

## The Strategic Planners of Writing: A Tier 2 Intervention Writing Program

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*The present research approaches differentiated instruction in light of metacognition and collaborative practices. The aim is to examine the contribution of a Tier 2 intervention implemented by teachers through a program entitled The Strategic Planners of Writing to the writing performance of 3rd and 4th grade students with writing difficulties. The special teachers and 31 students who received special education services in inclusive classes at eight public primary schools in the prefecture of Attica in Greece were randomly selected. Sixteen students in four inclusive classes participated in the intervention program and formed the experimental group. Fifteen students in another four inclusive classes received regular classroom instruction from their special teachers and formed the control group. The teachers of the experimental group received intensive practice in specific strategy instruction and collaborative practices in a differentiated teaching environment such as that of the Tier 2 Response to Intervention Program. The students were evaluated before and after the end of the intervention regarding the general quality of the written narratives they produced and the metacognitive knowledge they possessed about writing. The experimental group received an 8-week intervention with a frequency of two lessons per week. The teachers followed the structured lesson plans and applied educational material given to them according to the stages of the Self-Regulated Strategy Development model. The results indicated that the experimental group showed statistically significant improvements in text structure and in the general quality of the produced narratives compared to the control group. At the same time, it was found that there was a statistically significant difference in the experimental group's awareness of the planning phase of the writing process and structural elements of a good narrative text compared to that of the control group.*

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**Keywords: explicit strategy instruction, metacognition, collaborative writing, writing difficulties, Tier 2 intervention program**

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## INTRODUCTION

Writing production is a complex and cognitively demanding process that requires the writer to effectively perform the role of the scribe, capturing their thoughts according to the correct orthographic patterns (Wolf, Abbott, & Berninger, 2017) and demonstrating fluent handwriting (Graham, 2010). At the same time, the writer is called upon to successfully fulfill the role of the creator, to generate, to organize their ideas, to supervise the process, and to modify both the content and the process in order to respond to their original aspirations (Spandidakis, 2010). The dual role of the writer is reflected in cognitive models of writing production (Flower & Hayes, 1981), according to which text composition is a problem-solving process that includes planning, drafting, and revising. The cognitive process of planning concerns the creation of a mental plan or an internal representation, which defines the writer's goals and the means for the realization of these goals, while also guiding the production of writing. More specifically, the planning process concerns the creation of a mental representation or a mental plan resulting from the recall of information from long-term memory (generating), from the organization of knowledge (organizing), and from its processing through the application of the appropriate strategies, so that the produced text is suitable for the purpose for which it is written (goal setting). The cognitive process of drafting is closely related to the transformation of ideas produced during planning into text. The cognitive process of revising includes reading, correcting, and finalizing the produced text. The writer reads the text in order to identify ambiguities and evaluate whether it meets its original (communicative) goals. This means that when there is incompatibility between the final product and the expected (goals), the writer is driven to make corrections (Alamargot & Chanquoy, 2001).

The effective orchestration of the aforementioned cognitive processes requires the knowledge and flexible application of cognitive and metacognitive skills (Álamargot & Chanquoy, 2001). Metacognition is a structural element in cognitive models of writing. Experienced writers apply the knowledge transformation model by constructing mental representations of both the text and communication needs they must meet and the goals they set. The construction of internal representations guides and controls experienced writers (Bereiter & Scardamalia, 1987), who have developed metacognitive skills of monitoring, content review, and flexible application of strategies (Harris, Santangelo, & Graham, 2010). At the same time, the socio-cognitive models of writing point out that the production of written language, in addition to being a mental act, is also social. It takes place in authentic conditions of communication, negotiation, and construction of meaning, and is carried out through the interaction of the writer, the reader, and the wider social framework (Flower, 1994; Hayes, 1996).

From the above perspective, a teacher offers appropriate mediating support and engages, together with their students, in the shared implementation of strategic behaviors with the support of mental aids or procedural facilitation (Englert, Mariage, & Dunsmore, 2006). Gradually, the teacher diminishes their supporting role in order to offer the appropriate space for the learning autonomy of their students to develop. These writing models, by describing the profile of the experienced writer who intentionally constructs meaning during the writing activity and by emphasizing the important mediating role of the teacher in the effective writing process, simultaneously outline the profile of weak writers who face difficulties in writing.

