, which includes six recursive steps (a) Develop background knowledge - students develop any pre-skills (e.g., vocabulary, concepts) needed for using the writing and self-regulation strategies; (b) Discuss it - the teacher and the students discuss the significance and benefits of the writing and self-regulation strategies to be learnt; (c) Model it - teacher models the writing strategy and self-instructions, while thinking aloud when writing; (d) Memorize it - students memorize the steps in the writing strategy; (e) Support it - teachers scaffold student strategy use; (f)

Independent performance - student writing without support of the teacher (see Harris et al., 2008).

The teachers conducted SRSD instruction approximately four times a week for five weeks. Each session duration was approximately 40 minutes. Students received a total of 21 lessons. During this five-week timeframe, the students in the comparison group received their regular classroom instruction, which the first author observed on three occasions per classroom. Their regular classroom instruction involved 10 to 15 minutes of modeling from the teacher, and then 25 to 30 minutes of individual writing while the teacher moved around the room helping students when needed.

Teacher professional development. We adopted a practice-based approach (c.f. Ball & Cohen, 1999) and focused on developing the teachers' understandings and skills using six steps which other researchers have used and are supported by theory and research (Harris et al., 2012; Harris et al., 2015; McKeown, Brindle, et al., 2019). These include (a) collective participation with teachers within a school who have similar needs; (b) focus professional development on the specific needs, strengths, and characteristics of students in these classrooms; (c) attention to content knowledge needs of the teachers, including pedagogical content knowledge; (d) opportunities for active learning and practice of new methods, including opportunities to see and analyze examples of these methods; (e) use materials during professional development that will be used with the students; and (f) feedback on performance while learning and before use in the classroom to develop understandings and skills that critical for implementation (Ball & Cohen, 1999; Grossman & McDonald, 2008).

Both teachers were familiar with this style of professional development as it was commonly used in their school. We used a low intensity training approach to accommodate the teachers' limited time availability and numerous responsibilities. Before the professional development sessions, the teachers read two practice-orientated articles about SRSD writing strategies (Graham, 2013; Harris et al., 2003) that provided information about the intervention and highlighted the effectiveness of SRSD. Then, the teachers participated in four 1-hour meetings after school where the teachers evaluated the content of the program and discussed its implementation. In previous SRSD research, teachers participated in approximately 12 hours of professional development (Harris et al., 2012; Harris et al., 2015; McKeown, Brindle, et al., 2019); however, this was not feasible in the present study. During the first meeting, teachers discussed their students' needs, their own preservice and in-service professional development experiences pertaining to writing, and what they wanted to achieve by the end of the intervention. The four lessons were organized around the six stages of

SRSD teaching (develop background knowledge, discuss it, model it, support it, and independent performance). The first author also modeled a lesson, the teachers practiced lessons, and then received feedback. We provided the teachers with a checklist of the steps for each lesson to support their implementation of the lessons. The first author made weekly school visits and maintained regular email contact to provide support and guidance throughout the intervention. The weekly visits included coaching sessions to support teachers to achieve high levels of treatment fidelity and to ensure that all students' needs were being meet.

Fidelity of SRSD lessons. The first author observed eight sessions (33%) to measure treatment fidelity. A second observer was present for six sessions (25%). Observers used a checklist of essential steps unique to that lesson. Prior to the observation the teacher informed the observer of the lesson plan they were teaching for that day and any changes they had made to the lesson. The checklist contained the main aspects of SRSD (e.g., test memory for the mnemonic, identify the parts in a story, plan using a graphic organizer, write story using plan). We calculated treatment fidelity by dividing number of steps completed by number of steps possible. We calculated interobserver agreement (IOA) by dividing the number of agreements by the total number of steps scored (IOA = 86.5%). The first author also wrote anecdotal notes about classroom observations, which she discussed with the teacher at the end of the lesson.

Data collection. Teachers in both conditions administered three writing prompts at pre-intervention (only one writing prompt per day) using a scripted procedure. Students had 40 minutes to complete their stories, were encouraged to plan their stories, and were allowed to use their alphabet cards, but no teacher guidance was provided. At the end of each writing period, the teachers rewrote words in the students' stories to make them legible. Within one week after the intervention, teachers in both conditions administered three different writing prompts (only one per day) using the same scripted procedure they had used at pre-intervention. Additionally, teachers completed the IRP-15 questionnaire.

Data analysis. We analyzed the writing performance data using a 2 (SRSD instruction: yes vs. no) x 2 (time: pre-intervention vs. post-intervention) mixed model ANOVA with SRSD instruction as the between-subjects variable and time as the within-subjects variable. Scores were combined and averaged for each student at pre- and post-test. Specifically, students received a raw score for each writing prompt. Then, we created an average score for each participant at each time point. For example, if a student had pre-test scores on the three writing prompts of 2, 3, and 2, respectively, then the student's pre-test

score would be 2.33 or (2+3+2= 7/3 = 2.33). For all post-hoc tests, we used Tukey's HSD which controlled for family-wise error at the .01 level. We computed effect sizes using the pooled standard deviation in the denominator to determine the magnitude of the differences between groups' change scores (post- minus preintervention scores) and were calculated to examine differences in growth demonstrated by each group and are reported in text. According to Cohen (1988), small, medium, and large effect sizes are 0.2, 0.5, and 0.8, respectively. We did not analyze these data using multilevel regression modeling because of insufficient sample size (O'Dwyer & Parker, 2014). We set all tests of significance at the $p <$ .01 level to minimize the likelihood of Type I error. Further, there were no differences between the two classrooms in the comparison group on any of the dependent variables. The two classrooms in the treatment group received their lessons jointly and moved back and forth between teachers in a shared space. For the IRP-15, we reported the teacher's scores for both the total scale and for each sub-scale.

Qualitative Phase

Interview protocol. We developed the interview protocol (see Appendix) to prompt the teachers to explain their perceptions of the aims, procedures, and outcomes of the writing intervention. The questions were related to the IRP-15 questionnaire that the teachers filled out at the completion of the intervention. We did this to gain insights and greater depth into the teachers' perceptions of the acceptability of the intervention (e.g., Was this intervention effective? In what ways? Anything ineffective? What would make it more effective in the future?).

Data collection. The first author conducted a semi-structured, joint interview with the two teachers from the treatment group two weeks after the intervention. The interview was scheduled as close to the completion of the intervention as possible to facilitate teachers' memories of the intervention. The teachers brought notes and student work to support their responses during the interview, which helped to support the validity of their responses. The interview was recorded via audio taped face-to-face interview and lasted approximately 60 minutes.

Data analysis. The first author used thematic analysis (Braun & Clarke, 2006) to analyze verbatim transcripts of the audio-taped interview using a four-step process. The researcher aimed to be reflexive during the analysis and not impose her ideas on the data (Patton, 2002). First, she listened to the interview and read the transcripts to get a holistic

sense of the data and allowed her to become familiar with the data as a whole. No sorting or coding of data occurred in this step.

In the second step, she extracted descriptive phrases that pertained to teacher thoughts about the intervention. For example, comments such as "Sometimes we found it challenging to fit the lesson into the timeframe" (T1), "We would look through the plan together and talk through parts we were unsure of" (T1), and "We enjoyed working together" (T2) were extracted because they reflected participants thoughts about the intervention.

In the third step, she generated codes for the data by segmenting and labelling the extracted phrases and identifying commonalities among the extracted phrases. For instance, "talking through parts together", and "we enjoyed working together" were combined to create the code "teacher relationship". In this example, the coded phrases indicated that working together was an important aspect of the intervention.

The fourth step was theme identification. The codes were compared and examined to identify relevant relations between and across them. Additionally, it was important to triangulate the researcher's inferences with those of another researcher, a form of peer debriefing (Miles & Huberman, 1994). A research assistant who was not involved with the interview analysed the data on her own. The research assistant and the researcher discussed the codes and themes, and also compared the themes generated in the analysis with the original statements made by the interviewees to ensure the accuracy of the codes and themes.

We attempted to establish the credibility of our interpretations in several ways. First, we conducted semi-structured interviews with probes to encourage the teachers to elaborate upon their answers. Second, we used vivo coding, whereby we used words or short phrases from the participant interviews as codes (King, 2008). Third, to review evidence, the teacher quantitative questionnaire data were compared with the teacher qualitative interviews, both of which were compared with student writing outcomes.

RESULTS

Quantitative Data

Holistic quality. The main effect for condition was not significant ($p = .93$), whereas the main effect for time was significant, $F(1,75) = 38.86$, $MSE = 0.56$, $p < .001$, $\eta^2_p < .341$. However, this main effect was qualified by their interaction, $F(1,75) = 8.997$, $MSE = 0.56$, $p = .004$, $\eta^2_p = .107$. The post-hoc test indicated that the treatment group post-intervention score ($M = 4.36$, $SD = 1.24$) was significantly greater than the comparison group post-intervention ($M = 3.98$, $SD = 1.35$) and pre-intervention scores ($M = 3.59$, $SD = 1.26$), which did not

differ, but were significantly greater than treatment group pre-intervention score (M = 3.25, SD = 1.23). Students in the treatment group (M = 1.12, SD = 0.93) had larger improvements in holistic writing quality after the intervention relative to students in the comparison condition (M = 0.39, SD = 1.15, effect size = 0.70).

Story elements. The main effect for condition was not significant (p = .88), whereas the main effect for time was significant, $F(1,75) = 27.43$, $MSE = 0.52$, $p < .001$, $\eta^2_p = .268$. However, this main effect was qualified by their interaction, $F(1,75) = 22.48$, $MSE = 0.52$, $p < .001$, $\eta^2_p = .231$. The post-hoc test indicated that the treatment group post-intervention score (M = 5.71, SD = 1.83) was significantly greater than the comparison group post-intervention (M = 5.10, SD = 1.14) and pre-intervention scores (M = 5.04, SD = 1.11), which did not differ, but were significantly greater than treatment group pre-intervention score (M = 4.53, SD = 1.68). Students in the treatment group (M = 1.17, SD = 1.24) had larger improvements in story writing elements after the intervention relative to students in the comparison condition (M = 0.06, SD = 0.82, effect size = 1.06).

Story length. The main effect for condition was not significant (p = .138); whereas the main effect for time was significant, $F(1,75) = 44.30$, $MSE = 402.42$, $p < .001$, $\eta^2_p = .371$. However, this main effect was qualified by their interaction, $F(1,75) = 7.69$, $MSE = 402.42$, $p = .007$, $\eta^2_p = .093$. The post-hoc test indicated that treatment group post-intervention score (M = 90.1, SD = 33.0) was significantly greater than comparison group post-intervention (M = 72.6, SD = 32.4) and pre-intervention scores (M = 60.0, SD = 24.4), and treatment group pre-intervention scores (M = 59.4, SD = 23.0), none of which differed. Students in the treatment group (M = 30.7, SD = 29.6) had larger improvements in word count after the intervention relative to students in the comparison condition (M = 12.6, SD = 27.4, effect size = 0.63).

Writing outcomes summary. Thus, the within-group findings indicated that the difference between pre-intervention and post-intervention scores for holistic quality, story elements, and story length for the treatment condition was significant, whereas these differences were not significant for students in the comparison condition (see Table 4). Further, the between-group findings indicated that the post-intervention scores on these dependent variables were significantly greater for the treatment condition than the comparison condition.

IRP-15. The total acceptability score for the teacher from classroom A1 was 86 (M = 5.06) and 87 (M = 5.12) for the teacher from classroom A2. Overall, these data indicated that the teachers gave high acceptability ratings to the intervention (see Table 5). Both teachers gave the maximum rating on the item about whether the intervention was beneficial. Teachers

also gave very high ratings on the appropriateness for students and effectiveness items. Thus, not only did teachers believe the intervention was beneficial in terms of their students' needs, they also believed it was appropriate in achieving its goals and were willing to recommend the intervention to other teachers. Participants also gave high ratings on the effectiveness subscale, which indicated that they clearly understood the intervention's goals, aims and procedures. Further, they liked the intervention and did not perceive negative side effects. Thus, the teachers were positive overall about the intervention.

Qualitative Data

Our analysis of the qualitative interview data indicated the teachers viewed the acceptability of the intervention very favorably. We identified four themes. The first theme was the intervention was beneficial for the students. Both teachers believed it positively impacted students' writing performance. They enjoyed talking about the positive changes they had seen in students' writing. For instance, T2 said, "It really helped their vocabulary, and the way they structured their stories". T1 added, "Their stories seemed to flow better, they all seemed to be writing, which was good". T2 felt the students were writing more than they usual: "We did a lot more writing using this writing program than what we would normally, which sped up the improvement we saw in students' writing."

The second theme was the teachers valued the opportunity to work collaboratively with a colleague. They found it beneficial to be able to progress through the intervention together. T1 explained, "Having someone to talk to after a lesson doesn't go the way you want was a great support". T2 added, "When I looked at the lesson and was unsure of what to do, I could talk it through with [T1] and we would work through it out together prior to teaching it to the kids". Throughout the interview it was clear that they had a close working relationship. For example, one teacher would answer a question and the other teacher would add extra information. They also used "we" when answering questions about what they did instead of "I", which indicated they saw the intervention as a collaborative process.

The third theme was teachers were motivated to continue using the intervention. The teachers indicated that the intervention was thorough, worked with the current curriculum, and met their needs. T1 said, "We had already talked about who, when, where, but this program added another level, adding what, what, how, how. It broke it down a little bit more". One aspect that the teachers particularly liked was the planned and repeated practice of the specific elements of SRSD because it gave students many opportunities to practice and remember them for subsequent classes. T2 said, "I think it was a very thorough way of

covering the genre, very repetitive in the lesson structure". Teachers also commented about how they had made actions to go with the mnemonic which had helped students learn the parts needed in the story. T1 explained, "As soon as we started adding action into it, they became a lot more involved." T2 added, "It helped them remember, didn't it? When they came back to you, you could kind of just do the action and it helped to prompt them what they needed to write".

The fourth theme was that the teachers would adapt intervention for future use. The teachers indicated that on several occasions that students spent too much time sitting on the mat before they were able to practice their writing T1: "I felt there was too much sitting in one chunk"; The students were restless and easily distracted on the mat due to sitting for too long." T2 explained, "There was a lot of sitting on the mat, and having them sit for so long is not productive". Additionally, the teachers felt that parts of the program went too fast for the less able students and they struggled to keep up. T1 explained, "For those less able, at times they couldn't keep up with the pace of the program…if we were to do it again, we would break the program down further". They also indicated that the lesson plans were sometimes too long for their allocated time slot, so they struggled to get through the entire lesson. T1 said, "At the beginning, the lesson plans were far too long. But once we got into it a bit more, they were ok. Sometimes the 'before stuff' took up a lot of the actual writing time". The time devoted to learning the features of the intervention meant other aspects of writing were not being taught. For instance, even though the program did not focus on spelling and punctuation, the teachers felt it was an important part of writing and felt that there was not enough time to add these into their program. They were unhappy that students were forgetting to use punctuation and spelling during the intervention. T1 said, "It didn't cover surface features, you still need time for that, like what is a sentence and where a sentence ends with a full stop, otherwise you can't read their writing". T1 then added later, "I think in future I would try and integrate spelling and punctuation activities into the lessons more so that those things would still get covered."

In summary, the teachers were interested in continuing to use the SRSD instruction but wanted to further adapt it to fit into the current school curriculum and their style of teaching. T1 concluded, "I think we would teach it three days max and intersperse it with other kinds of teaching that still needs to be done in writing", T2 added, "It taught some good aspects of writing enough that we're willing to use it again in the next year."

DISCUSSION

The purposes of this study were to investigate the effect of a teacher-implemented, whole class writing strategy intervention on year two students' writing performance and]investigate the social validity of the writing strategy intervention within a New Zealand context. Our first research question was: Does the teacher-implemented SRSD story writing intervention affect students' writing performance? Students in the treatment group who received the intervention and students in the comparison group who received their regular writing instruction both showed improvements in writing outcomes, which would be expected given that they both received instruction over a five-week time frame. Nevertheless, students in the treatment group showed greater improvement than students in the comparison group on holistic quality (ES = 0.70), number and quality of story writing elements (ES = 1.06), and story length (ES = 0.63). The effect sizes for holistic quality and story elements (0.70 and 1.06) were lower that other SRSD studies as reported in meta-analyses (Graham et al., 2012; Graham et al., 2013; Graham & Perin, 2007), with average effect sizes of 1.20 and 1.37, respectively. However, these effect sizes were comparable to Harris et al. (2012; 0.77 and 1.09), who used an 8-week intervention with students who were approximately 8 years of age. Thus, there was evidence that explicit interactive teaching of strategies for story writing and general writing, practice using the strategies, and strategies for self-regulation promoted student writing outcomes.

