Improving the Writing Performance of Struggling Students: The Effects of Self-regulated Strategy

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Abstract

Research has shown that the Self-Regulated Strategy Development (SRSD) writing model has a positive impact on fostering students' meta-cognition and self-regulation in the planning and composing of writing, and could build their writing fluency. Supported by the theory of socio-constructivism and the principles of self-regulated learning, the instructional procedures are scaffolded across six basic stages to help students to start writing until they are able to use both writing and self-regulation strategies independently. In view of the extensive reports of the benefits of SRSD writing instruction on struggling writers in different age groups and ability levels in the United States, an experimental design intervention was conducted to examine the effects of SRSD instruction on the writing of realistic fiction in two classes of Primary 4 low progress students (n = 60) over one academic year in one Singapore primary school. Findings indicated that there was a significant improvement in students' composition scores throughout the five cycles of the intervention, although their self-perception of their writing abilities remained largely the same as that prior to the intervention.

Introduction

Writing is a cognitively demanding skill (Flower & Hayes, 1981). It is a multidimensional process which begins with planning what to say, translating ideas into written text, and then revising what has been written. While paying attention to the mechanics of writing, the writer is required, at the same time, to be mindful of the organisation, form and features, and audience needs and perspectives (Harris, Schmidt, & Graham, 1997). Given the complex nature of writing, most students struggling with writing lack critical knowledge of the writing process, experience difficulty generating ideas, selecting topics, developing plans and staying focused on the topic they are writing on, and, most importantly, lack important self-regulation strategies such as persistence (Harris, Santangelo & Graham, 2008). In fact, research has shown that many of them demonstrate a deteriorating attitude towards writing as they advance through the school years. Unless they overcome their negative emotions towards writing and familiarise themselves with effective strategies to manage their writing process, they face considerable disadvantages in the 21st Century and can experience significant barriers in further education and employment.

Underlying premises and theoretical bases

Research has shown that Self-Regulated Strategy Development (SRSD), which is a strategy instruction model of writing, has had a positive impact on fostering students' metacognition in the planning and composing of writing over a range of age groups and learning abilities, and could build students' fluency in writing. SRSD explicitly teaches the knowledge for genre specific and general writing, as well as strategies for self-regulating strategy use and writing behaviour, some of which include goal setting, self-monitoring and self-reinforcement (Harris & Graham, 1992; Harris et al., 2012).

There are three underlying premises to SRSD (Harris et al, 2008). Firstly, it advocates the structured and explicit teaching of knowledge about writing and the skills and strategies involved in the process of writing, including the development of self-regulation, in which students activate and sustain cognitions, behaviours and affects to attain their goals (Schunk & Zimmerman, 1994). The level of explicitness of instruction, as suggested by Harris and Graham (1996, 2009), is adjustable to student needs. Secondly, it addresses the affective and behavioural aspects of writing by promoting the students' development of positive attitudes and beliefs about writing and themselves as writers. Thirdly, it integrates multiple theoretical perspectives related to instruction and learning.

The development of SRSD has been influenced by multiple theoretical perspectives and empirical sources (Harris & Graham, 2009; Harris et al., 2008) concerning writing instruction, motivation, self-regulation, and students with learning difficulties. Some notable ones include Meichenbaum's (1977) cognitive-behavioural intervention principles, which emphasize the collaborative engagement of students by the teacher with the eventual goal of releasing the responsibility of applying and monitoring strategies to the former, social constructivist learning theories (Vygotsky, 1978), which advocate the scaffolding and modelling of explicit instructions to mediate students' learning, the work of Schumaker, Deshler, Alley, Warner, and Denton (1982) on the validation of acquisition steps for strategies by learners with learning disabilities, and also that of Schunk and Zimmerman (1994) on promoting self-regulatory behaviours. Underpinning Schunk and Zimmerman's work is the social-cognitive perspective, which perceives students as capable of motivating their own learning using goal setting, planning, self-monitoring and self-evaluation (Butler & Winne, 1995; Zimmerman & Risemberg, 1997).

SRSD consists of six stages of instruction designed to facilitate the use of cognitive and self-regulation skills to prompt the planning, organisation, composing and revision of writing. In particular, the use of mnemonic acronyms and charts is integrated into each of the six steps, namely: *1. Develop Background Knowledge; 2. Discuss It; 3. Model It; 4. Memorise It; 5. Support It and 6. Independent Performance* (Graham, Harris & Mason, 2005, p. 217-219; Harris, Graham, Mason & Friedlander, 2008, p. 13). These steps will be explained in detail in the methodology section of this report. Harris and Graham (1996, 2009) stress that the stages are not meant to be scripted and linear in actual use, and can be modified, revisited, combined or deleted based on an individual student's needs.

Research (Bandura, 1997; Pajares, 1996; Pajares, Miller & Johnson, 1999) has also widely shown that children's self-efficacy beliefs about their academic capabilities determine their actual academic performance. Thus the current study adapted the Writer Self-Perception Scale (WSPS), with permission from the authors, Bottomley, Henk, and Melnick (1997), to determine if any improvement in writing scores by the struggling writers would enhance their self-efficacy judgements, which would in turn further contribute to their writing performance (Pajares & Valiante, 1997). The instrument assesses children's attitudes, values, beliefs and motivation with regard to writing in general as well as with regard to specific aspects such as focus, coherence, organisation and style of writing.