### ***Students with Writing Difficulties***

Students with writing difficulties follow the model of knowledge telling by applying associative writing (Bereiter & Scardamalia, 1987). They manage and approach the production of written speech in a linear and simplistic way, without setting goals, planning in advance the steps they will implement to realize their goals, or rechecking and redefining their initial goals (Saddler & Graham, 2007). Writers using this approach are often focused on text production and mechanical features such as handwriting and spelling. However, without automaticity in the transcription process, working memory resources are allocated to acts of handwriting and spelling rather than higher-level composition skills (Berninger, 1999; Cornoldi et al., 2010), and the produced compositions are often characterized by limited quality and completeness (Santangelo, 2014).

The above-mentioned writing behavior results from metacognitive deficits that do not allow writers to apply self-observation skills and executive functions in order to carry out detection, diagnosis, and corrective intervention strategies (Fletcher, Lyon, Fuchs, & Barnes, 2007). At the same time, these writers show deficient declarative, procedural, and conditional knowledge regarding writing (Lin, Monroe, & Troia, 2007). This results in the production of short texts, which reflect a lack of awareness of textual structure and are characterized by insufficient coherence and organization of ideas.

### ***Successful Interventions in the Teaching of Writing***

The contours of the learning needs of students with writing difficulties, as well as the large number of students who fail to respond effectively to the task of writing texts (National Center for Education Statistics, 2012) have prompted researchers to investigate reliable and evidence-based programs. They have concluded that explicit strategy instruction (Graham, McKeown, Kiuahara, & Harris, 2012) and collaborative practices (De Smedt, Graham, & Van Keer, 2020) are two structural characteristics of successful intervention practices that encourage weak students with writing difficulties to approach the cognitive profile of experienced student writers.

The Response to Intervention (RTI) model is a promising intervention program, as it indicates that students with learning difficulties can receive successful and effective three-tiered intervention. Tier 1 intervention is delivered in the general classroom, Tier 2 intervention is delivered in small groups, and Tier 3 intervention is delivered as individualized intervention outside of class (Fuchs & Fuchs, 2006). At the first level (Tier 1), the intervention concerns all students and reflects good practices in early intervention and reduction of difficulties faced by some students. Then, if necessary, it is provided at a second level (Tier 2), as a systematic intervention with appropriately adapted programs for small groups of students who need differentiated teaching. Students who do not respond to instruction receive individualized intervention at a third level (Tier 3). Instructional support of appropriate quality is a cornerstone of RTI, as the deviation of the aforementioned students is determined based on their degree of responsiveness to the provision of such support. Among the characteristics of quality support are specific strategy instruction, systematic intervention, and flexible grouping of students as well as the implementation of collaborative practices (Fuchs & Fuchs, 2006).

### ***Specific Strategy Instruction***

Numerous meta-analyses (Graham, 2006; Rogers & Graham, 2008; Graham & Perin, 2007) aimed at investigating the most appropriate practices for improving writing production have concluded that explicit strategy instruction is particularly effective for both typical students and students with difficulties in writing. Teaching of planning and revision strategies (Troia & Graham, 2002), awareness of textual structure (Graham et al, 2013), and review and analysis of exemplar texts have been identified as particularly valuable (Williams, Nubla-Kung, Pollini, Stafford, Garcia, & Snyder, 2007; Englert, Raphael, Anderson, Anthony & Stevens, 1981). The use of graphic organizers (Englert, 2009), the application of mnemonic rules (Pandeliadou, 2011), and structured group collaborative practices (Harris, Graham, & Mason, 2006; Yarrow, & Topping, 2001), have been highlighted as the most appropriate practices for improving written language production (Gersten & Baker, 2001; Rogers & Graham, 2008; Graham & Perin, 2007). Furthermore, mnemonic strategies have been proven to help students in inclusive classes remember and learn the content (Mastropieri, Sweda, & Scruggs, 2000). According to the Scruggs, Mastropieri, Berkeley, and Marshak (2010), there are reconstructive and transformational mnemonic procedures that could be applied from the teacher's point of view to support students' learning by addressing their memory problems.

More recently, the meta-analysis by Graham, McKeown, Kiuahara & Harris (2012) identified specific instruction in strategies, cultivation of metacognitive skills and collaborative writing as effective practices in teaching writing. A cornerstone of the specific strategy instruction is the gradual transfer of con-