Our second research question was: What are the teachers' perceptions of the acceptance of the writing intervention? The quantitative questionnaire and qualitative interview data were complementary and provided evidence for the social validity of the intervention. For instance, high scores on the IRP-15 acceptability items were consistent with responses from the interview data in which the teachers indicated that the intervention had improved their students' writing performance, and that they found it feasible to implement into the classroom context. This suggests that teachers rated the intervention acceptable in part because it was possible to incorporate into their classrooms. The scores on the IRP-15 were similar to other SRSD studies which used this measure to determine teacher social validity, however these studies used this measure at both pre- and post-intervention (Harris et al., 2012; Harris et al., 2015).

Teachers also perceived the intervention to be very beneficial for the students. The high ratings on the beneficial item was highlighted in the interview data. The teachers spoke about how much the students enjoyed the program, the positive changes they saw in the way students were writing, and the amount of writing they were producing. This meant that the

intervention positively improved students' affective reactions to writing which we would not have known based on the questionnaire data alone.

In addition, high ratings on the IRP-15 suitability subscale was similar with the interview data, which showed the importance that teachers placed on finding an intervention that fit within the ecology of the classroom; they believed that the students enjoyed it and that their writing improved, without the teachers having to use prohibitive resources to implement the intervention. The interview data highlighted that they appreciated the prescribed and repetitive nature of the intervention. The teachers needed to spend less time planning and generating objectives for their lessons, which gave them more time to allocate to other tasks. This suggests that the teachers thought that the intervention suitably met both their needs and their students' needs. Similarly, in McKeown, Brindle, et al. (2019) thirteen out of the fourteen teachers found the detailed lesson plans helpful and an important reference tool.

While the general perception of the intervention was positive, teachers provided some suggestions for improvements. Both teachers believed that the time sitting on the mat was too long and suggested decreasing that amount taught in one lesson into smaller pieces to reduce the sitting time. They also agreed that some lessons went to fast through the process for some of the students to keep up and suggested that more time was needed with some of the lessons. In addition, they stated they would have liked to have incorporated the mechanics of writing (i.e., punctuation, spelling) into the intervention, a comment provided by teachers in previous research (McKeown, Brindle, et al., 2019).

Thus, the teachers indicated that the intervention was appropriate to meet the needs of the students, had acceptable procedures, and meaningful outcomes, a finding consistent with other teacher-implemented SRSD studies (e.g., Festas et al., 2015; Harris et al., 2012; Harris et al., 2015; McKeown, FitzPatrick, et al., 2019). This finding is important because an intervention with high social validity is more likely to be used in the future (Harris et al., 2015).

Limitations and Future Directions

There were several limitations and future directions. First, the intervention focused on story writing only, as opposed to other types of writing. Future research should investigate additional types of writing (Harris et al., 2012; Harris et al., 2015). Second, the time devoted to professional development in the SRSD program was limited due to teacher workload, which may have led to lower than expected treatment fidelity (e.g., Harris et al., 2012; McKeown, FitzPatrick, et al., 2019). Future research should consider ways to provide

manageable professional development that maximizes treatment fidelity. Third, it is unclear whether student writing outcomes or teacher perceptions of the social validity of the intervention would persist over a longer time frame. Future research should investigate students writing outcomes and teacher perceptions of social validity over a longer time frame for teacher-implemented interventions. Given the five-week duration of the intervention, the teachers indicated that they felt that some students did not have time to develop some skills to competency. An important aspect of SRSD is that students should reach mastery of each stage prior to progressing (Harris et al., 2008). However, in a whole-class intervention this can be challenging to achieve, especially given the small duration of this study. A greater number of students may benefit if the intervention has a longer duration, providing students with more time to master each step of the intervention. Alternatively, teachers could differentiate instruction for the more and less successful writers by providing small group sessions within the whole-class context. Teachers in this study were unclear how to teach small groups, and individuals using this Tier 1 model, which suggests that the teachers needed additional support or coaching during the intervention. Importantly, teachers were interested in further adapting the intervention to fit the school curriculum. Finally, this study includes a small sample of students and teachers in New Zealand, which raises the possibility of Type I error. There is currently limited research in SRSD writing interventions within a New Zealand context. Additional studies are needed within this context with different populations to evaluate its efficacy for the diverse population within New Zealand. However, it is promising that SRSD can be effective outside of the US.

Conclusion

This study demonstrated that a teacher-implemented writing intervention promoted student writing outcomes relative to a comparison group when the teachers received low-intensity professional development at a primary school in New Zealand. These results replicated previous findings in which students who received researcher implemented SRSD writing instruction demonstrated better writing outcomes than students in a comparison group in both quality and elements of the genre (e.g., Graham et al., 2005; Harris et al., 2006; Saddler & Graham, 2007) and are consistent with teacher-implemented SRSD writing instruction (Finlayson & McCrudden, 2019b; McKeown, FitzPatrick, et al., 2019). These results indicate that not only was the intervention effective, but that it had social validity, which is crucial to the long-term implementation and success of an intervention and whether teachers will persist with it.

REFERENCES

Ball, D. L., & Cohen, D. K. (1999). Developing practice, developing practioners: toward a practice-based theory of professional education. In L. Darling-Hammond & G. Sykes (Eds.), *Teaching as a learning profession: handbook for policy and practice* (pp. 3-31). San Francisco, CA: Jossey-Bass.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Inquiry, 6,* 97-113.

Callahan, K., Henson, R. K., & Cowan, A. K. (2008). Social validation of evidence-based practices in autism by parents, teachers, and administrators. *Journal of Autism and Developmental Disorders, 38,* 678–692. doi:10.1007/s10803-007-0434-9.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Earlbaum Associates.

Creswell, J., & Plano Clark, V. (2018). *Designing and conducting mixed methods research* (3rd Ed.). Thousand Oaks, California: SAGE.

Festas, I., Oliveira, A., Rebelo, J., Damiao, M., Harris, K., & Graham, S. (2015). Professional development in self-regulated strategy development: Effects on the writing performance of eighth grade Portuguese students. *Contemporary Educational Psychology, 40,* 17-27.

Finlayson, K., & McCrudden, M. T. (2019a). Teacher-implemented writing instruction for elementary students: a literature review. *Reading & Writing Quarterly, 36,* 1-18. doi: 10.1080/10573569.2019.1604278

Finlayson, K., & McCrudden, M. T. (2019b). Teacher-implemented self-regulated strategy development for story writing with 6-year-olds in a whole-class setting in New Zealand. *Journal of Research in Childhood Education, 33,* 307-322. doi: http://dx.doi.org.helicon.vuw.ac.nz/10.1080/02568543.2019.1568328

Gillespie Rouse., A., & Kiuhara, S. (2017). SRSD in writing and professional development for teachers: Practice and promise for elementary and middle school students with learning disabilities. *Learning Disabilities Research & Practice, 32,* 180–188. https://doi.org/10.1111/ldrp.12140

Graham, S. (2006). Strategy instruction and the teaching of writing. In C. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *Handbook of writing research* (pp.187-207). New York, New York: Guilford.

Graham, S. (2013). *It all starts here: Fixing our national writing crises from the foundation*.

Columbus, Ohio: Saperstein Associates.

Graham, S., & Harris, K.R. (2014). Conducting high quality writing intervention research: Twelve recommendations. *Journal of Writing Research, 6,* 89-123. doi: 10.17239/jowr-2014.06.02.1

Graham, S., & Harris, K.R. (2016). A path to better writing: evidence-based practices in the classroom. *Reading Teacher, 69,* 359-365.

Graham, S., & Harris, K.R. (2018). Evidence-based writing practices: A meta-analysis of existing meta-analyses. In R. Fidalgo, K.R. Harris, & M. Braaksma (Eds.). *Design principles for teaching effective writing: Theoretical and empirical grounded principles* (pp. 13-37). Hershey, PA: Brill Editions

Graham, S., Harris, K.R., & McKeown, D. (2013). The writing of students with LD and a meta-analysis of SRSD writing intervention studies: Redux. In L. Swanson, K.R. Harris, & S. Graham (Eds.), *Handbook of Learning Disabilities* (2nd Edition; pp. 405-438). MY: Guilford Press.

Graham, S., Harris, K., & Mason, L. (2005). Improving the writing performance, knowledge, and self-efficacy of struggling young writers: The effects of self-regulated strategy development. *Contemporary Educational Psychology, 30,* 207-241.

Graham, S., McKeown, D., Kiuhara, S., & Harris, K. R. (2012). A meta-analysis of writing instruction for students in the elementary grades. *Journal of Educational Psychology, 104,* 879-896. doi: http://dx.doi.org/10.1037/a0029185

Graham, S., & Perin, D. (2007). A meta-analysis of writing instruction for adolescent students. *Journal of Educational Psychology, 99,* 445-476. doi:10.1037/0022-0663.99.3.445

Graham, S., & Sandmel, K. (2011). The process writing approach: A meta-analysis. *Journal of Educational Research, 104,* 396-407. doi:10.1080/00220671.2010.488703

Grossman, P., & McDonald, M. (2008). Back to the future: directions for research in teaching and teacher education. *American Educational Research Journal, 45,* 184-205.

Hancock, R. (1997). Why are class teachers reluctant to become researchers? *British Journal of In-service Education, 23,* 85-99.

Harris, K. R., & Graham, S. (1996). *Making the writing process work: Strategies for composition and self-regulation* (2nd ed.). Cambridge: Brookline Books.

Harris, K., Graham, S., & Adkins, M. (2015). Practice-based professional development and self-regulated strategy development for tier 2, at-risk writers in second grade. *Contemporary Educational Psychology, 40,* 5-16.

Harris, K., Graham, S., & Mason, L. (2003). Self-regulated strategy development in the classroom: Part of a balanced approach to writing instruction for students with disabilities. *Focus on Exceptional Children, 35,* 1-16.

Harris, K., Graham, S., & Mason, L. (2006). Improving the writing knowledge, and motivation of struggling young writers: Effects of self-regulated strategy development with and without peer support. *American Educational Research Journal, 43,* 295-340.

Harris, K., Graham, S., Mason, L., & Friedlander, B. (2008). *Powerful writing strategies for all students.* Baltimore: Brookes Publishing.

Harris, K.R., Lane, K.L., Graham, S., Driscoll, S., Sandmel, K., Brindle, M., & Schatschneider, C. (2012). Practice-based professional development for self-regulated strategies development in writing: A randomized controlled study. Journal of Teacher Education, 63 (2), 103-119

Harris, K. R., Ray, A., Graham, S., & Houston, J. (2019). Answering the challenge: SRSD instruction for close reading of text to write to persuade with 4th and 5th grade students experiencing writing difficulties. *Reading and Writing: An Interdisciplinary Journal, 32,* 1459-1482.

Hillocks, G. J. (1984). What works in teaching composition: A meta-analysis of experimental treatment studies. *American Journal of Education, 93,* 133-170.

King, A. (2008). In vivo coding. In L. M. Given (Ed.), *The SAGE encyclopedia of qualitative research methods* (pp. 473-473). Thousand Oaks, California: SAGE Publications, Inc. doi: 10.4135/9781412963909.n240

Lane, K. L., Harris, K. R., Graham, S., Driscoll, S., Sandmel, K., Morphy, P., . . . House, E. (2011). The effects of self-regulated strategy development for second-grade students with writing and behavioral difficulties: A randomized controlled trial. *Journal of Research on Educational Effectiveness, 4,* 322-353.

Martens, B., Witt, J., Elliott, S., & Darveaux, D. (1985). Teacher judgments concerning the acceptability of school-based interventions. *Professional Psychology: Research and Practice, 16,* 191–198. doi:10.1037/0735-7028.16.2.191

McKeown, D., Brindle, M., Harris, K., Graham, S., Collins, A., & Brown, M. (2016). Illuminating growth and struggles using mixed methods: practice-based professional development and coaching for differentiating SRSD instruction in writing. *Reading & Writing: An Interdisciplinary Journal, 29,* 1105-1140. doi: 10.1007/s11145-016-9627-y.

McKeown, D., Brindle, M., Harris, K.R., Sandmel, K., Steinbrecher, T.D., Graham, S., Lane, K.L., & Oakes, W.P. (2019). Teachers' voices: Perceptions of effective professional development and classwide implementation of self-regulated strategy development in writing. *American Educational Research Journal, 56*, 753-791.

McKeown, D., FitzPatrick, E., Brown, M., Brindle, M., Owens, J., & Hendrick, R. (2019). Urban teachers' implementation of SRSD for persuasive writing following practice-based professional development: Positive effects mediated by compromised fidelity. *Reading and Writing: An Interdisciplinary Journal, 32,* 1483-1506. doi: 10.1007/s11145-018-9864-3.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis.* Thousand Oaks, CA: Sage.

Ministry of Education, New Zealand. (2020). *Writing/Tuhituhi: Primary schooling what we have found.* https://www.educationcounts.govt.nz/statistics/indicators/main/education-and-learning-outcomes/writing-tuhituhi-primary-schooling

O'Dwyer, L. M., and Parker, C. E. (2014). *A primer for analyzing nested data: multilevel modeling in SPSS using an example from a REL study* (REL 2015–046). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Northeast & Islands. Retrieved from http://ies.ed.gov/ncee/edlabs.

Parr, J. M., & Jesson, R. (2016). Mapping the landscape of writing instruction in New Zealand primary school classrooms. *Reading & Writing: An Interdisciplinary Journal, 29,* 981-1011.

Patton, M. (2002). *Qualitative research and evaluation method (3rd ed.).* Thousand Oaks, CA: Sage.

Saddler, B. (2006). Increasing story writing ability through self-regulated strategy development: Effects on young writers with learning disabilities. *Learning Disability Quarterly, 29,* 291-305.

Saddler, B., & Graham, S. (2007). The relationship between writing knowledge and writing performance among more and less skilled writers. *Reading and Writing Quarterly, 23,* 231-247.

Saddler, B., Moran, S., Graham, S., & Harris, K. (2004). Preventing writing difficulties: The effects of planning strategy instruction on the writing performance of struggling writers. *Exceptionality, 12,* 3-17.

Schwartz, I. S., & Baer, D. M. (1991). Social validity assessments: Is current practice state of the art? *Journal of Applied Behavior Analysis, 24*, 189–204.

Tunmer, W., & Chapman, J. (2015). The development of New Zealand's national literacy strategy. In W. Tunmer & J. Chapman (Eds.), *Excellence and equity in literacy education. The case of New Zealand*. London: Palgrave Macmillan.

Witt, J. C., & Elliott, S. N. (1985). Acceptability of classroom intervention strategies. In T. R. Kratochwill (Ed.), *Advances in school psychology* (Vol. 4., pp. 251-288). Mahwah, New Jersey: Erlbaum.

Wolf, M. M. (1978). Social validity: the case for subjective measurement or how applied behavior analysis is finding its heart. *Journal of Applied Behavior Analysis, 11,* 203–214. doi:10.1901/jaba.1978.11-203.

Zumbrunn, S., & Bruning, R. (2013). Improving the writing and knowledge of emergent writers: the effects of self-regulated strategy development. *Reading & Writing: An Interdisciplinary Journal, 26,* 91-110.

APPENDIX A

Teacher Interview Protocol

1. What did you find acceptable about the intervention? What would make it more acceptable? Was there anything that was unacceptable?
2. Was this intervention effective? In what ways? Anything ineffective? What would make it more effective in the future?
3. Would you recommend it to other teachers? Why/why not?
4. Did the intervention align with the goals of the school, if so how? Were there ways in which it didn't?
5. Were there any negative side effects for the students?
6. To what extent do you think the intervention was appropriate for students from a variety of backgrounds?
7. How was the intervention different from other writing programs you have tried?
8. Was this intervention accessible for students from different backgrounds?
9. To what extent was the intervention reasonable for teaching writing?
10. Did you like the procedures in the intervention? Why/why not? What could you do in the future?
11. Was the intervention plan a good way of self-regulating writing and improving student writing?
12. Do you think the intervention could be more manageable? How?
13. Did the monitoring plan give you the information needed to evaluate the intervention?
14. Do you believe the intervention was beneficial for primary school students? Why/why not?
15. What did work in the intervention?
16. What did not work in the intervention?
17. What would you do differently if you were to implement the intervention again?
18. Any other thoughts you would like to add?
    (a) the intervention duration,
    (b) the strategy,
    (c) the lesson plans,
    (d) the writing prompts,
    (e) the overall experience.