The validation of the WSPS was grounded in Self-Efficacy Theory (Bandura, 1982, 1997). It consists of five dimensions developed from the premises of the Reader Self Perception Scale (RSPS) by Henk and Melnick (1995) for children in grades four through six for their perception about themselves as writers. There are five domains measured by the instrument: General Progress (GPR), Specific Progress (SPR), Observation Comparison (OC), Social Feedback (SF), and Psychological State (PS). The General and Specific Progress dimensions refer to the current writing performance in comparison with past performance; Observation Comparison indicates how the writer's writing performance compares with that of their peers; Social Feedback reflects the verbal and non-verbal input from teachers, classmates and parents about the writer's writing ability; Psychological State reports how the writer feels inside when they engage with writing.

Methodology: The Research Context

The study reported here is guided by the following two research questions:

1. Does the use of the Self-Regulated Strategy Development (SRSD) writing instruction improve the writing performance of Primary 4 low progress students in a Singapore primary school? If so, how?
2. Did the Self-Regulated Strategy Development (SRSD) writing instruction help to improve the Primary 4 low progress students' perceptions of their own writing abilities?

An experimental design intervention that involved two experimental classes of similar profiles, Class A and Class B, was adopted. The degrees to which the classes responded to the treatment were compared and are reported in the findings section of the report. The procedure of the project followed a pre-intervention, intervention and post-intervention phase design.

The subjects were two low progress Primary 4 classes (n=60), Class A (n=35) and Class B (n=25). The former was academically stronger than the latter, based on their Primary 4 year-end examination results. Apart from the teachers of the two classes, who implemented SRSD, there were another two teachers who validated the implementation processes and reviewed the worksheets. To increase teachers' sense of involvement in the intervention, as well as develop their understanding of and skills in using SRSD procedures, the other English teachers of Primary 4 level classes observed the lessons taught by the teachers and provided feedback on the lessons.

The procedure of the research followed the pre-intervention, intervention and post-intervention phase design.

Pre-intervention phase

Before the start of the intervention, from January to March 2017, the team of teachers learnt about SRSD and how to implement the stages through the reading of articles, frequent dialogues during Teachers' Professional time, known as Teachers' Timetable Time (TTT), and conferencing with a knowledgeable other who was an academic staff member at the National Institute of Education (NIE). It was estimated that around six hours were spent on dialogues and discussions during the two months preceding the intervention. The original writing exercise materials were also revised to incorporate the framework of SRSD instructions, which were adapted from Harris, Graham, Mason and Friedlander's (2008) work. In addition, the WSPS was administered to Classes A and B to find out their attitudes towards writing before the intervention began.

Intervention phrase

From March to early October 2017, teachers in both classes implemented the six steps in the SRSD model (*1. Develop Background Knowledge; 2. Discuss It; 3. Model It; 4. Memorise It; 5. Support It and*

6. Independent Performance (Graham, Harris & Mason, 2005, p. 217-219; Harris, Graham, Mason & Friedlander, 2008, p. 13) in each of the four writing exercises prescribed by the English Language Department of the school. The exercises centred on the narrative genre but the topic differed in each writing exercise. In semester one, there were two writing exercises; in semester two, there were another two such writing exercises. Each writing exercise took an average of three to four weeks of lessons to complete.

1. In the *Develop Background Knowledge* step, the teacher built up the students' prior knowledge of the writing topic as well as that of the organisational structure and basic language features of the narrative text type. Appropriate vocabulary, known as 'million dollar words', was explicitly taught to help the students improve their communication of ideas. The teacher also introduced goal setting as part of self-regulation in writing.
2. In the *Discuss It* step*,* the goal and purpose of writing step, the teacher helped the students to identify reasonable, measureable and attainable goals using self-statements, which served as think-alouds or self-talk for regulating their thoughts during the writing process.
3. In the *Model It* step, the teacher explicitly demonstrated the use of mnemonics (POW, SPARC and DROF) for writing, using think-aloud questions and self-statements. For the purpose of this study, the mnemonics taught were specifically crafted to help students elaborate the plot and actions (e.g. POW = Pick your own ideas. Organise your notes. Write and say more; DROF = Do. Reason. Outcome. Feelings) components of the narrative text, in relation to the required organisational (SPARC = Setting. Problem. Actions. Resolution. Conclusion) and language features of the narrative genre. The teacher could use some self-statements, which were statements students could say to themselves, or think-aloud questions, to regulate students' thinking. At the brainstorming stage, the teacher could pose a think-aloud question, 'What do I need to do first in the setting?' or say 'Let my mind be free and take my time. Good ideas will come to me'; while defining the problem, the teacher could say, 'I need to think of what happened'; when assessing the ideas brainstormed, the teacher might ask, 'Does this idea make sense?'; for self-reinforcement, the teacher might say, 'If I work hard and follow the steps, I'll write a great essay!'; for editing the writing, the teacher might say, 'Can I use a power word here?' or 'Did I write in the past tense?'.
4. In the *Memorise It* step, the teacher got the students to remember and practise the steps of the writing strategies and the meaning of the three mnemonics (POW, SPARC and DROF) used to reinforce fluency. This is where students were provided with cue cards and a graphic organiser, which acted as concrete reminders of the critical steps involved in writing compositions in relation to building up the problem and action sections of the narrative text.
5. In the *Support It* step, the teacher continued to provide scaffolding and continuous feedback while the students practised writing in groups. During this stage, the students worked on planning and organizing the ideas. The teacher worked with the entire class, small groups or individuals to prompt and guide students in building the parts of narrative as well as modelling each necessary stage.
6. In the *Independent Performance* step, the students were expected to have internalized the strategy steps and worked on the actual writing. During this stage, the teacher reminded the students to revisit their goal-setting and self-monitoring procedures that included the application of self-statements demonstrated in Step 3 of the SRSD instruction.