trol of learning to students. The Self-Regulated Strategy Development (SRS) model (Harris, Graham, & Mason, 2006; Saddler, 2006) is an evidence-based practice that mirrors the steps of explicitly teaching strategies and gradually leads students to learning autonomy. It includes six stages: teaching prerequisites for using the strategy (develop background knowledge); description and discussion of the strategy (describe it); demonstration of its use (model it), memorization of it by the student (memorize it), the student's supported use of it (support it); and the student's application of it with little or no support (independent use). In addition, the provision of procedural facilitations plays a decisive role in the acquisition of learning autonomy (De La Paz, 2007; Englert, Mariage, & Dunsmore, 2006). Procedural facilitations are instructions and cues that support the students mnemonically and help them monitor and control the writing process, as well as develop metacognitive skills. Procedural facilitations are story maps, mnemonic aids in the form of acronyms, worksheet guides, self-check sheets, question cards, and cue cards for each stage of writing that teachers use to help students emulate the performance of more expert learners. Procedural facilitators are gradually withdrawn in the context of fading support. In this way, they can be used as mental supports and to help students how to work without the constant support from the teacher (Valiantis & Neofytou, 2017).

### ***Collaborative Practices***

Slavin (1996) and Johnson and Johnson (2009) have argued that cooperative learning is one of the most important successes in educational research. They have mentioned the following advantages of collaborative practices: (a) reinforcement and creation of motivation for goal-directed behavior, as the participants realize that the results depend on mutual effort; (b) encouragement of social cohesion, as the participants acquire a feeling of care through common preparation practices; and (c) promotion of cognitive skills, as the participants move one another into the zone of imminent development through collaborative practices. In this last practice, students sometimes function as models and sometimes as less able students, while at the same time they interact in solving a common goal. Important parameters of cooperative learning are structuring group interactions, group goals, individual accountability, and equal opportunity for success (Slavin, Hurley, & Chamberlain, 2003). In addition, the inclusion of students in groups alone does not offer many benefits if it is not accompanied by structured contexts in which the roles to be taken by students are distinct and the cognitive demands are understood (Yarrow & Topping, 2001). Mercer (1996) has mentioned interaction to solve a problem is a determinant of successful collaborative practices, and has stated that encouraging students to develop dialectical practices in the group promotes the construction of their knowledge. Thus, students get the feeling that they are contributing to the joint completion of a project.

### ***The Present Study***

The present study seeks to transform the above theoretical background into educational practice through the implementation of The Strategic Planners of Writing program. This program captures in educational practice the stages of the SRSD model (Graham, 2006) and the principles of the RTI model (Fuchs & Vaughn, 2012). It emphasizes the importance of specific strategy instruction and cooperative learning within a progressively withdrawn scaffolding framework that respects and encourages the pace of individual learning. At the same time, the program reflects the principles of the social-cognitive model of writing production (Hayes, 1996), in which collaborative practices are encouraged as pathways of knowledge co-construction in student work groups.

### ***Elements of Differentiated Instruction***

The current Tier 2 intervention program supports differentiated instruction through two means: the process and the content. In terms of the process, it provides several strategies for differentiating teaching, such as task analysis of the process of comprehension and production of written language; visualization of work steps; provision of clear examples of the application of writing strategies; use of story maps, learning contracts, and self-monitoring rockets; and, finally, different levels of support in the form of cue cards (Tomlinson, 2001). In addition, the mediating role of the teacher who encourages collaborative practices with structured roles (the dual role of the writer as creator-secretary and the reader as reviewer) is highlighted. In terms of content, the differentiation concerns the gradation of the material, given that weak students with writing difficulties work to achieve the same goal as typical students, but through graded difficulty tasks (Valianti & Neofytou, 2017). In particular, the simplified educational material offered focuses on the composition of narrative texts. Guidance is offered in the composition process, with mostly closed-ended multiple-choice story parts cards and structured story maps and mnemonics as well. Writing procedures are structured from simple knowledge (supporting environment through teacher's modeling and verbalized thinking) to complex knowledge (writing autonomy). In addition, self-regulated learning routines are offered in which students connect what they know to their current cognitive state using cue cards such as "I'm working with my partner..." and "I need help with..." Along with the self-regulation routines of the students' learning, the teacher is supported with a similar self-regulation of the teaching routine, so that they know the needs and level of readiness of each student and can offer targeted and personalized help. In particular, the teacher is offered a sheet for observation and reflection on the differentiated teaching, which they use to check and note whether they applied certain quality characteristics of the differentiated instruction.

Assessment is a necessary component of differentiated instruction (Moon, 2005). Therefore, during the intervention program, teachers monitor students' performance and involve the students in self-evaluation and peer review, focusing on comparing the newly acquired knowledge with the previous one through the KWL strategy (Ogle, 1986). As noted, teachers and students share similar self-evaluation routines, the former focused on teaching process is concerned and the latter on learning.