Table 3. *Study 1 Student Demographic Data*

Variables	Intervention group			Comparison group		
	School A	School A	Total	School B	School C	Total
	Class 1	Class 2				
	n = 26	*n* = 23	*n* = 49	*n* = 21	*n* = 24	*n* = 45
Gender						
Female	13	10	23	11	11	22
Male	13	13	26	10	13	23
Year level						
Year 1	0	10	10	0	0	0
Year 2	26	13	29	21	24	45
Ethnicity						
NZ European	19	15	34	11	20	31
NZ Maori	2	1	3	2	4	6
Pasifika	1	2	3	2	0	2
Asian	3	3	6	4	0	4
Other	1	2	3	2	0	2
NS writing						
Above	2	4	6	2	3	5
At	10	12	22	14	11	25
Below	14	7	21	5	9	14
NS reading						
Above	5	7	12	9	5	14
At	18	8	26	11	13	24
Below	3	8	11	1	6	7
Struggling students	3	7	10	7	9	16

Note. NS = New Zealand National Standards Data; Struggling student is a student who has been referred to an outside agency for either behavior, or learning disability (e.g., dyslexia; ADHD).

Table 4. *Study 1Writing Performance Results for Both Groups Pre- and Post-Intervention*

	Treatment group			Comparison group		
	Pre *M (SD)*	Post *M (SD)*	Diff score	Pre *M (SD)*	Post *M (SD)*	Diff score
Writing components	4.53 (1.68)	5.17 (1.83)	0.64	5.04 (1.11)	5.10 (1.14)	0.06
Holistic quality	3.25 (1.23)	4.36 (1.24)	1.11	3.59 (1.26)	3.98 (1.35)	0.39
Word count	59.40 (23.00)	90.10 (32.40)	30.70	59.90 (24.40)	72.60 (32.40)	12.60

Table 5. *Study 1 Teachers' IRP-15 Scores*

Scales/Subscales	Teacher		Max possible score
	1	2	
Total acceptability	86	87	102
Acceptable	5	5	6
Appropriate	16	15	18
Effective	5	5	6
Suitable	10	11	12
Consistent	10	11	12
Side-effects	6	6	6
Fair	5	5	6
Reasonable	5	5	6
Likability	5	4	6
Meet purpose	5	5	6
Manageable	4	4	6
Informative	4	5	6
Beneficial	6	6	6

CHAPTER FOUR:
A 17-WEEK TEACHER-IMPLEMENTED SRSD STORY WRITING INTERVENTION WITH YEAR 2 STUDENTS IN NEW ZEALAND: A MIXED METHODS STUDY

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Note: Since submitting the thesis this article is now in press with minor changes from the original chapter. **Statements of Contributions of Joint Authorship**

Finlayson, K: (Candidate)

Writing and compilation of manuscript, researched studies, data analysis, preparation of tables and figures.

McCrudden, M: (Principal Supervisor)

Supervised and assisted with manuscript compilation, data analysis, editing and co-author of manuscript.

ABSTRACT

We investigated the effectiveness and social validity of a 17-week teacher-implemented whole-class Self-Regulated Strategy Development (SRSD) story writing intervention with 6-7-year-old students in New Zealand. We used a mixed-methods intervention design. In the quantitative strand, we conducted a quasi-experiment in which students either received SRSD writing instruction or their regular writing instruction. We collected student writing samples before and after the intervention and teachers completed a social validity questionnaire after the intervention. A mixed-model ANOVA with SRSD instruction as the between-subject variable and time as the within-subject variable indicated that students in the treatment group had higher quality stories (ES = 0.97), included more essential story writing components (ES = 1.61), and wrote longer stories (ES = 1.06), after the intervention than students in the comparison group. In the qualitative strand, we interviewed the classroom teachers to gain deeper understandings of their perceptions of the social validity of the intervention. They indicated that the intervention was appropriate to meet their goals, was beneficial for the students, and they enjoyed implementing the intervention. Thus, the intervention was effective, and teachers perceived it to have social validity. Limitations and future directions are discussed.

Keywords: elementary writing, self-regulated strategy development, social validity, teacher-implemented, writing instruction

INTRODUCTION

Writing is a skill we use to communicate with others and to extend our knowledge in a variety of ways in different contexts. In classrooms, students use writing to demonstrate understandings about topics (Graham, 2019). In the workplace, individuals in both white-collar and blue-collar jobs communicate about work-related tasks through writing (Light, 2001). At home and in the community, we connect with others through writing via social networks, email, and texts. We use writing in a variety of ways, underscoring the importance of developing students' writing skills.

Meta-analyses and literature reviews on school-based writing interventions indicate that the most effective way to improve student writing performance is through explicit strategy instruction that includes a focus on self-regulation (Graham, 2006; Graham & Harris, 2018; Graham et al., 2012; Graham, Harris, & McKeown, 2013; Graham & Perin, 2007; Graham & Sandmel, 2011; Koster et al., 2015). In particular, self-regulated strategy development (SRSD) writing instruction is effective in promoting student writing outcomes independently of age, ethnicity, or gender and is a flexible option for catering to a range of student needs and contexts (one-on-one, small group, and whole-class). Further, SRSD (ES = 1.17) is more effective than strategy instruction alone (ES = 1.02) or other interventions, such as peer assistance (ES = 0.89), teaching transcription skills (ES = 0.55), or assessing writing (ES= 0.42; Graham et al., 2012).

Self-regulated Strategy Development

SRSD writing instruction is an interactive, multicomponent, mastery-based intervention that is responsive to students' needs as developing writers (Harris et al., 2003; Harris et al., 2008; Harris et al., 2019; McKeown, FitzPatrick, et al., 2019). The instruction consists of six recursive stages (develop background knowledge, discuss it, model it, memorize it, support it, and independent performance) that are designed to promote students motivation for writing and attitudes toward writing (Harris et al., 2008; Harris et al., 2019; McKeown, FitzPatrick, et al., 2019). Students are taught strategies for successfully completing writing tasks and knowledge and self-regulatory skills necessary to execute the strategies and to better understand the task (Harris et al., 2015; Harris et al., 2019). Writing skills are scaffolded, which are slowly removed as students become more skilled and confident at writing. Further, students receive self-regulation supports which help them plan, monitor, and evaluate their learning (Bandura, 1994; Harris et al., 2008). Students learn to plan their writing activities, monitor their performance,

evaluate their previous and current performances, and react to their performance outcomes (Bandura, 1986; Schunk & Zimmerman, 2007). Students who respond to SRSD can effectively self-regulate their progress towards a learning goal and adjust their thoughts and actions as needed to reach their goals. There is strong empirical support for the effectiveness of researcher-implemented SRSD writing instruction in promoting student writing outcomes based on evidence reported from four meta-analyses (Graham, 2006; Graham & Perin, 2007; Graham et al., 2012; Koster et al., 2015).

While researcher-implemented interventions are important for establishing the efficacy of an intervention, teacher-implemented interventions are important for establishing the feasibility and sustainability of an intervention in a classroom environment, particularly in primary classrooms. Of the 20 studies reported in the aforementioned meta-analyses, 16 included primary school students (grades K-6) and of those, one was implemented by the classroom teacher in a whole-class setting (Graham, 2006; Graham & Perin, 2007; Graham et al., 2012; Koster et al., 2015). A recent literature review identified 13 experiments involving teacher-implemented writing instruction in primary schools (Finlayson & McCrudden, 2019a); nine of the studies used SRSD (e.g., Harris et al., 2012; Harris et al., 2015; McKeown et al., 2016; McKeown, FitzPatrick, et al., 2019). The findings from the review indicated that whole-class writing interventions can be effective with primary students from a range of ethnic backgrounds and settings (e.g., rural, suburban, urban) in North America (US, Canada) and Western Europe (Belgium, Netherlands, Spain). Nine studies used writing strategy instruction, and four of which used SRSD, and all studies reported improvements in student writing outcomes. The longevity of the intervention did not appear to influence the effectiveness of the intervention (studies ranged from four to five weeks to the intervention lasting the whole school year), although the optimal duration was not established. Eleven of the 13 studies were implemented with students in grades four to six (approximately 9- to 12-year-olds); only two studies included students in grade two (approximately 6- to 7-year-olds). Teacher training was important for the success of the interventions such that teachers in 12 of the 13 studies reported that the teachers received professional development on teaching writing and seven studies reported follow-up support and guidance throughout the intervention. Six of the studies reported social validity data from the teachers, and findings indicated that teachers were positive about the intervention. Thus, there is

a need for more research with early primary students and to develop a deeper understanding of the social validity of such interventions from the perspectives of teachers who implement them.

The social validity of a writing intervention influences whether teachers will implement it in their classrooms. Social validity consists of three related elements: the goals of the intervention (whether the intervention targets behaviors that are socially significant to stakeholders), the acceptability of procedures (whether the treatment procedures are acceptable and appropriate), and the social importance of intervention outcomes (whether the effects of the intervention are important to the stakeholders; Wolf, 1978). The social validity of an intervention influences its sustainability and effectiveness in real-world settings (Cook et al., 2013; Reimers et al., 1987; Schwartz & Baer, 1991). Teachers are less likely to adopt interventions they perceive to be impractical, unacceptable, or do not address meaningful goals and outcomes (Leko, 2014; Lloyd & Heubusch, 1996).

The acceptability of procedures is a barrier to the implementation of evidence-based interventions. One barrier is time. The time needed to plan and implement an intervention can affect whether a teacher will use it. Teachers have multiple, competing time demands and may struggle to prioritize writing instruction. As a result, interventions that require excessive amounts of time to plan and/or implement may not be seen as feasible. For instance, McKeown, FitzPatrick, et al. (2019) reported that teachers found it difficult to find time to implement a writing intervention due to the pressures to prioritize standardized testing and other curriculum areas. Another barrier is the ability to address a range of student needs within a classroom. Classrooms commonly have 20-35 students. Students in these classrooms often have a range of writing skills. Given the size of classes and the range of writing skills within those classrooms, teachers often find it difficult to provide writing instruction that is responsive to all students' needs. In these situations, struggling students may not get the support they require (Gamoran & Weinstien, 1995; McLauglin & Talbert, 1993; Tomilinson et al., 2003). Teacher-implemented interventions need to be flexible so that the needs of all students can be met, particularly when there is not enough funding to provide one-on-one support for students who need it.

Writing in New Zealand

New Zealand schools are self-governing and tests are not mandated until the last three years of schooling (Years 11-13). Schools interpret and apply the education curriculum based on their context. Further, schools are financially independent and decide on their use of professional

development funds; therefore, participation in national professional learning is voluntary (Parr & Jesson, 2016). As a result, writing instruction in New Zealand differs across schools and some forms of writing instruction being used are not evidence-based. According to Parr and Jesson (2016), many teachers in New Zealand have limited exposure to and knowledge of evidence-based writing pedagogy and there is limited data for evaluating the effects of writing instruction on student writing outcomes in New Zealand primary schools. Therefore, there is a need to identify evidence-based practices suitable for students in New Zealand can promote student writing outcomes.

The Present Study

This study investigates the effect of a teacher-implemented whole-class SRSD writing intervention in year 2 classrooms (equivalent to 1st-grade in the US). To date, there is limited research that suggests teachers can effectively implement writing interventions, and there is even less known about collaboratively planned SRSD interventions success rate (Wong et al., 2008; Harris et al., 2015; Harris et al., 2012; Finlayson & McCrudden, under review). Additionally, the research in primary schools is minimal especially at the year 2 level, and with whole-class instruction (i.e., tier one). The focus for this study was on story writing as that fit with the school's curriculum and needs of the students. A recent study by Finlayson and McCrudden (under review) looked at if a 5-week teacher-implemented SRSD intervention was effective at improve year 2 students' writing performance in a New Zealand context. Their results were promising and the interview data from the teachers gave valuable insights into ways to improve SRSD to further embed it into a New Zealand context.

The aim of the present study was to investigate the impact of a long-term, teacher-implemented SRSD story writing intervention on 6-7-year-old students' writing performance and teacher perceptions of the social validity of the intervention. Our inquiry was guided by two research questions. The first question was: Does a 17-week teacher-implemented whole-class SRSD writing intervention promote student writing outcomes in a year 2 classroom? It is important to identify ways to promote student writing outcomes in which teachers and researchers work collaboratively so that the program becomes sustainable over the long term. Further, if teachers have more choices and a voice in respect to the intervention implementation they will implement interventions at a higher quality than teachers who do not have the same choices (McKeown, FitzPatrick, et al., 2019; Johnson et al., 2013). We wanted to investigate

whether student writing outcomes would improve relative to a comparison group when the teachers were involved in the planning and implementation of an SRSD writing intervention. We predicted that students in both groups would improve due to the longevity of the intervention and the fact they were both receiving writing instruction. However, we expected students in the treatment group to show greater improvements because previous research has shown that explicit strategy instruction and self-regulatory skills have promoted student writing outcomes (e.g., Koster et al., 2015). However, the majority of these studies have been researcher-implemented, were conducted in small-groups or one-to-one sessions, and involved older students so it was unclear the extent a teacher-implemented whole-class intervention with younger students would be successful. The second question was: To what extent was the writing intervention socially valid? For an intervention to be adopted and sustainable, it is important that the teachers find the intervention to be acceptable, effective, and manageable. Thus, we wanted to investigate the effectiveness of the writing intervention and its social validity.

These research questions are important because more research is needed on teacher-implemented writing instruction, which can provide insights into how to effectively teach writing in schools. This can include the impact on student writing outcomes, but also teacher involvement in decision-making before and during an intervention in which they are responsible for the intervention of an extended writing intervention with early elementary students.

METHODS

We used a mixed methods intervention design (Creswell & Plano Clark, 2018). This two-phase design began with the collection and analysis of quantitative data, followed by the collection and analysis of qualitative data. In the quantitative phase, we conducted a classroom-based, two-group, pre-post quasi-experiment. Primary school students in intact classrooms received either SRSD writing instruction (intervention group) or received regular writing instruction (comparison group) over a 17-week period. This specific duration was chosen because it fit within the school schedule (e.g., ended before the start of the last school term, which includes more extracurricular activities) and we wanted to investigate the impact of a lengthy intervention as this meant that more students would more likely gain mastery of each stage of the intervention. Students in both groups wrote three stories before and after the intervention and the teachers completed a social validity questionnaire about the intervention. In

the follow-up qualitative phase, we interviewed the teachers to investigate in more detail their perceptions of the social validity of the writing intervention.

Context and Participants

This study was conducted in three suburban primary schools located on the lower north island of New Zealand. Schools in New Zealand are categorized based on a decile system rating scale from one to ten, which is determined by the socio-economic statues of the community in which the school is located. Decile ten schools have the lowest proportion of the low socio-economic households in the community, and decile one schools have the highest proportion. School A and C were decile ten schools and School B was a decile five school. All students were in year two (6-7-year-olds; equivalent to 1st grade in the US). Each class was co-educational, mixed ability, and inclusive (i.e., had students with and without disabilities). The two treatment classes were in School A which served 219 students from years 1 to 6. The two comparison classrooms were in School B (382 students from years 1-6), and School C (497 students from years 1-8). The students were predominantly New Zealand European (range = 63%-77%). The intervention began in the first quarter of the school year. Before the intervention, all students received their regular writing instruction for 40 to 50 minutes per day for at least four days a week. This involved 10 to 15 minutes of whole-class instruction, followed by individual writing.

Students. There were 71 year 2 students in four classrooms (29 in treatment group and 42 in comparison group; see Table 6). Data from an additional three students (two in the treatment group; one in the comparison group) were not included because they missed all pre-intervention measures or all post-intervention measures. Additionally, one of the classrooms in the treatment group included both year one and year two students; although the year one students received the SRSD intervention their data were not included in this study. The average age of students the treatment group was 6.0 years (*SD* = 0.45) and the average age of students in the comparison group was 6.4 years (*SD* = 0.50). None of the students had knowledge of, or experience with, SRSD writing instruction.

Teachers. Four female teachers participated in the study, two in each condition, all four self-identified as New Zealanders of European descent. The teachers in the treatment condition classrooms had 8 and 26 years of overall teaching experience, respectively, and four and six years of experience in year two. These two teachers had previously participated in a shorter 5-week intervention six months earlier with different students where they received four hours of

training over four days, using a practice-based approach and coaching from the researcher throughout the intervention (Finlayson & McCrudden, under review). Originally, these teachers were recruited through snowball sampling (see Finlayson & McCrudden, under review). The two teachers in the comparison condition classrooms had 5 and 21 years of overall teaching experience, respectively, and four and six years of experience teaching in year two. These two teachers showed an interest in being participants in the study but were unable to participate in the treatment at the time of the study.

The first author is a female of New Zealand European descent and a qualified primary school teacher with seven years of teaching experience within the lower primary grades. The second author is a male of Irish American descent and has been a university faculty staff member for 15 years (10 in New Zealand).