Post intervention

The students' writing from the four writing exercises, and first and second semestral assessments (SA1 and SA2) was collected and scored. The grading of the students' writing for the writing exercises was done using a rubric that was mainly adapted from the SEAB (Singapore Examinations and Assessment Board) band descriptors to include emphasis on the use of the mnemonics and use of million dollar

words. The students' compositions were then scored using the SEAB band descriptors translated into scores.

Before assessing the students' writing, the teachers involved were briefed about the use of the marking scheme and shown the representative writing of high, medium and low-scoring compositions. For SA1 and SA2, the students' compositions were independently scored by two markers, who were unfamiliar with the purpose and design of the study but were experienced with Primary English Language assessment. The final SA1 and SA2 scores were obtained from the average of the scores from the two markers. They were then compared for evidence of improvement or otherwise in the students' writing.

Description of marking rubrics for scoring Writing Exercises

There were two components for the student grade, namely, content and language. Each component carried a score of 10, with a total of 20 representing the highest quality of writing, and 2 representing the lowest quality. Each band corresponded to a mark range.

Following the completion of the intervention, the Writer Self-Perception Scale (WSPS) was administered to the two classes a second time. The results were compared with that of the pre-intervention survey to assess possible changes in students' knowledge of writing and writing strategies, as well as their perceptions of SRSD writing instruction.

Results

Performance in Writing Exercises

Class A's and Class B's writing scores for each of the four writing exercises (WE1 to WE4) were compared using a dependent sample *t-test* (one tailed).

Table 1

Mean Scores of Writing Exercise by Class A and Class B

	WE1		WE2		WE3		WE4	
Class	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
A	7.89	3.01	10.23**	2.52	12.06*	3.72	9.86	2.68
B	7.90	1.76	10.36**	1.98	13.88**	0.33	9.44	3.32

Note. Comparison with the results of the immediately prior test in each case.
* *p*<.01. ** *p*<.001.

To determine if there was significant improvement or otherwise as the students progressed from one WE to the next, five pairwise comparisons of mean scores were made: WE1 vs WE2, WE2 vs WE3, WE3 vs WE4, WE1 vs WE4, WE2 vs WE4.

From Table 1, a comparison of WE2 with WE1 in Class A shows a significant increase in the mean score (2.34), $t(34) = 4.27$, $p < .001$. Cohen (1988)'s coefficien*t d* was found to be medium in size ($d = .688$) (Sawilowsky, 2009). Similarly, a comparison of WE2 with WE3 also indicated a significant increase in

the mean score (1.83) at $t(34) = 3.77$, $p < .001$. The size of this effect as indexed by Cohen (1988)'s coefficient d was found to exceed the convention for large effect size ($d = .914$). Since the mean score of WE3 was higher than that of WE2 and WE1, and the increase was significant in both cases, it was deduced that the improvement in mean scores from WE1 to WE3 was significant. Despite the drop of mean score from WE3 to WE4 (-2.20) and from WE2 to WE4 (-0.37), the comparison of WE1 with WE4 still reveals a significant increase in mean score (1.97) at $t(34) = 3.37$, $p < .001$. To safeguard against testing for statistically significant differences on data that may not be considered normally distributed, the Wilcoxon Signed Rank test (one tailed) was conducted. The results confirmed that of the dependent sample t-test (one tailed).

In Class B, it appears that there was a steady improvement in mean scores from WE1 to WE3. A comparison of WE2 with WE1 shows that there was an increase in mean score (2.56) which was significant at $t(24) = 5.456$, $p < .001$. Cohen (1998)'s coefficient d was found to exceed the convention for a large effect size ($d = 1.46$) (Sawilowsky, 2009). There was an even greater increase in the mean score (3.52) from WE2 to WE3, which was significant at $t(24) = 12.68$, $p < .001$. The size of this effect as indexed by Cohen (1998)'s coefficient d was found to exceed the convention for a huge effect size ($d = 2.55$) (Sawilowsky, 2009). Since the mean score of WE3 was higher than that of WE2 and WE1, and the increase was significant in both cases, it was also deduced that the improvement in mean scores from WE1 to WE3 was significant. There was a drop in mean score from WE3 to WE4 (-4.44) as well as from WE2 to WE4 (-3.82). In each instance, the drop registered was more than that of Class A. To safeguard against testing for statistically significant differences on data that may not be considered normally distributed, the Wilcoxon Signed Rank test (one tailed) was conducted. The results confirmed that of the dependent sample t-test (one tailed).

Performance in Semestral Assessments (SA1 and SA2)

A dependent sample t-test was also conducted to compare the results of the classes' performance in the Continuous Writing assessment in SA1 and SA2.