### ***Purpose and Research Questions***

The purpose of the present research is to examine the contribution of a Tier 2 intervention implemented by a teacher through the program entitled The Strategic Planners of Writing to the writing performance and metacognitive knowledge about writing of 3rd and 4th grade students with writing difficulties who received special education services in inclusive classes of primary public schools. We address two research questions in this study:

1. Do specific strategy instruction and collaborative writing improve the writing performance of students with writing difficulties who receive Tier 2 intervention through The Strategic Planners of Writing?
2. Do specific strategy instruction and collaborative writing encourage the development of metacognitive knowledge concerning writing in students with writing difficulties who receive Tier 2 intervention through The Strategic Planners of Writing?

## **METHOD**

### ***Participants and Setting***

The present study was conducted by the 1st Interdisciplinary Assessment Center offering Consultation and Support of 4th Region of Attica. According to article 11 (ba) of the law 4823/2021, the Interdisciplinary Assessment Center offering Consultation and Support has purposes and responsibilities at the level of planning and implementation of educational and psychosocial interventions. These include the implementation, in collaboration with teachers and the Interdisciplinary Support Committees (DYY), of customized personal or group pedagogical and counseling psychosocial support interventions for students through educational intervention and prevention programs; targeted actions to strengthen the cognitive and psychosocial skills of students; actions to empower specific members or vulnerable groups of the student community; actions aimed at cultivating opportunities for personal development by strengthening self-esteem and improving the overall quality of life of students; the identification of structural barriers and obstacles to students' equal access to learning; and the implementation of scientific, educational, and other supporting measures for all students in a school community.



Based on the above framework of responsibilities, a collaborative pedagogical support intervention was implemented under the supervision of the 1st Interdisciplinary Assessment Center Offering Consultation and Support of the 4th Region of Attica, in cooperation with the teachers of eight inclusive classes who expressed an interest in participating. Its aim was to strengthen the cognitive skills associated with written language. Initially, an informational email was sent to the schools under the responsibility of the assessment center, which was also shared with the regional education directorate. Afterwards, eight schools were randomly selected from all the schools that expressed interest.

Thirty-one students (8 girls and 23 boys) from eight urban public primary schools in Attica, Greece, participated in the present study. All students had received diagnoses from the assessment center that they fell into the category of people with special educational needs, and they faced difficulties in writing. All students had Greek as their mother tongue and had no linguistic or mental deficits. The selection of schools was done by random sampling. The students studied in the 3rd and 4th grades and received special education services in inclusive classes at their schools. Students in the two middle grades were selected as these grades are when the systematic teaching of writing production begins, and the syllabus has similar requirements regarding the writing of narrative texts. In inclusive classes in the Greek education system, special education teachers teach small, homogeneous or heterogeneous groups of students corresponding to Tier 2 of RTI. In this study, four classes constituted the experimental group and implemented the Strategic Planners of Writing intervention program, and four classes were the control group. All students who participated in the program had their parents' written informed consent.

**Table 1. Demographic Characteristics of the Students**

		N	%
Gender	Boys	23	74.2
	Girls	8	25.8
Grade	Grade 3	15	48.4
	Grade 4	16	51.6
Group	Control	15	48.4
	Experimental	16	51.4

***Intensive Practice of Teachers***

All teachers received theoretical and practical training in SRSD and differentiated instruction through the implementation of the Strategic Planners of Writing program. Four hours of training was provided by the first author. As shown in Figure 1, The Strategic Planners of Writing mirrored the six stages of



SRS D. Each lesson was modeled by the first author, and then the teachers practiced implementing it with each other, receiving support and feedback. Teachers were encouraged to talk about their teaching needs as well as about their students' writing needs and strengths. Each teacher received a notebook including detailed lesson plans. They were given copies of students' material for their students in their classes. Teachers were expected to follow scripted lesson plans and were provided with a checklist with step-by-step directions for each lesson. They received ongoing feedback and support during the implementation of the program to ensure that they went through all the steps of the lesson plans. Each teacher was encouraged to contact the first author by email or phone for assistance as needed. Before the beginning of the intervention program, all teachers filled out a questionnaire about their classroom writing practices. Teachers did not report any planning, composing, or revising strategy, and did not report any structured collaborative writing practices apart from verbally encouraging their students to interact with each other. They did mention that they used lists of words and phrases and verbally prompted students to revise their texts. All of the teachers had master's degrees in special education.