Quantitative Phase

Writing measures. In collaboration with the teachers, we developed six story writing prompts. Each prompt was a cartoon image of a scene (e.g., a little boy on a jetty looking down into the water; a duck with its head stuck in a barn with other animals looking on). The students were asked to generate ideas about what was happening in the picture and to write a story about it. The pictures were sourced from the teachers' materials. The writing prompts were similar to prompts we had used in previous SRSD studies, and they led to similar writing performance in those studies (Finlayson & McCrudden, 2019b; Finlayson & McCrudden, in press).

The writing prompts were randomly selected, and students received three different writing prompts before the intervention, and three different writing prompts after the intervention (Saddler, 2006; Saddler, et al., 2004; Zumbrunn & Bruning, 2013). We used three writing prompts to balance practical and measurement considerations. Each writing sample took approximately 40 minutes of class time to complete over three different days. Three written responses provided an estimate of each students' story writing ability across multiple data points while also considering the time demand placed on classroom instruction. Prior to scoring, identifying information was removed and a research assistant typed each story, correcting for spelling and grammar. Then, each story was scored for holistic quality, story elements, and length.

Holistic quality. We assessed each story with respect to organization, development, sentence fluency, word choice, and audience awareness, with equal weighting for each feature

(McKeown, FitzPatrick, et al., 2019; Finlayson & McCrudden, under review). We used an 8-point scale (1 = lowest quality to 8 = highest quality; Graham et al., 2005; Harris et al., 2006) to score each story. Prior to individually scoring each story, the first author and a trained research assistant determined parameters for each scale. Anchor papers from Finlayson & McCrudden (under review) were used for each of the corresponding numbers in the scale (1 to 8) to assist with scoring the stories. Each rater independently scored all stories. Interrater reliability (94%) was comparable with other SRSD studies (Finlayson & McCrudden, under review; Harris et al., 2012; Harris et al., 2015; Harris et al., 2019; McKeown, FitzPatrick, et al., 2019). We resolved differences through discussion until 100% agreement was reached on each item.

Story elements. We scored each writing sample for each of the seven essential story components (characters, setting, time, goals of the main character, actions of the main character, ending, and characters' feelings) on a scale of 0 (absent), 1 (present but not developed), or 2 (developed; Zumbrunn & Bruning, 2013). Thus, overall scores for each writing sample could range from 0 to 14. The first author and a trained research assistant scored all the writing samples using a rubric devised by Finlayson and McCrudden (under review). The scorers marked 20 samples together to establish consistency in application of rating criteria. The scorers independently marked the remaining samples. Interrater reliability (85%) was similar to previous studies (Harris et al., 2012; Harris et al., 2015; Harris et al., 2019; McKeown, FitzPatrick, et al., 2019). Differences in scores were resolved through discussion to reach 100% agreement.

Story length. Story length was computed by counting the number of words written for each story. The number of words was calculated using the word count function in Microsoft Word. The length of each story was recorded and checked for reliability by another research assistant with 100% accuracy.

Intervention Rating Profile for Teachers (IRP-15). The IRP-15 is a 15-item scale that assesses teachers' perceptions of the social validity or acceptability of an intervention (Witt & Elliot, 1985), with a focus on teachers' acceptance and willingness to continue teaching the strategies to their current students and other students after an intervention. The IRP-15 was designed to provide a measure of general acceptability and has been shown to have high reliability ($\alpha = .98$; Martens et al., 1985). The teachers rated their level of agreement with the statements (e.g., I would suggest the use of this intervention to other teachers) on a 6-point

Likert-type scale (1= *strongly disagree* to 6= *strongly agree*) after the intervention. Higher scores reflect greater acceptability of the intervention.

Teacher professional development. On a weekly basis while implementing the study, the first author did classroom observations and met with the teachers to provide feedback and support related to the observations and the teachers' lesson plans. These coaching sessions designed to support the teachers' implementation of the SRSD intervention.

Intervention. We obtained informed consent from the school principals, teachers, and parents/caregivers before beginning the study. We obtained student assent orally in individual one-on-one meetings with the first author or research assistant. After the teachers in the treatment group had participated in professional development, they began instruction in their classroom. The intervention consisted of content about story writing (the mnemonic) and explicit strategy instruction on how to apply the mnemonic (SRSD). Students were explicitly taught story writing components using a mnemonic WWW + What = 2, How = 2 (Who is the main character? When does the story take place? Where does the story take place? What does the main character do or want to do, what do other characters do? What happens then? What happens with other characters? How does the story end? How does the main character feel? How do other characters feel?; Harris et al., 2008). To help students learn these strategies, we provided each child with a poster of these mnemonics. Previous SRSD studies have used this mnemonic with comparably aged students who demonstrated improved writing outcomes (Finlayson & McCrudden, 2019b; Harris et al., 2006; Zumbrunn & Bruning, 2013). They used a story to illustrate the teaching point for the week (i.e., character, setting, time, actions, goals, feelings, ending). They picked the story to clearly portray one of the seven components of a story. Approximately six lessons were taught on each aspect of the mnemonic. This was done to ensure that each student was given enough time to master each component before introducing a new component. Lessons also provided support for self-regulated writing: goal-setting, self-instructions, self-monitoring, and self-assessments and self-reinforcement (Harris et al., 2012).

The intervention mirrored the basic SRSD structure, which includes six recursive steps (a) Develop background knowledge - students develop pre-skills (e.g., vocabulary, concepts) needed to use the writing and self-regulation strategies; (b) Discuss it - the teacher and students discuss the value and benefits of the writing and self-regulation strategies; (c) Model it – the teacher models the writing strategy and self-instructions, while thinking aloud when writing; (d)

Memorize it - students memorize the steps in the writing strategy; (e) Support it - teachers scaffold student strategy use; (f) Independent performance - student write without teacher support (see Harris et al., 2008). Thus, the teachers cycled through each of the six SRSD steps to teach each element of the mnemonic until students had mastered all elements of the mnemonic. The teachers implemented the intervention incrementally and recursively; for example, once students had learned about characters, they still received character descriptions in the subsequent writing lesson even if the target of the next lesson was on setting. This was done to reinforce previous learning and introduce new ideas and skills.

The students in the treatment group had approximately four lessons a week for 17-weeks over three terms (61 overall lessons). The teachers worked together to plan the lessons and to develop resources, but they independently taught SRSD in their classrooms. Both teachers taught the same lessons at the same time. Their classrooms were adjoining. When students were writing independently, they were able to do their work in either classroom. The resources used were adapted from Harris et al. (2008) to reflect the procedural nature of the lessons. During this time, the students in the comparison group received their regular classroom instruction, which the first author observed on 10 occasions per classroom spread across the 17-weeks. The teachers typically introduced the writing topic and task and then modelled task performance for 15 to 20 minutes. Then students would sit individually and write independently for up to 30 minutes until they completed their stories or class ended. Teacher moved around the room helping students, or groups of students when needed.

Fidelity of SRSD lessons. We measured treatment fidelity with observations and teacher self-report. After each session, the teachers completed a checklist that included the main aspects of SRSD (e.g., test memory for the mnemonic, identify the parts in a story, plan using a graphic organizer, write story using plan). We calculated treatment fidelity by dividing the number of steps completed by the number of steps possible (seven possible steps). Self-report indicated fidelity at 89%. The first author observed eight sessions (33%). A second observer was present for 25% of these same sessions. They used the same checklist as the teachers to insure the fidelity of the treatment. The two researchers determined fidelity was 92% from the lessons in which they jointly observed. Interobserver agreement (IOA) was calculated by dividing the number of agreements by the total number of steps scored (IOA = 100%). The first author also

wrote anecdotal notes about what she observed, which she discussed with the teacher at the end of the lesson and recommend changes if needed.

Data collection. Teachers in both conditions administered three writing prompts at pre-intervention (one per day) using a scripted procedure. Students had 40 minutes to complete their stories, were encouraged to plan their stories, and could use their alphabet cards, but no teacher guidance was provided. At the end of each writing period, the teachers rewrote words in the students' stories to make them legible. At post-intervention (within one week after the intervention), teachers in both conditions administered three different writing prompts (one per day) using the same scripted procedure they had used at pre-intervention and the teachers completed the IRP-15.

Data analysis. We analyzed the writing performance data using a 2 (SRSD instruction: yes vs. no) x 2 (time: pre-intervention vs. post-intervention) mixed model ANOVA with SRSD instruction as the between-subjects variable and time as the within-subjects variable. Scores were combined and averaged for each student at pre- and post-test. Specifically, students received a raw score for each writing prompt. Then, we created an average score for each participant at each time point. For example, if a student had pre-test scores on the three writing prompts of 2, 3, and 3, respectively, then the student's pre-test score would be 2.67 or (2+3+3= 8/3 = 2.67). For all post-hoc tests, we used Tukey's HSD which controlled for family-wise error at the .01 level.

We computed effect sizes using the joint standard deviation in the denominator to determine the size of the differences between groups' change scores (post- minus pre-intervention scores) and were calculated to examine differences in growth demonstrated by each group and are reported in text. According to Cohen (1988), effect sizes can be evaluated as small (0.2), medium (0.5), and large (0.8). We were unable to use multilevel regression modeling because of insufficient sample size (O'Dwyer & Parker, 2014). We set all tests of significance at the $p < .01$ level to minimize the likelihood of Type I error. Further, there were no differences between the two classrooms in the comparison group on any of the dependent variables. The two classrooms in the treatment group worked in a shared space and received their lessons jointly by both teachers. For the IRP-15, we reported the teacher's scores for both the total scale and for each sub-scale.

Qualitative strand

Interview protocol. We developed the teacher interview protocol (see Appendix) to elicit teacher perceptions of the aims, procedures, and outcomes of the writing intervention. The questions related to the items on the IRP-15 questionnaire the teachers had completed after the intervention. This was done to gain greater insights into their questionnaire responses (e.g., Did you like the procedures in the intervention? Why/why not? What could you do in the future). We also asked the teachers to compare their experiences with the current intervention and the previous intervention.

Data collection. The two intervention teachers participated in a joint interview with the first author one week after the intervention. The interview was scheduled as close to the completion of the intervention as possible to facilitate teachers' memories of the intervention. Teachers brought notes and lesson plans to support their responses. These context items helped to support the validity of responses given. The interview data was collected via audiotaped face-to-face interview and the interview lasted approximately 40 minutes.

Data analysis. The first author analyzed verbatim transcripts of the audio-taped interview using thematic analysis (Braun & Clarke, 2006) in a four-step process. First, the first author listened to the interview and read the transcription to get a holistic sense of the data. No sorting or coding was done during this step. Second, she coded the transcripts inductively for meaningful phrases pertaining to teachers' thoughts towards the intervention. For example, comments such as, "They are adding more ideas to their stories" (T1), and "I enjoy reading their stories now because they are more interesting to read" (T2), were extracted because they pertained to the teachers' perceptions of the intervention. Third, she grouped the phrases together based on commonalities and created codes that expressed their commonalities. For example, the phrases, "They are adding more ideas", and "Their stories are more interesting to read" were combined to create the code "Student improvement". In the example above, the coded phrases indicated that student writing improvement was deemed an important aspect of the intervention. Fourth, themes were identified. The codes were compared and examined to determine relevant connections between them. Further, a research assistant who was not involved with the interview analyzed the data on her own. Then they discussed the codes and themes with the first author, and compared the themes generated in the analysis with original statements made by the teachers to ensure the accuracy of the codes and themes. This triangulation of the first author's inferences

with those of another researcher called debriefing was important for the validity of the concluded themes (Miles & Huberman, 1994).

We attempted to establish the credibility of our interpretations in three ways. First, we conducted semi-structured interviews with probes to encourage the teachers to add more information to their answers. Second, we used vivo coding, whereby words or short phrases from the participant interviews were used as codes (King, 2008). Third, to review evidence, the teacher quantitative questionnaire data was compared with the teacher qualitative interviews, both were then compared to student writing outcomes.

RESULTS

Quantitative Phase

Holistic Quality. The main effects for condition, $F(1,69) = 14.28$, $MSE = 2.10$, $p < .001$, $\eta^2_p = .171$, and time, $F(1,69) = 154.6$, $MSE = 0.39$, $p < .001$, $\eta^2_p = .691$, were significant. However, these main effects were qualified by their interaction, $F(1,69) = 18.38$, $MSE = 0.39$, $p < .001$, $\eta^2_p = .210$. The post-hoc test indicated that scores for students in the treatment group significantly increased from pre-intervention to post-intervention (3.64 vs. 5.41), whereas the pre- and post-intervention scores were not significantly different for students in the comparison group (3.16 vs. 4.02). Further, scores for students in the treatment and comparison conditions did not differ at pre-intervention (3.64 vs. 3.16); however, students in the treatment condition had significantly higher scores than students in the comparison condition at post-intervention (5.41 vs. 4.02). Students in the treatment group ($M = 1.78$, $SD = 0.78$) had larger improvements in holistic writing quality after the intervention relative to students in the comparison condition ($M = 0.76$, $SD = 1.27$, effect size = 0.97).

Story Elements. The main effects for condition, $F(1,69) = 30.42$, $MSE = 2.78$, $p < .001$, $\eta^2_p = .306$ ($p < .001$), and time, $F(1,69) = 91.17$, $MSE = 1.03$, $p < .001$, $\eta^2_p = .569$, were significant.. However, these main effects were qualified by their interaction, $F(1,69) = 42.79$, $MSE = 1.03$, $p < .001$, $\eta^2_p = .383$. The post-hoc test indicated that scores for students in the treatment group significantly increased from pre-intervention to post-intervention (3.85 vs. 6.63), whereas the pre- and post-intervention scores for students in the comparison group were not significantly different (3.41 vs. 3.93). Further, scores for students in the treatment and comparison conditions did not differ at pre-intervention (3.85 vs. 3.41); however, students in the

treatment condition had significantly higher scores than students in the comparison condition at post-intervention (6.63 vs. 3.93). Students in the treatment group (M = 2.78, SD = 1.40) had larger improvements in story writing elements after the intervention relative to students in the comparison condition (M = 0.48, SD = 1.46, effect size = 1.61).

Story length. The main effects for condition, $F(1,69) = 15.32$, $MSE = 1823.14$, $p = .000$, $\eta^2_p = .182$, and time, $F(1,69) = 87.96$, $MSE = 650.9$, $p < .001$, $\eta^2_p = .56$, were significant. However, these main effects were qualified by their interaction, $F(1,69) = 17.88$, $MSE = 650.9$, $p < .001$, $\eta^2_p = .206$. The post-hoc test indicated that the word count for students in the treatment group significantly increased from pre-intervention to post-intervention (50.41 vs. 109.7), whereas the pre- and post-intervention word counts for students in the comparison group were not significantly different (40.3 vs. 62.7). Further, the word count for students in the treatment and comparison conditions did not differ at pre-intervention (50.4 vs. 40.3); however, students in the treatment condition had significantly higher word counts than students in the comparison condition at post-intervention (109.7 vs. 62.7). Students in the treatment group (M = 59.3, SD = 42.4) had larger improvements in word count after the intervention relative to students in the comparison condition (M = 20.7, SD = 29.6, effect size = 1.06).

Summary. The within-group findings indicated that the difference between pre-intervention and post-intervention scores for holistic quality, number and quality of story elements, and story length for the treatment group were significant, whereas these differences were not significant for the students in the comparison group (see Table 7). Further, the between-group findings indicated that the post-intervention scores on these dependent variables were significantly greater for students in the treatment group than the comparison group.

IRP-15. The total acceptability scores for the teacher from classroom A1 was 77 (M = 5.10) and the teacher from classroom A2 was 66 (M = 4.40). Overall, the teachers viewed the intervention positively (see Table 8), providing evidence of social validity. Both teachers gave high ratings on the items related to appropriateness, likability, purpose, and benefit of the intervention for students. Thus, not only did teachers believe the intervention was appropriate in achieving its goals, they also believed it was beneficial at meeting the needs of students. Participants also gave high ratings on the likability subscale, which indicated that they enjoyed implementing the intervention. Their responses indicated that they believed the intervention met

the needs of the students and they perceived few negative side effects. Thus, participants were positive overall about the intervention.

Qualitative Data

Analysis of the interview data indicated that the teachers viewed the acceptability of the intervention favorably and planned to implement it for the rest of the school year (10 weeks remaining). We identified four themes. The first theme was the intervention improved the student writing. Both teachers thought that the students' writing had improved significantly from pre- to post-intervention. T1 said, "It has certainly improved the students writing, they all have an idea now of what a good piece of writing looks like, and most of the time they achieve that." When asked if they would recommend this intervention to other teachers, they agreed they would because of the improvements they saw in their students' writing that the teacher had not seen in their previous teaching experiences prior to the implementation of SRSD. T2 said, "Yes, I would recommend it to other teachers. The progress the students made was better than what we have experienced in other years doing other programs". The teachers' described in detail one student, who had struggled with writing and had a poor attitude towards writing prior to the intervention, whose attitude had shifted. T1 stated, "He's gone from a kid who we couldn't get a word out of, to now writing pages during writing time. From a slug to a ninja!" This was reflected in the improvements they saw in this student's writing, and improvements seen in other students' writing. T2 added, "The transformation of some of the students, especially [Student A], has been amazing. The progress documented in their writing book and is so cool to see." T1 pointed out, "The progress, especially for the ones that struggle, has been so positive. The students are enjoying writing now and look forward to writing time. The improvement from some of the boys has been amazing." These types of comments indicated that the changes they saw in their students contributed to their acceptability of the program.