Table 2

Mean Scores of Continuous Writing in SA1 and SA2 by Class A and Class B

	SA1		SA2	
Class	Mean	SD	Mean	SD
A	8.96	1.93	10.14**	1.87
B	5.62	1.98	6.62**	2.30

Note: **p < .01

Table 2 shows that there were statistically significant differences between the mean scores of Continuous Writing in SA1 and SA2 of Class A and Class B. The dependent sample t-test (one-tailed) revealed a significant difference for Class A, $t(34) = 3.274$, $p = .001$. Cohen (1998)'s coefficient d was found to be medium in size ($d = .613$). Since the sample size of 35 may not be considered large enough to ensure normality, the Wilcoxon Signed Rank test (one-tailed) was conducted on the mean scores, and the results were found to be the same.

Although the improvement in mean scores for Class B from SA1 to SA2 (1.002) was smaller than that of Class A (1.183), the dependent sample t-test nevertheless showed the difference to be significant, $t(24) = 2.91$, $p = .004$. Cohen (1998)'s coefficient d was found to be medium in size ($d = .506$). Again, the Wilcoxon Signed Rank test confirmed the results of the dependent sample t-test.

Figures 1 and 2 show the performance trends of Class A and Class B in all four WE and two SA. As can be seen, Class A's mean scores dropped from WE2 to SA1. As it was only two months after the start of the intervention in March when the students were assessed in SA1 in May, they might not have had enough practice opportunities during these two months to internalise the SRSD steps to the point that they could be fluently recalled and accurately applied during the actual writing process. As mentioned earlier, there was also a drop in mean scores from WE3 to WE4. This was attributed to the task requirements of WE4, which might have been unfamiliar to the students. Despite the drop in the mean scores from WE3 to WE4, the overall trend shows that the class made reasonable progress from SA1 at mid-year to SA2 at year end.
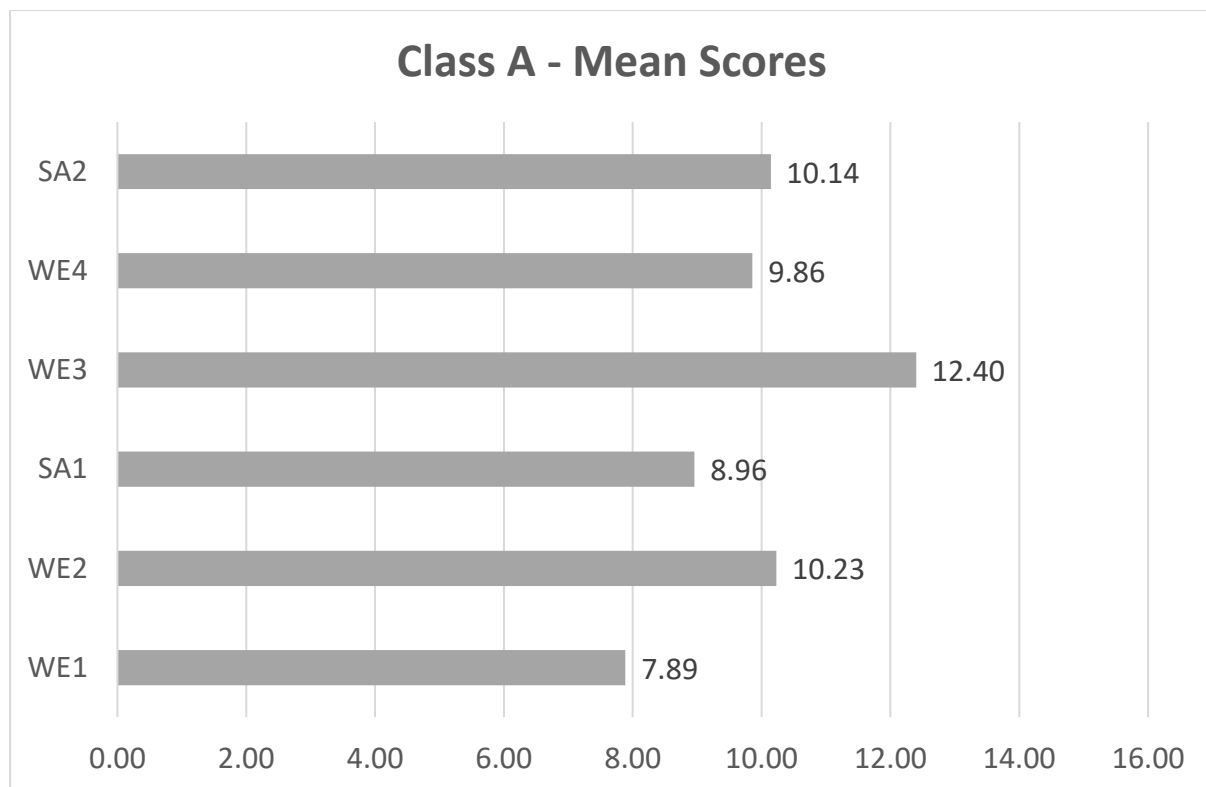
Figure 1. Class A's Performance Trend in WE and SA

Like Class A, Class B experienced a drop in mean scores from WE2 to SA1, as well as from WE3 to WE4. As in the case of Class A, the drop in mean score from WE2 to SA1 could be due to the fact that the students had not been given sufficient reinforcement in using the SRSD steps before they could apply them effectively under exam conditions. Although they made improvement in WE3, they experienced another drop in mean scores from WE3 to WE4, which was likely due to the fact that students lacked the prior knowledge of the topic in WE4. In addition, there was also a change of teacher by the time they did WE4, which might also have affected the delivery of the SRSD steps. Thus, the class did not improve in its SA2 mean scores from WE4. Nevertheless, the improvement in scores from SA1 to SA2 was found to be significant at $t(24) = 2.91$, $p = .004$. This suggested that the students were able to better apply the SRSD steps in SA2 after having experienced four rounds of SRSD reinforcement.
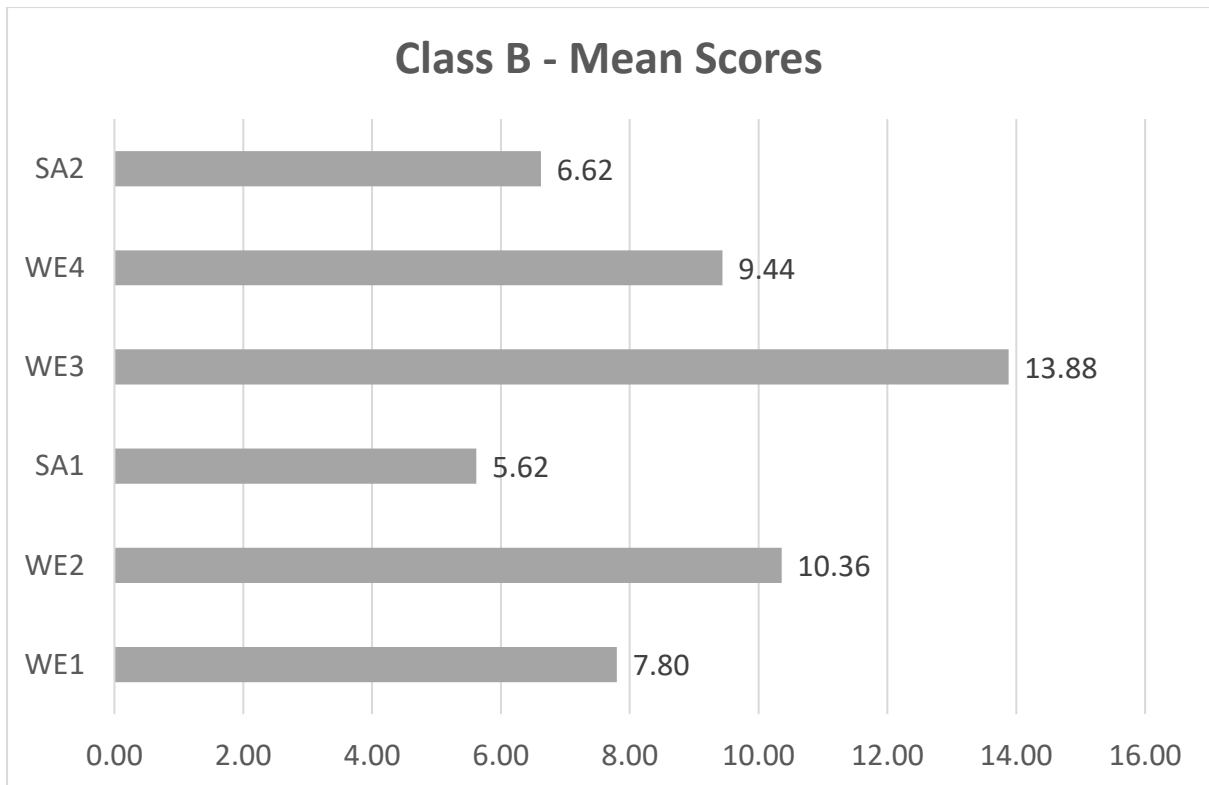
Figure 2. Class B's Performance Trend in WE and SA

Overall, a comparison of the performance trends of Class A and Class B shows that both classes improved in their mean scores from SA1 to SA2, and that the improvement was significant for both classes. Although the latter outperformed the former in its WE2 and WE3 mean scores, it obtained lower mean scores in WE4, SA1 and SA2 (see Tables 1 and 2). A comparison of results shows that Class A scored better than Class B in both SA1 and SA2 (see Table 2). An independent sample *t-test* (one-tailed) confirmed that the differences in mean scores in both SA1 and SA2 were statistically significant, $t(58) = 6.53$, $p < .001$. The size of this effect as indexed by Cohen (1998)'s coefficient *d* was found to exceed the convention for a large effect size ($d = 1.67$) (Sawilowsky, 2009). A Mann Whitney test was used to safeguard against testing for statistically significant differences on the data that may not be considered normally distributed, and the results concurred with that of the independent sample *t-test* (one-tailed).

Analyses of Student Writing

To determine the aspects of writing the students had improved in, eight samples of student writing from each class were selected, analysed and compared for the improvement made from SA1 to SA2 in the following aspects: evidence of story elements, evidence of the use of mnemonics (POW, SPARC and DROF), the fluency of ideas and the length. The results are shown in Table 3.

Table 3

Analyses of Students' Writing

Class	Overall Scores			Story Elements			Use of Mnemonics (POW, SPARC + DROF)			Fluency of ideas			Length		
	I*	C*	D*	I	C	D	I	C	D	I	C	D	I	C	D
A	5	2	1	2	4	2	3	5	0	3	3	2	4	2	2
B	6	1	1	4	2	1	1	6	1	1	6	1	1	0	7

Note. *I = Increased. *C = Constant. *D = Decreased.