The second theme was the flexibility of the program. The teachers indicated that by having more control over the implementation of the program they were able to make changes with regard to the pace, details, and delivery of certain elements of the SRSD program. When asked, "What worked in the intervention?" the teachers explained that they liked being able to adapt the plan to suit the learners and did not have to keep to a rigid plan. T2 said, "We broke the learning up into smaller chunks, and could go back and revisit things that we had done and do them again for students who needed more support". T1 added, "We were building upon the

teaching of the day before and tried not to overload the students especially students who needed more time with each component". Thus, the autonomy to adapt the implementation of the program contributed to their perceptions of the acceptability of the program.

The third theme was that the teachers' enjoyed teaching the intervention. They mentioned their enjoyment of teaching SRSD throughout the interview (7 times) and highlighted that the intervention helped address their instructional goals. When the teachers were asked, "Are there other thoughts you would like to add?", T1 stated "I thoroughly recommend [the program] as it has helped us become better at teaching writing and now we have some new skills that will help improve student writing for years to come." T2 added "We have really enjoyed the experience of being part of this writing intervention and plan to share our knowledge with our peers." The teachers went on to explain that they were planning to be share the program with other teachers in the school so that the program would become school wide and the writing gains that students have made in their classrooms could be built upon as they move through the school. These comments, and other like them, indicated that teachers viewed the program very positively.

The fourth theme was that the teachers wanted more integration between the program and other aspects of writing. On the one hand they were pleased to see that students were including a lot more ideas in their stories; however, they were frustrated by the absence of procedural elements, such as use of punctuation. T2 said, "You read their stories that have fantastic ideas but there is not a full stop to be seen in four pages!" T2 then added, "We were thinking of doing a language workday once a week and four days of the program so they are integrating this [procedural skills] into their stories. We also want to include more editing and proof reading into the lessons." The teachers want to embed the program further so that it aligns with their teaching philosophies and the achievement criteria for students in this age group. T1 said, "The students need to reach certain criteria by the time they leave us and move to their next classroom and the current program does not quite improve all those criteria so we need to find a way to integrate other aspects of writing into the weekly program so the students achieve this." Thus, they identified additional ways that they could integrate school-wide standards into the program to more effectively promote student writing outcomes.

DISCUSSION

We investigated the effect of a long-term, teacher-implemented whole-class SRSD story writing intervention on 6-7-year-old students' writing performance and teacher perceptions of

the social validity of the intervention in a New Zealand context. Our inquiry was guided by two research questions. The first question was: Does a 17-week teacher-implemented whole-class SRSD writing intervention promote student writing outcomes in a year 2 classroom? Students in the treatment and comparison groups improved their writing performance, which we predicted given that the intervention lasted 17 weeks. However, students in the treatment group had larger gains than students in the comparison group on holistic quality (ES = 0.97), number and quality of story writing elements (ES = 1.61), and story length (ES = 1.06). Thus, the students who received SRSD writing instruction showed greater improvements than the students in the comparison group who received their regular classroom instruction. The results were comparable to other SRSD studies (e.g., Graham, et al., 2005; Harris et al., 2006; Harris et al., 2009; McKeown, FitzPatrick, et al., 2019; Saddler & Graham, 2007) and the effect sizes were greater than the previous study involving the two treatment teachers (holistic quality ES = 0.70, story elements ES = 1.06, story length ES = 0.63; Finlayson & McCrudden, under review). The larger effect sizes in the present study could be due to the length of the intervention (17 weeks in present study vs. 5 weeks in previous study) and teachers' familiarity with SRSD writing instruction. Further, these results highlight that having teachers involved in the planning and implementation of an SRSD writing intervention can promote student writing outcomes.

The second question was: To what extent was the writing intervention socially valid? The questionnaire and interview data indicated that teachers perceived the intervention to be acceptable, effective, and manageable. The teachers indicated that the intervention was appropriate to meet the needs of the students, had acceptable procedures, and meaningful outcomes. In the quantitative phase, responses to the IRP-15 questionnaire indicated that the teachers believed that the intervention had a high level of social validity. For instance, both teachers gave high ratings on the appropriateness items, which pertained to the extent to which the intervention was appropriate for their students' needs. Their ratings on the intervention's beneficial item and likeability item also received high ratings, which indicated that teachers believed changes in students writing performance were meaningful and they were willing to continue the intervention. Findings from this study were comparable to other SRSD studies which found that teachers viewed the intervention favourably (Harris et al., 2012; Harris et al., 2015).

In the qualitative phase, the interview data provided deeper insights into teachers' perceptions of the social validity of the SRSD intervention. We identified four themes, the first being the intervention improved students writing. This indicated that teachers saw improvements in the students' writing which they linked to the SRSD intervention. The second theme, the flexibility of the program, indicated that the teachers enjoyed having the freedom to work through the program how they saw was beneficial for the students. Given their previous experiences, they felt they had more freedom to proceed at a pace that suited the students and to be able to organize the instructional sequence into manageable segments so that students had a chance of being successful at each step before bringing together all seven steps. The third theme was that the teachers enjoyed the intervention, they thought it had helped them become better teachers, and they wanted to share their success with other teachers. One explanation for the teachers' positive views was that the students' writing improvements were much more dramatic than in their previous teaching experiences with children of the same age who had received the typical writing instruction. The final theme was that teachers wanted more integration between the SRSD intervention and other areas of writing that were important. Teachers mentioned that they would like to further integrate the program into a writing program which will meet other needs in writing.

The quantitative and qualitative data were complementary. For instance, both the quantitative and qualitative data indicated that the teachers perceived the intervention to be beneficial. High scores on the IRP-15 acceptability items were consistent with responses from the interview data in which the teachers indicated that the intervention had improved their students' writing performance, and that they found it appropriate to implement into the classroom setting. This suggests that teachers rated the intervention acceptable in part because they were able to control the pace and rate of implementation into their classrooms.

Teachers perceived the intervention to be beneficial for the students. The high rating on the beneficial item was highlighted in the interview data. The teachers spoke about the changes that they saw in the students' writing, especially the struggling students. In addition, high ratings on the IRP-15 likability item corresponded with the interview data, which showed that teachers enjoyed implementing the intervention and would recommend the intervention to other teachers. They believed that the intervention was useful for the students and that students' writing improved. This replicates previous findings in which teachers were interviewed about their

perceptions of the intervention (Finlayson & McCrudden, under review; McKeown, Brindle, et al., 2019). McKeown, Brindle, et al. (2019) found that teachers were excited to talk about the changes they saw in their students, specifically their behaviour, confidence and writing ability. The interview data highlighted that teachers enjoyed having ownership over the intervention and having some control over the content and delivery of the intervention.

While the general perception of the intervention was positive, teachers provided some ways in which they would like to embed the program further to meet their philosophies and needs. The teachers discussed using one day a week for doing language activities that could then be incorporated into the students' stories. Additionally, they recommended including editing to the program so that students' punctuation and spelling could improve this was also mentioned in the previous study involving these two teachers (Finlayson & McCrudden, under review). Similarly, teachers in McKeown, Brindle, et al. (2019) recommended including grammar and punctuation into future iterations of the intervention.

One explanation for the teachers' positive view was that the students' writing improvements exceeded that of other similarly aged students they had taught using their usual writing instruction. The SRSD intervention was organized into segments in a prescribed way which made story writing concepts easier for students to grasp. They saw the improvement first-hand with struggling students turning their writing attitudes around and becoming an active in the writing lessons. For an intervention to be adopted and sustainable, it is important that the teachers find the intervention to be acceptable, effective, and manageable. Thus, we wanted to investigate the effectiveness of the writing intervention and its social validity.

Limitations and Future Directions

There were several potential limitations and future directions. First, the intervention only focused on story writing. Two previous studies have focused on story writing with this age group and have shown positive results. One reason story writing has potential utility for this age group is that they are familiar with narrative text structure. However, it is important to investigate other forms of writing with this age group (e.g., expository writing). Second, we did not collect maintenance data to evaluate the potential long-term benefit of the intervention or the extent to which the teachers continued to use the intervention for writing instruction. Thus, future researchers should consider collecting maintenance data. Third, the teachers in the treatment group had engaged in SRSD writing instruction with their classes over a five-week time frame

the previous academic year. It is possible that the teachers used some elements of SRSD before the start of the intervention. To minimize this possibility, we started the intervention as close to the start of the school year as possible (the 4th week of the first quarter of the academic year). Fourth, it is unclear what role the collaboration between teachers played in the success of the intervention. The teachers had each other to share the workload, to process information, and to problem solve along with coaching and support from the first author. Future research should investigate to how collaboration between teachers, particularly at the same school, influences the implementation of an intervention. Fifth, more research is needed for identifying ways to support students who receive tier one (whole class) interventions, but who are not as responsive to the intervention as their peers. For instance, tier two (small group) interventions could be embedded with a whole-class intervention to support students in schools that have limited resources. Lastly, this study is a small sample of teachers and students in New Zealand. This raises the possibility of Type I error. There is limited research on SRSD writing interventions within New Zealand and additional studies are needed with different student populations to evaluate its efficacy for the population within New Zealand. However, the current and previous studies on this population are promising (Finlayson & McCrudden, 2019b; Finlayson & McCrudden, under review).

Conclusion

The present study demonstrated that long-term teacher-implemented whole-class SRSD story writing intervention improved student writing outcomes and the teachers perceived it to be socially valid. The study highlights that involving teachers in planning prior to an intervention and allowing them autonomy to implement an intervention can be beneficial for students. The data from the intervention provide evidence that the intervention successfully improved young students writing in terms of quality and story writing components. In addition, this study demonstrated that SRSD can be used effectively with early primary students and in New Zealand schools.

REFERENCES

Bandura, A. (1994). Self-efficacy. In: V. S Ramachandran, editor. *Encyclopedia of human behavior*. New York: Academic Press.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs NJ: Prentice Hall.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Inquiry, 6*, 97-113.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Earlbaum Associates.

Cook, B. G., Cook, L., & Landrum, T. J. (2013). Moving research into practice: Can we make dissemination stick? *Exceptional Children, 79,* 163–180. http://dx.doi.org/10.1177/001440291307900203.

Creswell, J., & Plano Clark, V. (2018). *Designing and conducting mixed methods research* (Third Edition.). Thousand Oaks, California: SAGE.

Finlayson, K., & McCrudden, M. T. (2019a). Teacher-implemented writing instruction for elementary students: A literature review. *Reading & Writing Quarterly, 36,* 1-18. doi: 10.1080/10573569.2019.1604278

Finlayson, K., & McCrudden, M. T. (2019b). Teacher-implemented self-regulated strategy development for story writing with 6-year-olds in a whole-class setting in New Zealand. *Journal of Research in Childhood Education, 33,* 307-322. doi: http://dx.doi.org.helicon.vuw.ac.nz/10.1080/02568543.2019.1568328

Finlayson, K., & McCrudden, M. T. (under review). Teacher-implemented SRSD instruction for story writing with year 2 students in New Zealand: A mixed methods study.

Gamoran, A., & Weinstein, M. (1995). *Differentiation and opportunity in restructured schools.* Madison, WI: Center on Organization and Restructuring of Schools.

Graham, S. (2006). Strategy instruction and the teaching of writing. In C. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *Handbook of Writing Research* (pp.187-207). New York: Guilford.

Graham, S. (2019). Changing how writing is taught. *Review of Research in Education, 43,* 277-303.

Graham, S., & Harris, K.R. (2018). Evidence-based writing practices: A meta-analysis of

existing meta-analyses. In R. Fidalgo, K.R. Harris, & M. Braaksma (Eds.), *Design principles for teaching effective writing: Theoretical and empirical grounded principles* (pp. 13-37). Hershey, PA: Brill Editions

Graham, S., Harris, K.R., & McKeown, D. (2013). The writing of students with LD and a meta-analysis of SRSD writing intervention studies: Redux. In L. Swanson, K.R. Harris, & S. Graham (Eds.), *Handbook of Learning Disabilities* (2nd Edition; pp. 405-438). MY: Guilford Press.

Graham, S., Harris, K., & Mason, L. (2005). Improving the writing performance, knowledge, and self-efficacy of struggling young writers: The effects of self-regulated strategy development. *Contemporary Educational Psychology, 30*, 207-241.

Graham, S., McKeown, D., Kiuhara, S., & Harris, K. R. (2012). A meta-analysis of writing instruction for students in the elementary grades. *Journal of Educational Psychology, 104*, 879-896. doi.org/10.1037/a0029185

Graham, S., & Perin, D. (2007). A meta-analysis of writing instruction for adolescent students. *Journal of Educational Psychology, 99*, 445-476. doi:10.1037/0022-0663.99.3.445

Graham, S., & Sandmel, K. (2011). The process writing approach: A meta-analysis. *Journal of Educational Research, 104*, 396-407. doi:10.1080/00220671.2010.488703

Harris, K.R., Graham, S., & Adkins, M. (2015). Practice-based professional development and self-regulated strategy development for Tier 2, at-risk writers in second grade. *Contemporary Educational Psychology, 40,* 5-16.

Harris, K. R., Graham, S., Brindle, M., & Sandmel, K. (2009). Metacognition and children's writing. In D. Hacker, J. Dunlosky, & A. Glasser (Eds.), *Handbook of Metacognition in Education* (pp. 131-153). Mahwah, NJ: Erbaum.

Harris, K., Graham, S., & Mason, L. (2003). Self-regulated strategy development in the classroom: Part of a balanced approach to writing instruction for students with disabilities. *Focus on Exceptional Children, 35,* 1-16.

Harris, K., Graham, S., & Mason, L. (2006). Improving the writing knowledge, and motivation of struggling young writers: Effects of self-regulated strategy development with and without peer support. *American Educational Research Journal, 43,* 295-340.

Harris, K., Graham, S., Mason, L & Friedlander, B. (2008). *Powerful Writing Strategies for*

all Students. Baltimore: Brookes Publishing.

Harris, K.R., Lane, K.L., Graham, S., Driscoll, S., Sandmel, K., Brindle, M., & Schatschneider, C. (2012). Practice-based professional development for self-regulated strategies development in writing: A randomized controlled study. Journal of Teacher Education, 63 (2), 103-119.

Harris, K. R., Ray, A., Graham, S., & Houston, J. (2019). Answering the challenge: SRSD instruction for close reading of text to write to persuade with 4th and 5th grade students experiencing writing difficulties. *Reading and Writing: An Interdisciplinary Journal, 32,* 1459-1482.

Johnson, L. D., Wehby, J. H., Symons, F. J., Moore, T. C., Maggin, D. M., & Sutherland, K. S. (2013). An analysis of preference relative to teacher implementation of intervention. *The Journal of Special Education, 48,* 214-224. http://doi.org/10.1177/002246913475872

King, A. (2008). In vivo coding. In L. M. Given (Ed.), *The SAGE encyclopedia of qualitative research methods* (pp. 473-473). Thousand Oaks, CA: SAGE Publications, Inc. doi: 10.4135/9781412963909.n240

Koster, M., Tribushinina, E., De Jong, P.F., & van den Bergh, B. (2015). Teaching children to write: A meta-analysis of writing intervention research. *Journal of Writing Research, 7,* 300-324.

Leko, M. M. (2014). The value of qualitative methods in social validity research. *Remedial and Special Education, 35,* 275–286. doi.org/10.1177/0741932514524002.

Light, R. (2001). *Making the most of college.* Cambridge, MA: Harvard University Press.

Lloyd, J. W., & Heubusch, J. D. (1996). Issues of social validation in research on serving individuals with emotional or behavior disorders. *Behavioral Disorders, 22,* 8–14. doi.org/10.1177/019874299602200105.

Martens, B., Witt, J., Elliott, S., & Darveaux, D. (1985). Teacher Judgments Concerning the Acceptability of School-Based Interventions. *Professional Psychology: Research and Practice, 16,* 191–198. doi:10.1037/0735-7028.16.2.191

McKeown, D., Brindle, M., Harris, K., Graham, S., Collins, A., & Brown, M. (2016). Illuminating growth and struggles using mixed methods: practice-based professional development and coaching for differentiating SRSD instruction in writing. *Reading & Writing: An Interdisciplinary Journal, 29,* 1105-1140. doi: 10.1007/s11145-016-9627-y.

McKeown, D., Brindle, M., Harris, K.R., Sandmel, K., Steinbrecher, T.D., Graham, S., Lane, K.L., & Oakes, W.P. (2019). Teachers' voices: Perceptions of effective professional development and classwide implementation of self-regulated strategy development in writing. *American Educational Research Journal, 56*, 753-791.

McKeown, D., FitzPatrick, E., Brown, M., Brindle, M., Owens, J., & Hendrick, R. (2019). Urban teachers' implementation of SRSD for persuasive writing following practice-based professional development: positive effects mediated by compromised fidelity. *Reading & Writing: An Interdisciplinary Journal, 32,* 1-24. doi: 10.1007/s11145-018-9864-3.

McLaughlin, M., & Talbert, J. (1993). *Contexts that matter for teaching and learning: Strategic opportunities for meeting the nations educational goals.* Stanford, CA: Center for Research on the Context of Secondary School Teaching.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis.* Thousand Oaks, CA: Sage.

O'Dwyer, L. M., and Parker, C. E. (2014). *A primer for analyzing nested data: multilevel modeling in SPSS using an example from a REL study* (REL 2015–046). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Northeast & Islands. Retrieved from http://ies.ed.gov/ncee/edlabs.

Parr, J. M., & Jesson, R. (2016). Mapping the landscape of writing instruction in New Zealand primary school classrooms. *Reading & Writing: An Interdisciplinary Journal, 29*, 981-1011.

Reimers, T. M., Wacker, D. P., & Keoppl, G. (1987). Acceptability of behavioral interventions: A review of the literature. *School Psychology Review, 16*, 212–227.

Saddler, B. (2006). Increasing story writing ability through self-regulated strategy development: Effects on young writers with learning disabilities. *Learning Disability Quarterly, 29,* 291-305.

Saddler, B., & Graham, S. (2007). The relationship between writing knowledge and writing performance among more and less skilled writers. *Reading and Writing Quarterly, 23*, 231-247.

Saddler, B., Moran, S., Graham, S., & Harris, K. (2004). Preventing writing difficulties:

The effects of planning strategy instruction on the writing performance of struggling writers. *Exceptionality, 12,* 3-17.

Schunk, D. H., & Zimmerman, B. J. (2007). Influencing children's self-efficacy and self-regulation of reading and writing through modeling. *Reading & Writing Quarterly, 23,* 7–25.

Schwartz, I. S., & Baer, D. M. (1991). Social validity assessments: Is current practice state of the art? *Journal of Applied Behavior Analysis, 24,* 189–204. doi.org/10.1901/jaba.1991.24-189.

Tomlinson, C. A., Brighton, C., Hertberg, H., Calahan, C., Moon, T., Brimijoin, K., et al. (2003). Differentiating instruction in response to student readiness, interest, and learning profile in academically diverse classrooms: A review of literature. *Journal for the Education of the Gifted, 27,* 145-199.

Witt, J. C., & Elliott, S. N. (1985). Acceptability of classroom intervention strategies. In T. R. Kratochwill (Ed.), *Advances in school psychology* (Vol. 4., pp. 251-288). Mahwah, NJ: Erlbaum.

Wolf, M. M. (1978). Social validity: The case for subjective measurement or how applied behavior analysis is finding its heart. *Journal of Applied Behavior Analysis, 11*, 203–214. doi.org/10.1901/jaba.1978.11-203.

Wong, B. Y. L., Hoskyn, M., Jai, D., Ellis, P., & Watson, K. (2008). The comparative efficacy of two approaches to teaching sixth graders opinion essay writing. *Contemporary Educational Psychology, 33,* 757-784.

Zumbrunn, S., & Bruning, R. (2013). Improving the writing and knowledge of emergent writers: the effects of self-regulated strategy development. *Reading & Writing: An Interdisciplinary Journal, 26,* 91-110.

APPENDIX B

Teacher Interview Protocol

1. What did you find acceptable about the intervention? What would make it more acceptable? Was there anything that was unacceptable?
2. Was this intervention effective? In what ways? Anything ineffective? What would make it more effective in the future?
3. Would you recommend it to other teachers? Why/why not?
4. Did the intervention align with the goals of the school, if so how? Were there ways in which it didn't?
5. Were there any negative side effects for the students?
6. To what extent do you think the intervention was appropriate for students from a variety of backgrounds?
7. How was the intervention different from other writing programs you have tried?
8. Was this intervention accessible for students from different backgrounds?
9. To what extent was the intervention reasonable for teaching writing?
10. Did you like the procedures in the intervention? Why/why not? What could you do in the future?
11. Was the intervention plan a good way of self-regulating writing and improving student writing?
12. Do you think the intervention could be more manageable? How?
13. Did the monitoring plan give you the information needed to evaluate the intervention?
14. Do you believe the intervention was beneficial for primary school students? Why/why not?
15. What did work in the intervention?
16. What did not work in the intervention?
17. What would you do differently if you were to implement the intervention again?
18. Any other thoughts you would like to add?

    (a) the intervention duration,
    (b) the strategy,
    (c) the lesson plans,
    (d) the writing prompts,
    (e) the overall experience.

Table 6. *Study 2 Student Demographic Data*

Variables	Intervention group			Comparison group		
	School A	School A	Total	School B	School C	Total
	Class 1 *n* = 25	Class 2* *n* = 4	*n* = 29	*n* = 20	*n* = 22	*n* = 42
Gender						
Female	7	2	9	12	12	24
Male	18	2	20	8	10	18
Ethnicity						
NZ European	18	3	21	13	14	27
NZ Maori	1	1	2	3	2	5
Pasifika	1	0	1	3	0	3
Asian	0	0	0	0	2	2
Indian	1	0	1	0	1	1
Other	4	0	4	1	3	4
NS writing						
Above	1	1	2	2	2	4
At	14	2	16	11	19	30
Below	10	1	11	7	1	8
NS reading						
Above	11	1	12	6	14	20
At	3	3	6	9	6	15
Below	11	0	11	5	2	7
Struggling students	6	1	7	8	5	13

Note. *Class 2 was a composite class made up of year 1 (*n* = 16; equivalent of kindergarten in the US) and year 2 (*n* = 4; equivalent of 1st grade in the US) students, however only data reported from the year two students has been used in this study. NS = New Zealand National Standards Data; Struggling student is a student who has been referred to an outside agency for either behaviour, or learning disability (e.g., dyslexia; ADHD).

Table 7. *Study 2 Writing Performance Results for Both Groups Pre- and Post-Intervention*

	Treatment group			Comparison group		
	Pre *M (SD)*	Post *M (SD)*	Diff score	Pre *M (SD)*	Post *M (SD)*	Diff score
Writing components	3.85 (1.15)	6.63 (1.78)	2.78	3.41 (1.13)	3.93 (1.43)	0.52
Holistic quality	3.64 (1.03)	5.41 (1.09)	1.77	3.16 (1.10)	4.02 (1.19)	0.86
Word count	50.4 (29.3)	109.7 (46.0)	59.3	40.3 (24.6)	62.7 (38.9)	22.4

Table 8. *Teachers' IRP-15 Scores*

Scales/Subscales	Teacher		Max possible score
	1	2	
Total acceptability	77	66	90
Acceptable	5	4	6
Appropriate	11	10	12
Effective	5	4	6
Suitable	9	8	12
Consistent	10	9	12
Side-effects	6	4	6
Fair	5	4	6
Reasonable	5	4	6
Likability	5	5	6
Meet purpose	5	5	6
Needs	6	4	6
Beneficial	5	5	6

GENERAL DISCUSSION

The purpose of this chapter is to draw conclusions and make comparisons between the two studies as well as with previous research. Study 1 was an intervention using a previously developed, prescribed SRSD writing intervention (Harris et al., 2008). This study was done to investigate effectiveness of an SRSD story writing intervention with Year 2 students on the extent to which teachers could successfully implement this evidence-based writing intervention with fidelity, and to evaluate the social validity of the intervention. Study 2 used the findings from Study 1 to create a more sustainable intervention which could be embedded further into the school culture. The teachers worked with the researcher to create the intervention plan prior to the commencement of the intervention. This discussion will consist of seven sections. First, I will discuss the length of the interventions. Second, I will compare the writing performance of the students. Third, I will discuss the effectiveness of teacher-implemented writing interventions. Fourth, I will compare the social validity of the studies and with previous research. Fifth, I will discuss implications of these studies and directions for future research. Sixth, I will identify the limitations of these studies and the thesis. Lastly, I will conclude the discussion by reiterating the main findings from the study.

Length of Intervention

A difference between the studies was the length of the intervention. The intervention in Study 1 was spread out over five weeks, whereas in Study 2 the intervention lasted 17 weeks. This meant that students in Study 2 received a bigger "dose" and therefore probably spent more time being taught each of the seven components of a story (character, setting, time, goals, actions, feelings, and ending) than did the students in Study 1. It is likely that this longer duration of the intervention in Study 2 provided the students with greater opportunity to develop their mastery of each component of the SRSD story writing intervention. Previous studies have also involved varied lengths of intervention. In Harris et al. (2012), for example, the whole-class intervention was between six and eight weeks long, with a maximum of 24 lessons, and in McKeown et al. (2016) the whole-class intervention was between four to six weeks with a maximum of 17 lessons. There have been no other teacher-implemented SRSD studies as long as Study 2 (17-weeks).

Intervention duration seemed to have an impact on outcomes in the present thesis. Although students in the treatment group in both studies improved on all writing performance

measures (quality, components, and length), it was the case that students in Study 2 had greater gains than students in Study 1. This was to be expected because the duration of the intervention was longer in Study 2. Interestingly, students were also younger in Study 2 at the start of the intervention than the children in Study 1 and thus the greater gains for these students might have stemmed from there being more room for maturation effects due to the longer duration of intervention (17 weeks). The students in the treatment and comparison groups in Study 2 increased in their writing performance, which suggest a maturation effect given the length of this study. However, improvement was significantly greater for the students in the treatment group which indicates a positive intervention effect. Overall, the results are consistent with findings from previous SRSD studies with respect to the holistic quality of the students' writing and with respect to the number and quality of story elements used by students. When comparing the effect sizes of previous whole-classroom based studies, outcomes were evident in the present two studies were comparable to or higher than those reported in other studies. Harris et al. (2012), for example, which was five lessons longer than Study 1 had very similar effect sizes for holistic quality and writing components to those of Study 1. Harris et al. (2012) was used as a comparison study because it was a teacher-implemented whole-class intervention; however, the students were older (Year 3 and 4/Grades 2 and 3 in the US). However, gains in story length were greater in the present studies, especially Study 2. This could be because students in the present studies were younger than students in previous studies and thus they were likely to have been at earlier stages of learning to write and therefore probably had more room for improvement.

When comparing the gains made between Study 1 and 2 and the Harris et al. (2012) study, the students in Study 2 had the highest gain scores for writing components, holistic quality, and length). This was also the longest intervention which could have contributed to the increase in gains seen. Students in Study 1 had the lowest gains in writing components, which could have been due to the shorter length of the study compared with Study 2 and Harris et al. (2012). Students in Harris et al. (2012) made high gains in writing components, but the lowest gains in holistic quality, perhaps because the students were older and that changes in holistic quality may differ compared to beginning writers. Students in Harris et al. (2012) also wrote shorter stories at post-intervention. These students included less irrelevant information, yet included most of the critical elements (Harris et al., 2012). In all studies there was considerable

variability among story length and previous research has also seen mixed results on the length of composition among students in primary schools (Harris et al., 2009; Lane et al., 2011).

There was more variation and improvement in writing component scores compared to the holistic quality scores. This was to be expected because the score range for writing components (0-14) was greater than the score range for writing quality (0-8). Additionally, the writing program explicitly focused on teaching the components of a story and writing quality was secondary to the main focus of the intervention. Holistic quality reflects general growth in writing, including organization and ideation, and can be more difficult to achieve in a short period of time (McKeown, FitzPatrick, et al., 2019). Hence, there were some instances where students received a high score on story components, but their overall holistic quality was not very high because their stories may have not made logical sense.

Teacher-Implemented Writing Interventions

Research suggests that teacher-implemented interventions are more effective when teachers have volunteered to participate, and learn collaboratively with other teachers (Harris et al., 2012). Studies 1 and 2 highlighted the potential value of seeking to work collaboratively to implement an intervention. The sharing of experiences when training has been noted in other teacher-implemented SRSD interventions (McKeown, FitzPatrick, et al., 2019; Harris et al., 2012) and this can be valuable to the overall results of an intervention.

While both Studies 1 and 2 showed positive results from the teacher-implemented intervention, such positive outcomes may depend in part on teachers' values and openness to implementation of strategies such as SRSD. McKeown et al. (2016) found mixed results amongst their three teacher participants. One teacher was not willing to change her instructional approach to use the SRSD intervention, even though the researchers provided coaching and guidance. This highlights the importance of the teachers' buy-in and willingness to reflect upon and change how they teach writing. The teachers in Study 1 and 2 in contrast all seemed to be open to changing their instructional approach to address their students' learning needs.

Study 1 and 2 involved variations on the implementation approach, while still adopting the main SRSD concepts. Specifically, in Study 1, the teachers used prescribed lesson plans from Harris et al. (2008), whereas Study 2 involved the use of more teacher-driven lesson plans. Both studies involved similar and relatively minimal amounts of teacher training prior to the teachers implementing the respective SRSD-based approaches. I used a minimal training approach

because the teachers' willingness to participate depended upon minimal time investment given their workloads.

Study 1 showed that limited meetings (4, 1-hour meetings) plus regular coaching of student writing performance was associated with improved students writing. Even though past studies have included a more extensive professional development program prior to the intervention, Study 1 demonstrated that this might not be necessary as the results from this study were comparable to studies in which more time was spent on teacher training (e.g., Harris et al., 2012; McKeown, Fitzpatrick, et al., 2019). Study 1 still followed a practice-based training approach seen in other SRSD studies (e.g. Harris et al., 2012; McKeown, FitzPatrick, et al., 2019). However, content addressed in these sessions was shortened with lesson plans being very detailed to address areas which may have had less coverage during training. Additionally, with minimal training the teachers still implemented the intervention with fidelity. These results indicate that less intensive training programs can lead to similar outcome as more intensive training programs, which is beneficial for teachers who have limited time to commit to more intensive professional training. The teachers spoke favorably about the amount of time that was used for training and thought that it was adequate for them to implement the intervention.

In the post-intervention interview of Study 1, the teachers suggested ideas for improvements for future implementation. They wanted the parts of the intervention to be divided into more manageable sized pieces so that students who were struggling had time to master the component before adding additional components. Their concern was that students in a whole-class intervention who needed more time to understand new learnings were not getting enough time to master the steps given the pace of the intervention. The idea behind SRSD is that students move at their own pace through the steps, however, this is challenging when intervention occurs in a whole-classroom teaching format. One suggestion which was made during the teacher interviews was that the teachers could use of pull-out model with smaller groups of students who were struggling so as to give them more intensive teaching while the other students write independently. This strategy would seem to be well within the realms of SRSD teaching and could be evaluated in future research. In McKeown, Brindle, et al. (2019), four (out of 11) of their teachers re-taught and re-modelled as needed to small groups as part of the intervention even though all teachers were encouraged to do this during the professional development.

After Study 1, it became clear that the teachers wanted to be more involved in the planning stages of the intervention so as to make it better suited their needs. Thus, Study 2 was more teacher-driven, with the researcher being more of a guide and advisor to make sure that the elements of SRSD were included and implemented with fidelity. The intent was to allow teachers greater input into and ownership of the intervention. Prior research included teacher flexibility. McKeown, Brindle et al. (2019) encouraged teachers to adapt the lesson plans to meet their students' needs. In Study 2, teachers respond well to the flexibility of implementation and created rhymes for remembering the parts of the story, as well as choosing published stories to read that reiterate the focus of the session (i.e., character, setting, etc.). There was more integration between reading and writing. They were responsible for planning and they would use the focus in writing as the focus in reading to integrate them.

Social Validity

Social validity was an important aspect of both studies. If teachers and students do not support and buy into the intervention, then it is unlikely that writing changes will be sustained over the long term. It was incorporate input from the teachers' perspectives to identify ways to adapt the intervention to meet their needs and the needs of the students. Previous SRSD studies have also measured social validity (Harris et al., 2012; Harris et al., 2015; McKeown et al., 2016; McKeown, FitzPatrick, et al., 2019) all having positive results. The main result from these studies is that survey data indicated that the teachers found the interventions favorable. McKeown, Brindle et al. (2019), who used qualitative interviews to examine teacher perceptions found similar findings to Studies 1 and 2. These studies are important for finding out teacher perceptions and ways to improve interventions for the teachers.