In Class A, out of the eight selected samples of student writing, five of them made improvement in overall scores, two remained the same and one dropped; two progressed from no presentation of story elements in SA1 to visible use of story elements in SA2, while another two dropped from showing story elements in SA1 to giving no evidence of story elements in SA2; three progressed from no use of DROF to elaborate ideas in SA1 to evidence of use of DROF in SA2; out of five samples that featured complete plots, three of them improved in their fluency of ideas from SA1 to SA2; in terms of length, four students produced a higher word count in SA2 than in SA1.

In Class B, out of eight selected samples, six made improvements in overall scores, one remained unchanged and one dropped; four students progressed from no presentation of story elements in SA1 to visible use of story elements in SA2; one progressed from no use of DROF to elaborate ideas in SA1 to some use of DROF in SA2; one improved in fluency of ideas while two did not have a complete plot; in terms of length, one improved in having a higher word count in SA2 than SA1.

Based on the analyses, it appeared that more students in Class A had made greater improvement in terms of the use of mnemonics (POW, SPARC and DROF), fluency of ideas and word count from SA1 to SA2.

Writer Self-Perception Scale

After the completion of the intervention, the Writer Self-Perception Scale (WSPS) was again administered to the two classes. The scores of the pre- and post-WSPS for Class A and Class B were compared, using paired sample *t*-tests, to assess possible changes in the students' knowledge of

Table 4

Comparison between Pre- and Post-Intervention WSPS in Class A

Class A (n=31)	General Progress GPR	Specific Progress SPR	Observation Comparisons OC	Social Feedback SF	Psychological State PS
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Pre-SRSD	29.48 (6.16)	23.74 (6.09)	25.58 (6.72)	22.00 (4.91)	18.97 (7.34)
Post-SRSD	29.77 (5.23)	24.00 (5.09)	28.45** (5.80)	23.52* (5.01)	20.74* (6.41)

Note: *$p < .05$. **$p < .01$.

writing and writing strategies, as well as their perceptions regarding the SRSD writing instruction. The results are shown in Tables 4 and 5.

In Class A, there were four absentees who did not participate in the survey and thus the total number of students dropped to 31. The tests show that there was only improvement in the following scales: OC (Observation Comparison), SF (Social Feedback), and PS (Psychological State). Among these three scales, the most significant improvement was for OC (3.45) at $t(30) = 2.80$, $p = .004$.

Table 5

Comparison between Pre- and Post-Intervention WSPS in Class B

Class B (n=25)	General Progress GPR	Specific Progress SPR	Observation Comparisons OC	Social Feedback SF	Psychological State PS
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Pre-SRSD	22.28 (6.85)	21.04 (5.01)	23.32 (7.17)	21.48 (7.05)	19.44 (5.06)
Post-SRSD	27.20** (6.02)	21.80 (6.58)	25.28 (6.94)	23.16 (6.11)	20.80 (6.08)

Note: ** $p < .01$.

Students in Class B only made measurable improvement in the GPR (General Progress) scale, but this was found to be statistically highly significant, at $t(24) = 3.33$, $p = .001$. This suggests that the students perceived that they had actually made improvements in their writing abilities after the SRSD intervention.

Discussion of findings

The present study examined whether SRSD was effective in improving the scores for writing realistic fiction text by two low progress classes of Primary 4 struggling writers. As self-efficacy judgements can impact students' writing performance (Pajares & Valiante, 1997), the study also aimed to find out if the SRSD intervention would improve their perceptions of their own writing abilities.

Answer to Research Question 1

1. Does the use of the Self-Regulated Strategy Development (SRSD) writing instruction improve the writing performance of Primary 4 low progress students in a Singapore primary school? If so, how?

According to the findings of this study, there was some improvement in the mean scores over three of the writing exercises of both classes. In Class A, the improvement in mean scores from WE1 to WE2 was significant ($p < .001$), and from WE2 to WE3, the increase was also significant ($p < .001$). Overall, the increase of mean scores from WE1 to WE4 showed a significant improvement at $p < .001$. Similarly, in Class B, the increase in mean scores from WE1 to WE2 was significant ($p < .001$), with its improvement showing a large effect size ($d = 1.46$), compared to a medium effect size produced by Class A ($d = .688$) (Sawilowsky, 2009). Its improvement from WE2 to WE3 was likewise significant and registered a huge effect size ($d = 2.55$) (Sawilowsky, 2009).

Then from SA1 to SA2, there was clearly an improvement in mean scores for Classes A and B. In both classes, the improvement in class mean score was statistically significant ($p < .001$), with Class A registering greater improvement and a larger effect size ($d = .613$) than Class B ($d = .506$). A further

comparison between the SA performances of Classes A and B showed that Class A made more improvement in its mean score than Class B.

Students in both classes appeared to produce longer, more fluent and complete compositions with story elements, as well as higher word counts in SA2. Specifically, more students in Class A made improvements in the use of mnemonics (WWW, SPARC and DROF) to elaborate their plot, and produced higher word counts, whereas more students in Class B made progress only in their feature of story elements. Although the analyses of the writing of eight students could not be extrapolated to the writing of the rest of the students in both classes, this provided a 'snap shot' of the kind of improvement the students made following the intervention. The findings therefore reinforced that of existing studies that SRSD contributes to meaningful improvements in students' development in the process of writing (Harris, Graham & Mason, 2006)

Despite the improvement in scores in the two classes, it is necessary to acknowledge that factors such as teaching styles and competence, and the students' existing writing knowledge or maturation effects might also have contributed to the students' improvement. However, a discussion of these factors would be beyond the scope of this report.