In Study 1 and 2, the teachers reported that they viewed the intervention favorably and said that they felt the intervention made positive changes to their students. They also made comments to the effect that the intervention was easy to follow, had simple repetitive steps which allowed students to hear and do things more than once, and that students wrote more interesting stories. McKeown, Brindle, et al. (2019) teacher interview data suggested that SRSD increased focus and engagement, enhanced confidence during writing time, and decreased challenging behaviors, however the teachers in these two studies did not mention specifically if behaviors changed, or that students were more confident. An interesting difference between the social validity questionnaires between Study 1 and 2 was that the teacher favorability ratings were

lower in Study 2. This is surprising because in Study 2 teachers had greater input into the intervention plans and how the intervention was delivered to the students. It was anticipated that the social validity scores would therefore be higher in Study 2 compared to Study 1. There are two reasons why this may not have occurred. First, in Study 1 the intervention was new and unfamiliar. By the time Study 2 had finished (one year after starting Study 1), it was not new anymore and it may have been difficult for them to remember what the 'old' writing looked like. Second, it is possible that they liked the prescribed intervention better because they did not have to do as much preparation work because it was already done for them. Thus, in Study 1 they might have had to spend less time planning, which was seen as favorable. However, in the interviews the teachers did not specifically indicate that they enjoyed the first intervention more the second intervention. In fact, they were more positive about the second intervention in terms on the value it had for the students in improving their writing. Therefore, this finding suggests the information collected in the interview what corroborated and expanded upon the IRP scores.

Overall, teacher interviews suggest that they viewed the interventions favorably. The teachers wanted to continue using SRSD after the intervention with just a few further changes. This was to ensure that it aligned with the New Zealand writing curriculum, the culture of the school and their own teaching philosophies.

Implications

The findings from Study 1 and 2 have several implications for implementing SRSD in classrooms. First, the results suggest that low-intensity training and teacher inclusion in devising SRSD interventions can produce positive outcomes on student writing. Students wrote more, included the necessary story elements, and the holistic quality of their writing improved. This is important for researchers and practitioners when designing future SRSD interventions who have limited training time or want to include teachers in the involvement of the intervention. Research suggests that by giving teachers choice within an intervention can produce long term effective improvements in the quality of their implementation (Johnson et al., 2013).

Second, teacher-implemented interventions are important for the sustainability of writing interventions. Including general classroom teachers in interventions is more likely to lead to changes in teacher writing instruction and teachers will be less likely to use "teaching lore" as guidance for teaching writing. Study 1 and 2 along with a small number of other teacher-

implemented SRSD writing interventions provide evidence for using SRSD in classrooms with general education teachers. Therefore, more opportunities are needed for teachers to understand the concept of SRSD and how it will be effective with their students to improve the writing performance of their students.

Third, these studies demonstrate that students as young as six years of age can have positive writing improvements from an SRSD writing intervention. Previous research has focused on Year 3 students (7- to 8-years of age) and above. Therefore, Study 1 and 2 are unique and have contributed not only to the small number of teacher-implemented studies but demonstrated that SRSD can be used with younger children. These studies indicate that students at age six can also get the benefits of an SRSD intervention and can have positive improvements in writing performance at similar levels to students who are older (Harris et al., 2012; McKeown, FitzPatrick, et al., 2019). Future research should include students in the younger primary years to mitigate the need for remediating interventions once students are older and writing difficulties are more difficult to resolve. Implementing SRSD interventions earlier can prevent later difficulties from forming. This way students can acquire the skills they need from the beginning and then build upon the skills as they progress through school.

Fourth, Study 2 demonstrated how by giving teachers more involvement into the intervention process might have long-term benefits such as the retention of the program for the foreseeable future. The collaborative process of combining researcher and teacher perspectives was valuable for the integration of the SRSD intervention into their specific context. It demonstrated that this style of intervention was just as effective as an intervention that was more prescribed by researchers. Hence, further research is needed in adapting research into real life classrooms in collaboration with teachers to confirm that this type of research is also successful at improving students' writing performance. Additionally, the collaborative process needs to be further investigated at the training level for teacher who are unfamiliar with SRSD. There is evidence to suggest that teacher enjoy small group training as oppose to larger training events (McKeown, Brindle, et al., 2019). By participating in training with other teachers, teachers have a sense that they are not doing it alone and are able to discuss aspects of the intervention with others in similar situations. This was particularly noticeable in Study 1, in which the teachers commented in the interview about the value of having each other to discuss lesson plans with and problems that occurred.

Fifth, Study 1 demonstrated that short intensive interventions can have just as many benefits as a longer intervention. Thus a 5-week SRSD writing intervention can improve student writing performance. This is important for teachers who can only allocate a short amount of time to SRSD, that it will still lead to positive beneficial outcomes for their students. A short 5-week intervention will still improve writing significantly more than regular writing practice. The benefit of a longer intervention allows time for more students to gain mastery at each stage before moving onto the next.

Finally, a whole-class approach will not necessarily improve all students writing performance. Individual students have different rates of progress which may have been overshadowed in the whole-class data analysis. Some learners who struggle with writing will still need extra support. Having small group sessions available for the students who need additional support within the whole-class framework would be important for future implementation. The importance of having an adaptable framework inside of a whole-class intervention has been discussed in other whole-class research in which teachers noticed a need to provide mini lessons to accommodate all levels of learners (Harris et al., 2012; McKeown, FitzPatrick et al., 2019). This would allow struggling students to have success similar to their peers.

Limitations

While these studies have added valuable support for teacher-implemented writing intervention research. There are limitations to this research. First, both these studies focus on the story genre in writing. Both studies used the same mnemonic (WWW What =2, How = 2) to teach story writing to two different cohorts of year 2 students. Valuable information was gathered on how the SRSD intervention impacted students' story writing using this mnemonic. However, the findings from Study 1 and 2 cannot be generalized to other writing genres (i.e., persuasive, informative writing) because the mnemonic was specific for writing stories. Teachers chose story writing because they had already been learning personal narrative and reflected the aims and objectives of the school. Further, teachers felt that they would be able to integrate the learnings from writing into reading. Additional studies are needed on the generalizability of the skills learnt for one genre to another genre within this age group to see if the skills learnt are transferable with minimal relearning or whether the mnemonics are specific to a particular genre.

Second, this is a small sample of teachers and students in New Zealand. This raises the possibility of Type 1 error. The teachers and students in the treatment group of both studies are

from the same school. No other SRSD writing research in New Zealand that has been found while compiling these studies and therefore additional studies are needed with different student populations within New Zealand to evaluate its efficacy for this context. Nevertheless, these two studies provide promising results that SRSD writing instruction can be used effectively with students outside the US.

Third, another limitation from using the same two teachers in both studies is that it could have caused a threat to validity in Study 2. The teachers were trained in SRSD the previous year to Study 2 and could have inadvertently taught SRSD in lessons prior to the commencement of Study 2. To minimize this, Study 2 started as close to the beginning of the school year as possible to avoid students' exposure to SRSD prior to commencing the intervention.

Fourth, there was limited time available for teacher training especially for Study 1. While the writing results were still positive, the treatment fidelity was lower than previous studies (Harris et al., 2012). While Study 2 had better treatment fidelity, there was still room for improving the training and implementation of the SRSD concepts for future studies. More research is needed on considering ways to provide manageable training that also maximizes fidelity so that outcomes are the best they can be. Additionally, further research is needed into collaborative training programs which provide teachers ownership over the implementation to see if it is more effective than other methods.

Fifth, due to time limitations and teacher commitments we were unable to collect maintenance data for either study. This has meant that it is unclear if writing outcomes would persist after the intervention. Evidence from the interview would suggest that the treatment teachers would continue to implement SRSD on a regular basis. Additionally, it is unknown if teacher perceptions of the intervention would remain high after the intervention. It would be expected that teachers would be since they spoke positively about the effect the intervention had on the students, but more evidence is needed into the long-term outcomes for both the teachers and the students.

Sixth, whole-class intervention may be effective for a majority of students, however, some students still need extra support within this model. Study 1 was limited to the use of only whole-class teaching with no differentiation for students. In Study 2 it was recommended for the teachers to teach small groups within the whole-class context, however interview data identified that they were not very sure how to do this effectively. Further guidance, training, and modelling

is needed so that teachers can integrate small group and individual teaching into a whole-class program.

Seventh, the comparison groups writing programs were relatively unknown with only limited observations. This was especially the case for Study 2. There was a potential for elements of SRSD to be present in some lessons however, there was enough evidence to suggest that if this was happening it was very minimal. To prepare for this in future research, observations of the comparison classrooms more often could be beneficial to make sure they are not teaching SRSD especially with longer studies. There was a change in comparison class between Study 1 and 2, with a different school participating in Study 2 as one of the two schools used as comparisons. This could have affected the changes in the writing performance in Study 2. However, this will be minimized because all the students participating in Study 2 were not involved in Study 1.

Eighth, both these studies have small sample sizes and only the intervention was treated as an independent variable. Therefore, neither study had a large enough sample size for more a more advanced data analytic technique, such as hierarchal linear modelling. This means that in these studies the effect of the teachers is not included as an independent measure. Further research is needed using larger samples with practice-based professional development and teacher effects are included in the data analysis.

Nineth, students' beliefs and attitudes towards writing are important aspects of SRSD instruction. These were not measured or reported on in the current studies as the focus was on finding out how effective teacher-implemented SRSD interventions are on student writing performance. Further research needs to measure students' attitudes and beliefs towards writing as these are critical to their long-term success are writers and are also goals of the SRSD intervention.

Finally, social validity was only collected at the conclusion of the intervention. While this allows us to conclude that they were accepting of the intervention there is no way of measuring the change in perception over time, or be able to compare their social validity from the beginning to the completion of the intervention. Other studies collected social validity data at pre-intervention as well as post-intervention and were therefore able to conclude that social validity improved and therefore was a direct link to the intervention (Harris et al., 2012). Although it teacher perceptions of social validity were not measured pre-intervention to measure change over

time they, found the intervention to be acceptable and would recommend it to other teachers. The teacher interviews also reinforced the questionnaire responses, however remembering that this is a small sample and is limited to only two teachers' opinions. Therefore, their perceptions and acceptability cannot be used to represent the wider teacher community.

Conclusion

The evidence provided by these two studies suggests that students as young as six can benefit from a teacher-implemented SRSD intervention. The findings from these studies is promising and demonstrate that teachers can implement evidence-based research with an adequate level of fidelity to promote changes within student writing performance. The results from these studies were similar to that of other research in SRSD which demonstrates that this research is effective for young students in New Zealand, and that it is still effective when adapted to address the student needs. While students in the comparison groups writing did improve, the writing performance of the students in the treatment group exceeded that of the comparison students indicating that SRSD was more effective than regular classroom instruction. By using the mixed methods approach it provided more in-depth understanding into teacher social validity and highlighted the importance of teacher acceptability for class wide writing interventions to be sustainable.

Writing research has progressed in the last decade and now more research involves teacher-implementation of the intervention which allows for the research to practice gap to become smaller. Teachers of the future need to be encouraged to learn about evidence-based writing interventions which work so that students are getting the best possible writing instruction. Flexibility and adaptability are important in research programs due to the diversity amongst classrooms, schools, regions, and countries. SRSD is these things, this research has proven that through using two different styles of SRSD implementation which still showed positive results. Thus, SRSD writing interventions are flexible and adaptable for all learners and can contribute to significant improvement in writing outcomes for students.

In conclusion, these studies contribute to the growing body of writing research in a positive way. It is hoped that others will continue to develop SRSD writing interventions to suit different groups of learners in the future so that the benefits of this research continue to help students develop as writers. Finally, SRSD instruction will not solve all writing problems, its focus is on ideas and structure of the stories, it is not intended to replace a full-writing program.

A well-balanced writing program is still needed, with the inclusion of other important areas such as punctuation, spelling, and grammar being taught alongside an SRSD program.

REFERENCES

Andrews, R. (2004). Between Scylla and Charybdis: the experience of undertaking a systematic review in education. In G. Thomas & R. Pring (Eds.), *Evidence-based practice in education* (pp. 65-87). Berkshire: McGraw-Hill Education.

Applebee, A., & Langer, J. (2011). A snapshot of writing instruction in middle schools and high schools. *English Journal, 100,* 14–27.

Australian Curriculum, Assessment and Reporting Authority (ACARA). (2017). *National Report on Schooling in Australia.* https://www.acara.edu.au/docs/default-source/default-document-library/national-report-on-schooling-in-australia-0170de312404c94637ead88ff00003e0139.pdf?sfvrsn=0

Bandura, A. (1994). Self-efficacy. In: V. S Ramachandran, (Ed.). *Encyclopedia of human behavior*. New York: Academic Press.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs NJ: Prentice Hall.

Bangert-Drowns, R. L., Hurley, M. M., & Wilkinson, B. (2004). The Effects of School-Based Writing-to-Learn Interventions on Academic Achievement: A Meta-Analysis. *Review of Educational Research, 74,* 29–58. doi: 10.3102/00346543074001029

Bazerman, C. (2016). What do sociocultural studies of writing tell us about learning to write? In C. A. MacArthur, S. Graham, & J. Fitsgerald (Eds.), *Handbook of writing research* (2nd ed., pp. 11-23). New York, NY: Guilford Press.

Chamberlain, M., & Ministry of Education. (2013). *PIRLS 2010/11 in New Zealand: An overview of findings from the third cycle of the progress in international reading literacy study.* Wellington: Ministry of Education.

Department for Education. (2012). *The research evidence on "writing".* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/183399/DFE-RR238.pdf

Festas, I., Oliveira, A., Rebelo, J., Damiao, M., Harris, K., & Graham, S. (2015). Professional development in self-regulated strategy development: Effects on the writing performance of eighth grade Portuguese students. *Contemporary Educational Psychology, 40,* 17-27.

Finlayson, K., & McCrudden, M. T. (2019). Teacher-implemented writing instruction for elementary students: a literature review. *Reading & Writing Quarterly, 36,* 1-18. doi: 10.1080/10573569.2019.1604278

Gilbert, J., & Graham, S. (2010). Teaching writing to elementary students in grades 4-6: A national survey. *Elementary School Journal, 110*(4), 494-518. doi: 10.1086/651193

Graham, S. (2006). Strategy instruction and the teaching of writing. In C. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *Handbook of Writing Research* (pp.187-207). New York: Guilford.

Graham, S. (2019). Changing how writing is taught. *Review of Research in Education, 43*, 277-303. doi: 10.1302/0091732X18821125

Graham, S., Gillespie, A., & McKeown, D. (2013). Writing: Importance, development, and instruction. *Reading and Writing: An Interdisciplinary Journal, 26,* 1-15. doi:10.1007/s11145-012-9395-2

Graham, S., & Harris, K.R. (2003). Students with learning disabilities and the process of writing: A meta-analysis of SRSD studies. In H. L. Swanson, H.R. Harris, & S. Graham (Eds.), *Handbook of learning disabilities.* New York: Guilford Press.

Graham, S., & Harris, K.R. (2016). A path to better writing: evidence-based practices in the classroom. *Reading Teacher, 69,* 359-365.

Graham, S., Kiuhara, S. A., Harris, K. R., & Fishman, E., J. (2017). The relationship among strategic writing behavior, writing motivation, and writing performance with young, developing writers. *The Elementary School Journal, 118*(1), 82-104. doi: 130.195.253.045

Graham, S., McKeown, D., Kiuhara, S., & Harris, K. R. (2012). A meta-analysis of writing instruction for students in the elementary grades. *Journal of Educational Psychology, 104*, 879-896. doi:10.1037/a0029185

Graham, S., & Perin, D. (2007). A meta-analysis of writing instruction for adolescent students. *Journal of Educational Psychology, 99*, 445-476. doi:10.1037/0022-0663.99.3.445

Harris, K.R., & Graham, S. (1993). Cognitive strategy instruction and whole language: A case study. *Remedial and Special Education, 14*, 30-34.

Harris, K. R., & Graham, S. (1996). *Making the writing process work: Strategies for*

composition and self-regulation (2nd ed.). Cambridge: Brookline Books.

Harris, K.R., & Graham, S. (2016). SRSD in Writing for Students with Learning Disabilities and Their Normally Achieving Peers: Policy Implications of an Evidence-Based Practice. *Policy Insights from Behavioral and Brain Sciences, 3,* 77-84.

Graham, S., & Harris, K.R. (2018). Evidence-based writing practices: A meta-analysis of existing meta-analyses. In R. Fidalgo, K.R. Harris, & M. Braaksma (Eds.), *Design principles for teaching effective writing: Theoretical and empirical grounded principles* (pp. 13-37). Hershey, PA: Brill Editions.

Harris, K.R., Graham, S., & Adkins, M. (2015). Practice-based professional development and self-regulated strategy development for Tier 2, at-risk writers in second grade. *Contemporary Educational Psychology, 40,* 5-16.