Answer to Research Question 2

2. Did the Self-Regulated Strategy Development (SRSD) writing instruction help to improve the Primary 4 low progress students' perceptions of their own writing abilities?

Based on the comparison of the pre- and post-Intervention WSPS scores in Class A, findings from the dependent sample *t*-tests showed that there was significant improvement in the scores of the OC (Observation Comparison), SF (Social Feedback), and PS (Psychological State) scales. This suggests that students in Class A perceived that they had made improvement as perceived by the affirmation they received from their teachers, parents, and that they thought that they had improved in their writing abilities more than their peers, and had become more psychologically engaged with writing after the SRSD intervention. This finding appeared to contradict that of Pajares, Miller and Johnson's (1999) that better writers (such as those in Class A) did not have positive self-perception of themselves as writers, and thus did not take pride in their accomplishments.

For students in Class B, on the other hand, the only improvement made was in the GPR (General Progress) scale. The dependent sample *t*-test showed that the difference between the scores on the scale prior and after the intervention was significant. This suggests that students in Class B perceived that their overall writing performance had improved after the SRSD intervention. The fact that Class A's pre-SRSD score in GRP was already significantly higher than that of Class B might also mean that Class A was confident about their writing performance before the intervention and that the intervention did not contribute much to further improving their perception of their writing capabilities.

In terms of whether the SRSD intervention had helped the students develop positive perceptions about their writing capabilities and about themselves as writers, the findings in this study suggest that apart from the OC (Observation Comparison), SF (Social Feedback), and PS (Psychological State) scales in Class A, and the GPR (General Progress) scale in Class B, the SRSD intervention did not help to improve the students' self-perceptions towards their own writing abilities and towards themselves as writers. The finding is in line with reports by Loh, Ang and Goh (2016), which show that a significant improvement in students' writing scores did not lead to significant improvement in their perceived competence in their overall writing abilities. One possible reason to explain the lack of improvement is that the duration of the intervention was not long enough to result in a significant impact. Given the

short time frame stipulated in this study, students might not have sufficiently developed self-efficacy judgements about their writing abilities.

Limitations and Constraints

There are some limitations and constraints to the current study, which will be addressed in the following sections.

Design of the Study

Due to the school enrolment, there was no other class of students of a similar profile to the two studied here to use as a control class. Because of the absence of a control class, there was insufficient evidence to conclude that the SRSD intervention alone helped to improve the writing scores of Class A and Class B in their class exercises and semestral examinations. The improvement of grades from SA1 to SA2 could be a result of the maturation of the students or the individual teaching styles of each of the teachers, both of which factors might have caused the increase in post-intervention scores instead.

Task Difficulty

Task difficulty is believed to have affected the internal validity of the design of this study to some extent. It could have been a confounding variable affecting the correlation between the SRSD intervention and results of students WE scores, leading to a biased outcome (WordPress, 2017). As mentioned earlier, both classes experienced a drop in mean scores from WE3 to WE4. The latter required students to write in the voice of an abused animal. Compared to the other WE exercises, the topic presented some difficulty to the students in both classes as they did not have sufficient prior knowledge about the issues concerning abandoned pets, which made it more challenging for students to complete the task requirement. Both classes experienced a drop in their scores as a result. However, as the topic, which was aligned to the theme of the STELLAR units covered prior to the teaching of WE4, was also assigned to other non-participating classes, changing the topic and task requirement could have caused administrative inconvenience to the entire level.

Conclusion and future research

Apart from the areas of constraints and limitations, there are a few considerations to address should the study be continued, or should a similar one be conducted in Singapore mainstream schools in the future.

Firstly, as suggested by Limpo and Alves (2013), a larger sample population could be selected to explore SRSD effects both at student and classroom levels using multilevel analyses involving specific elements of writing, such as composition length, quality, and self-perceptions of writing ability. Secondly, there needs to be a study of the evidence of generalisability effects to find out whether SRSD instructional effects can transfer over time to other genres, such as persuasive writing. Lastly, it would have been ideal if classroom instruction for students who needed SRSD could have continued until they had met the criterion of demonstrating independent writing. One implication for future research is not to limit the total number of class sessions in SRSD instruction. Rather, as typically preferred in SRSD instruction, instruction with students who need it should continue until they have met the criterion of independent writing. In which case, future studies could also look into how long SRSD instruction should be implemented for optimal results to be realised.

References

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, *37*(2), 122-147.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: Freeman.

Bottomley, D. A., Henk, W. A., & Melnick S. A. (1997). Assessing Children's Views about Themselves as Writers Using the Writer Self-Perception Scale. *The Reading Teacher*, *51*(4), 286-296.

Butler, D. L., & Winne, P. H. (1995). Feedback and Self-Regulated Learning: A Theoretical Synthesis. *Review of Educational Research*, *65*(3), 245-281.

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

Flower, L. & Hayes, J. R. (1981). A Cognitive Process Theory of Writing. *College Composition and Communication*, *32*(4), 365-387.

Graham, S. Harris, K. R. & Mason, L. H. (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.

Harris, K. R., & Graham, S. (1992). Helping young writer master the craft: Strategy instruction and self-regulation in the writing process. Cambridge, MA: Brookline Books.

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

Harris, K. R., & Graham, S. (2009). Self-regulated strategy development in writing: Premises, evolution, and the future. *British Journal of Educational Psychology (monograph series)*, no. 6, 113-135.