Harris, K., Graham, S., Brindle, M., & Sandmel, K. (2009). Metacognition and students' writing. In D. Hacker, J. Dunlosky, & A. Graesser (Eds.), *Handbook of metacognition in education* (pp.131-153). Mahwah, NJ: Erlbaum.

Harris, K., Graham, S., & Mason, L. (2003). Self-regulated strategy development in the classroom: Part of a balanced approach to writing instruction for students with disabilities. *Focus on Exceptional Children, 35,* 1-16.

Harris, K., Graham, S., Mason, L & Friedlander, B. (2008). *Powerful Writing Strategies for all Students.* Baltimore: Brookes Publishing.

Harris, K.R., Lane, K.L., Graham, S., Driscoll, S., Sandmel, K., Brindle, M., & Schatschneider, C. (2012). Practice-based professional development for self-regulated strategies development in writing: A randomized controlled study. Journal of Teacher Education, 63 (2), 103-119.

Harris, K. R., Ray, A., Graham, S., & Houston, J. (2019). Answering the challenge: SRSD instruction for close reading of text to write to persuade with 4th and 5th grade students experiencing writing difficulties. *Reading and Writing: An Interdisciplinary Journal, 32,* 1459-1482.

Hertzberg, F., & Roe, A. (2016). Writing in the content areas: A Norwegian case study. *Reading & Writing: An Interdisciplinary Journal, 29,* 555–576.

Johnson, L. D., Wehby, J. H., Symons, F. J., Moore, T. C., Maggin, D. M., & Sutherland, K. S.

(2013). An analysis of preference relative to teacher implementation of intervention. *The Journal of Special Education, 48,* 214-224. http://doi.org/10.1177/002246913475872

Kühlemeier, H., Van Til, A., Feenstra, H., & Hemker, B.(2013). *Balans van de schrijfvaardigheid in het basis- en speciaal basisonderwijs 2. Periodieke Peiling van het Onderwijsniveau (No. 53) [Present state of writing competency in elementary and special education 2. Periodical assessment of the level of education]*. Arnhem: Cito.

Koster, M.,Tribushinina,E., De Jong, P.F., & van den Bergh, B. (2015). Teaching children to write: A meta-analysis of writing intervention research. *Journal of Writing Research, 7,* 300-324.

Lane, K. L., Harris, K. R., Graham, S., Driscoll, S., Sandmel, K., Morphy, P., . . . House, E. (2011). The effects of self-regulated strategy development for second-grade students with writing and behavioral difficulties: A randomized controlled trial. *Journal of Research on Educational Effectiveness, 4,* 322-353.

McCarthy, S., & Ro, Y. (2011). Approaches to writing instruction. *Pedagogies: An International Journal, 6,* 273–295.

McKeown, D., Brindle, M., Harris, K., Graham, S., Collins, A., & Brown, M. (2016). Illuminating growth and struggles using mixed methods: practice-based professional development and coaching for differentiating SRSD instruction in writing. *Reading & Writing: An Interdisciplinary Journal, 29,* 1105-1140. doi: 10.1007/s11145-016-9627-y.

McKeown, D., Brindle, M., Harris, K.R., Sandmel, K., Steinbrecher, T.D., Graham, S., Lane, K.L., & Oakes, W.P. (2019). Teachers' voices: Perceptions of effective professional development and classwide implementation of self-regulated strategy development in writing. *American Educational Research Journal, 56,* 753-791.

McKeown, D., FitzPatrick, E., Brown, M., Brindle, M., Owens, J., & Hendrick, R. (2019). Urban teachers' implementation of SRSD for persuasive writing following practice-based professional development: Positive effects mediated by compromised fidelity. *Reading and Writing: An Interdisciplinary Journal, 32,* 1483-1506. doi: 10.1007/s11145-018-9864-3.Harris et al. 2015

Ministry of Education, New Zealand. (2019). *National Standards Removed.* https://education.govt.nz/news/national-standards-removed/

Ministry of Education, New Zealand. (2020). *Writing/Tuhituhi: Primary schooling what we have*

found. https://www.educationcounts.govt.nz/statistics/indicators/main/education-and-learning-outcomes/writing-tuhituhi-primary-schooling

Mitchell, D. (2010). *Education that fits: Review of international trends in the education of students with special educational needs.* https://www.educationcounts.govt.nz/ publications /special_education/education-that-fits-review-of-international-trends-in-the-education-of-students-with-special-educational-needs/chapter-ten-evidence-based-pedagogy

National Center for Educational Statistics. (2012). *The nation's report card: Writing 2011.* https://nces.ed.gov/nationsreportcard/pdf/main2011/2012470.pdf

Oakley, A. (2000). *Experiments in Knowing: Gender and Method in the Social Sciences.* Cambridge: Polity Press.

Parr, J. M., & Jesson, R. (2016). Mapping the landscape of writing instruction in New Zealand primary school classrooms. *Reading & Writing: An Interdisciplinary Journal, 29,* 981-1011.

Rietdijk, S., van Weijen, D., Jassen, T, van den Bergh, H., & Rijlaarsdam, G. (2018). Teaching writing in primary education: Classroom practice, time, teachers' beliefs and skills. *Journal of Educational Psychology, 110,* 640–663.

Schluter, P. J., Audas, R., Kokaua, J., McNeill, B., Taylor, B., Milne, B., & Gillon, G. (2020). The efficacy of preschool developmental indicators as a screen for early primary school-based literacy interventions. *Child Development, 91,* 59-76. doi: 10.1111/cdev.13145

Schunk, D. H., & Zimmerman, B. J. (2007). Influencing children's self-efficacy and self-regulation of reading and writing through modeling. *Reading & Writing Quarterly, 23,* 7–25.

Singal, A. G., Higgins, P. D., & Waljee, A. K. (2014). A primer on effectiveness and efficacy trials. *Clinical and Translational Gastroenterology, 5*. doi: 10.1038/ctg.2013.13

Slavin, R. E. (2008). Perspectives on evidence-based research in education: What works? Issues in synthesizing educational program evaluations. *Educational Researcher, 37,* pp. 5-14. doi: 10.3102/0013189X08314117

Thomas, G. (2004). Introduction: evidence and practice. In G. Thomas & R. Pring (Eds.), *Evidence-based practice in education* (pp. 1-18). Berkshire: McGraw-Hill Education.

Tse, S., & Hui, S. (2016). Chinese writing curriculum reforms in Hong Kong in recent years and their impact on teaching and learning. *Reading & Writing: An Interdisciplinary Journal*, *29*, 1013–1037.

APPENDIX C

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Dear Matt McCrudden,

Thank you for your email.

As author of the original article they have the right to include the Accepted Manuscript in a thesis or dissertation that is not to be published commercially, provided that publication is acknowledged using the following text:

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APPENDIX D

INFORMATION SHEET FOR PRINCIPAL

Thank you for your interest in this project. Please read this information before deciding whether you would like your students to take part. If you decide that you students will participate, thank you. If you decide that your students will not take part, thank you for considering my request.

Who are we?

Kristen Finlayson a PhD student in the Faculty of Education at Victoria University of Wellington and Matt McCrudden PhD supervisor and an Associate Professor in the Faculty of Education at Victoria University of Wellington.

What is the aim of the project?

This project is focused on ways to help students develop as writers. We hope that this information will help us understand how to help students improve their writing skills.
This research has been approved by the Victoria University of Wellington Human Ethics Committee (application #22856).

How can you help?

If you agree for your students to take part in this study, he/she will do a short writing task and a questionnaire about his/her perceptions of writing. This will take place as part of your students' regular classroom instruction on writing. Then your students' teacher will provide instruction on how to write stories and he/she will practice writing stories. The instructions and practice are part of his/her regular writing activities in school, which occur 3-4 times a week for 20 minutes. Five weeks later, your students will do a short writing task and the same questionnaire about his/her perceptions of writing.
After completing the questionnaire, your students may be asked to participate in a short interview (i.e., 15-20 minutes) during normal school hours. When your students are asked to be interviewed, it will take place in a safe location at your school. He/she will be asked to describe the strategies they use when they write. We will record the interview and write it up later. Your students can stop the interview at any time, without giving a reason. Your students can withdraw from the study up to 31 December 2018. If your students withdraw, the information your students provided will be destroyed or returned to them.
It is important to note that participation or non-participation will not affect your students' achievement in class in any way.

What will happen to the information your students give?

This research is confidential. We will not name your students in any reports, and we will not include any information that would identify your students. Only research assistants and us will read the questionnaire data, writing tasks, or transcript of the interview. The questionnaire data,

writing tasks, interview transcripts, and any recordings will be kept securely and destroyed 5 years after the research ends.

What will the project produce?
Your students will not be identified in the report. We may also use the results of the research for conference presentations, and academic reports. I will take care not to identify your students or school in any presentation or report.

If you accept this invitation, what are your rights as a research participant?
You do not have to accept this invitation if you don't want to. If you do decide to let your students participate, your students have the right to:

- choose not to answer any question;
- ask for the recorder to be turned off at any time during the interview;
- withdraw from the study up 31 December 2018;
- ask any questions about the study at any time;
- receive a copy of his/her interview recording;
- read over and comment on a written summary of his/her interview;
- be able to read any reports of this research by emailing the researcher to request a copy.

If you have any questions or problems, who can you contact?
If you have any questions, either now or in the future, please feel free to contact:

Primary Researcher:
Name: Kristen Finlayson
Role: PhD student
School: School of Education
Phone: (027) 7655739
Email: Kristen.Finlayson@vuw.ac.nz

Human Ethics Committee information
If you have any concerns about the ethical conduct of the research you may contact the Victoria University HEC Convener: Associate Professor Susan Corbett. Email susan.corbett@vuw.ac.nz or telephone +64-4-463 5480.

APPENDIX E

INFORMED CONSENT FORM: Principal & Teachers

This research has been assessed and approved by Victoria University of Wellington Human Ethics Committee (Reference #22856).

Researcher: Kristen Finlayson, School of Education, Victoria University of Wellington

Please sign the form below to indicate your agreement with each statement below.

- I have read and understood the Information Sheet for this study and the project has been explained to me. My questions have been answered to my satisfaction. I understand that I can ask further questions at any time.

- I understand that my students' involvement in this project involves completing writing tasks and questionnaires about writing.

- If invited, I agree let my students take part in an audio recorded interview about the strategies they use for writing.

- I understand that the investigators do not foresee any potential physical, psychological, social, legal, or other risks to my students as a result of participating in this study.

- I understand that all research data will be securely stored at Victoria University of Wellington premises for at least five years, and will be destroyed when no longer required.

- I understand that any information my students provides will be kept confidential to the researchers.

- I understand that a summary of the results may be used in academic reports and/or presented at conferences, but that my students' names will not be used in reports, nor will any information that would identify my students or my school.

- I understand that I can receive feedback acknowledging my students' participation, I can request additional feedback at any time, and I can receive an outline of the overall findings.

- I agree to let my students participate in this research and understand that I may withdraw my permission until 31 December 2017 without any negative effect.

Signature of principal: _____

Name of principal: _____

Date: _____

Email/Phone number: _____

APPENDIX F

INFORMATION SHEET FOR PARENTS & CAREGIVERS (Treatment Group)

Dear Parents and Caregivers,

My name is Kristen Finlayson and I am a PhD student in the Faculty of Education at Victoria University of Wellington. Matt McCrudden is my supervisor and an Associate Professor in the Faculty of Education at Victoria University of Wellington.

I am conducting a research project at Kilbirnie School looking at writing. We hope that this research will help us understand how to help students improve their writing skills. This research has been approved by the Victoria University of Wellington Human Ethics Committee (application #22856).

As part of this study, your child will do a short writing task and a questionnaire about his/her views of writing. Then Kay Mudge and Jessica White will teach a series of writing lessons for 5 weeks. After 5 weeks your child will do a short writing task and the same questionnaire about his/her views of writing.

After completing the questionnaire, your child may be asked to participate in a short interview (i.e., 10-15 minutes) with Kristen Finlayson. The interview will take place at school and your child will be asked to describe the strategies they use when they write. The interview will be recorded and written up later.

What will happen to the information your child gives?
This research is confidential. I will not name your child in any reports or include any information that would identify your child. Only my research assistants and I will read the questionnaire data, writing tasks, and transcript of the interview. This information will be kept securely and destroyed 5 years after the research ends.

If you accept this invitation, what are your rights as a research participant?
You do not have to accept this invitation if you don't want to. If you do decide to let your child participate, your child has the right to:

- choose not to answer any question;
- withdraw from the study up 31 December 2018;
- ask any questions about the study at any time;
- be able to read any reports of this research by emailing the researcher to request a copy.

If you have any questions, either now or in the future, please feel free to email me at:
Kristen.Finlayson@vuw.ac.nz

Regards,
Kristen Finlayson

APPENDIX G

CONSENT FORM FOR PARENTS & CAREGIVERS (TREATMENT GROUP)

Kia Ora,

This letter is to inform you that in Room 3 and 4 they will be participating in a research based writing programme that has had proven positive effects in increasing student's writing performance. This will be taking place over five weeks. This research is part of my PhD and will allow me to make a contribution to the educational research community.
Please read this information before deciding whether you would like your child's data to be used. If you decide that you do not want your child's data to be shared, thank you for considering my request and please fill in the form below and no data will be gathered on your child.

I have attached some information explaining what the research project is about. If you would like to know more, feel free to contact me. I look forward to working with Room 3 and 4.

Warm Regards,

Kristen Finlayson

- I **Do** give permission for my child's data to be used in this research
- I **Do not** give consent for my child's data to be used in this research:

  (please tick one)

Name of child: _____

Signature of parent/caregiver: _____

Name of parent/caregiver: _____

Date:

_____

Email/Phone number: _____

APPENDIX H

INFORMATION SHEET FOR PARENTS & CAREGIVERS (Comparison Group)

Dear Parents and Caregivers,

My name is Kristen Finlayson and I am a PhD student in the Faculty of Education at Victoria University of Wellington. Matt McCrudden is my supervisor and an Associate Professor in the Faculty of Education at Victoria University of Wellington.

I am conducting a research project in the Wellington Region looking at writing. We hope that this research will help us understand how to help students improve their writing skills. This research has been approved by the Victoria University of Wellington Human Ethics Committee (application #22856).

As part of this study, your child will do a short writing task and a questionnaire about his/her views of writing, then the same testing will be repeated later in the year.

What will happen to the information your child gives?

This research is confidential. I will not name your child in any reports or include any information that would identify your child. Only my research assistants and I will read the questionnaire data, writing tasks, and transcript of the interview. This information will be kept securely and destroyed 5 years after the research ends.

If you accept this invitation, what are your rights as a research participant?

You do not have to accept this invitation if you don't want to. If you do decide to let your child participate, your child has the right to:

- choose not to answer any question;
- withdraw from the study up 31 December 2018;
- ask any questions about the study at any time;
- be able to read any reports of this research by emailing the researcher to request a copy.

If you have any questions, either now or in the future, please feel free to email me at: Kristen.Finlayson@vuw.ac.nz

Regards,
Kristen Finlayson

APPENDIX I

CONSENT FORM FOR PARENTS & CAREGIVERS (Comparison Group)

Kia Ora,

This letter is to inform you that the students in _____ have the opportunity to participate in writing research. This will be taking place over _____. This research is part of my PhD and will allow me to make a contribution to the educational research community.

Please read this information before deciding whether you would like your child's data to be used. If you decide that you do not want your child's data to be shared, thank you for considering my request and please fill in the form below and no data will be gathered on your child.

I have attached some information explaining what the research project is about. If you would like to know more, feel free to contact me. I look forward to working with _____.

Warm Regards,

Kristen Finlayson

- I **Do** give permission for my child's data to be used in this research
- I **Do not** give consent for my child's data to be used in this research:

  (please tick one)

Name of child: _____

Signature of parent/caregiver: _____

Name of parent/caregiver: _____

Date:

_____

Email/Phone number: _____

APPENDIX J

TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI
VICTORIA
UNIVERSITY OF WELLINGTON

Phone 0-4-463 5480
Email susan.corbett@vuw.ac.nz

MEMORANDUM

TO	Matthew McCrudden
COPY TO	
FROM	AProf Susan Corbett, Convener, Human Ethics Committee
DATE	21 April 2016
PAGES	1
SUBJECT	**Ethics Approval: 22856** Writing in Primary School

Thank you for your application for ethical approval, which has now been considered by the Standing Committee of the Human Ethics Committee.

Your application has been approved from the above date and this approval continues until 31 December 2017. If your data collection is not completed by this date you should apply to the Human Ethics Committee for an extension to this approval.

Best wishes with the research.

Kind regards

[redacted]

Susan Corbett

Convener, Victoria University Human Ethics Committee