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

Harris, K. R., Lane, K. L., Graham, S., Driscoll, S. A., 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., Santangelo, T., & Graham, S. (2008). Self-regulated strategy development in writing: Going beyond NLEs to a more balanced approach. *Instructional Science*. *36*, 395-408.

Harris, K. R., Schmidt, T., & Graham, S. (1997). *Strategies for Composition and Self-Regulation in the Writing Process.* LD Online. Retrieved from http://www.ldonline.org/

Henk, W. A. & Melnick, S. A. (1995). The Reader Self-Perception Scale (RSPS): A new tool for measuring how children feel about themselves as readers. *The Reading Teacher*, *48*(6), 470-482.

Limpo, T. & Alves, R. A. (2013). Teaching planning or sentence-combining strategies: Effecrie SRSD interventions at different levels of written composition. *Contemporary Educational Pscyhology*. *38*, 328-341.

Loh, C. H. F., Ang, K. H., & Goh, J. X. N. (2016). The effects of planning instruction and self-regulation training on the achievement and motivation of Primary 3 and 4 pupils in composition writing. In ELIS (Ed.), *Research Reports 2016* (pp. 37-49). Singapore: English Language Institute of Singapore.

Meichenbaum, D. (1977). *Cognitive behaviour modification: An integrative approach*. New York, NY: Plenum.

Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research*, *66,* 543-578.

Pajares, F., Miller, M. D., & Johnson, M. J. (1999). Gender differences in writing self beliefs of elementary school students. *Journal of Educational Psychology*, *91*, 50-61.

Pajares, F., & Valiante, G. (1997). Influence of self-efficacy on elementary students' writing. *Journal of Educational Research*, *90*(6), 353-360.

Sawilowsky, S. S. (2009). New effect size rules of thumb. *Journal of Modern Applied Statistical Methods*, *8*(2), 597–599.

Schumaker, J. B., Deshler, D. D., Alley, G. R., Warner, M. W., & Denton, P. H. (1982). Multipass: A learning strategy for improving reading comprehension. *Learning Disability Quarterly*, *5*, 295-304.

Schunk, D. H. & Zimmerman, B. J. (1994). *Self-regulation of learning and performance: Issues and educational applications*. Hillsdale, NJ: Erlbaum.

WordPress (2017). *Confounding Variable: Simple Definition and Example*. Retrieved from http://www.statisticshowto.com/experimental-design/confounding-variable/

Vygotsky, L. S. (1978). *Mind in Society: The Development of Higher Psychological Processes*. Cambridge, MA: Harvard University Press.

Zimmerman, B. J., & Risemberg, R. (1997). Becoming a Self-Regulated Writer: A Social Cognitive Perspective. *Contemporary Educational Psychology*, *22*(1), 73-101.

Appendix: Writer Self-Perception Survey

Name: _____ ( )

Class: _____   Date: _____

Listed below are statements about writing. Tick one response for each question.

☹☹ = Strongly Disagree

☹   = Disagree

😐   = Undecided

🙂   = Agree

🙂🙂 = Strongly Agree

S/N	Sentence	☹☹	☹	😐	🙂	🙂🙂
1.	I write better than my classmates in my class.(OC)					
2.	Writing makes me feel good (PS)					
3.	I think writing is easier for me than it used to be.(GPR)					
4.	When I write, my organization is better than my classmates'. (OC)					
5.	My family thinks that I write well.(SF)					
6.	I think I am getting better at writing. (GRP)					
7.	When I need to write, I don't feel stressed. (PS)					
8.	My content is more interesting than my classmates'. (OC)					
9.	My teacher thinks my writing is okay. (SF)					
10.	My classmates think I write well. (SF)					
11.	My sentences and paragraphs fit together as well as my classmates' sentences and paragraphs (OC)					
12.	I need less help to write well now than before. (GPR)					

S/N	Sentence	☹☹	☹	😐	🙂	🙂🙂
13.	People in my family think I write well. (SF)					
14.	I write better now than I could before. (GPR)					
15.	I think I am a good writer. (General)					
16.	I write my sentences in a better order than the other kids. (OC)					
17.	My writing has improved. (GPR)					
18.	I write better now than I could before.					
19.	I have more ideas to write now than before. (GPR)					
20.	The organization of my writing (paragraphing) has really improved. (GPR)					
21.	The sentences I use in my writing stick to the topic more than the ones my classmates use. (OC)					
22.	The words I use in my writing are better than the ones I used before. (SPR)					
23.	I write more words than some of my classmates. (OC)					
24.	I am relaxed when I need to write. (PS)					
25.	My content is more interesting than before. (SPR)					
26.	The words I use in my writing are better than the ones my classmates use. (OC)					
27.	I feel comfortable when I write (PS)					
28.	My teacher thinks I am a good writer. (SF)					
29.	My sentences stick to the topic better now. (SPR)					
30.	My writing seems to be clearer than my classmates' writing. (OC)					
31	When I write, my sentences fit better into the different paragraphs (SPR)					
32.	I am comfortable to write. (PS)					
33.	I can tell my teacher thinks my writing is okay. (SF)					

S/N	Sentence	☹☹	☹	😐	🙂	🙂🙂
34.	The order of my sentences makes better sense now (SPR).					
35.	I enjoy writing. (PS)					
36.	My writing is more clear than it used to be. (SPR)					
37.	My classmates think I write well. (SF)					
38.	The words I use in my writing are better than the ones I used before. (SPR)					