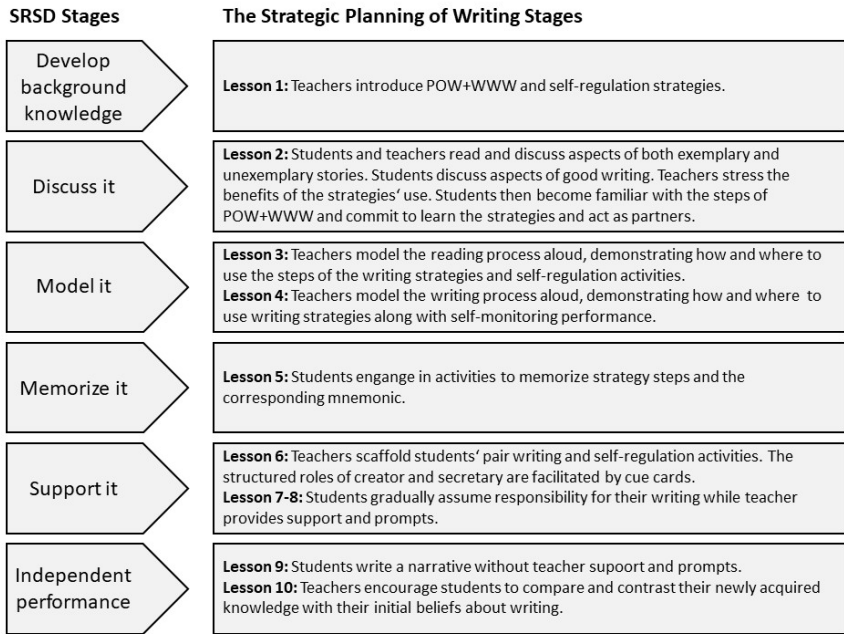


Figure 1. Overview Over the Lessons

### ***Control Condition***

The control group students were given writing instruction that was oriented to the outcome. Teachers did not report any evidence of planning, drafting, revising techniques, or using the SRSD process. Instead, they mentioned that they used to make use of lists of preferable/appropriate words to guide students' writing and verbally encouraged their students to cooperate with each other and check their papers again when they finished their writing.

### ***Intervention Condition***

The experimental group received an 8-week intervention with a frequency of two sessions per week. Each session consisted of two consecutive 45-minute lessons. Teachers followed the structured lesson plans and applied the differentiated teaching strategies and collaborative writing, as well as the materials provided, in groups of three to four students, according to the stages of the SRSD: develop background knowledge, discuss it, model it, support it, perform it independently. Organized lesson plans were provided that supported the role of the teacher as a model for both demonstrating writing strategies and providing the metacognitive knowledge of writing and as a mediator in the supported application of writing strategies through the provision of procedural facilitations that were gradually withdrawn. At the same time, students were encouraged to take structured roles during their writing activity through the visualization of the roles of the writer and the reader and the offered routines of self-regulation of learning. The schedule of the intervention program applied by the students of the experimental group is presented in Table 2.

### ***Material***

The program's educational materials were structured into lesson plans that reflected the fading scaffolding procedure, according to the SRSD model's stages. The procedural facilitation offered was in the form of structured story maps and story parts cards. Cards for memorizing mnemonics provided students with mnemonic support and metacognitive instruction in each phase of writing production: planning, drafting, and revising. The writing strategies were visualized and took the form of pedagogical agents that functioned as "writing partners" of the students throughout the composition of texts. Dialectical practices among group members were enhanced by the story parts cue cards' structure, which offered multiple choices and encouraged students to discuss and negotiate their choices. The development of metacognitive skills was supported through learning process steps reflection sheets, self-assessment cards, and asynchronous work cards. At the same time, the asynchronous work cards allowed the teachers to be informed about the current cognitive state of the students and, consequently, about the kind of help they would need to provide. The students were offered an observation sheet detailing the steps of the writing process. A similar observation sheet for the teaching steps was provided to the teachers. In

this way, the parallelism of the roles of teacher and student, as partners applying similar self-regulation routines and strategic behaviors, was highlighted.

**Table 2. *Intervention Program Schedule***

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Week 1. Lessons 1–2: Activating prior knowledge. Familiarity with the pedagogical agents of the program and awareness of the usefulness of the POW + WWW strategies. Students and teacher read and discuss model stories as well as poor stories.

Week 2. Lesson 3: Exemplary presentation of narrative text analysis, “I tell the story of this year’s adventurous birthday,” through verbalized thinking by the teacher.

Week 3. Lesson 4: Exemplary presentation of the process of producing writing, “I tell a different play,” following the planning, recording and revision phases. Teacher acted as a model demonstrating how to use writing strategies and self-monitor performance.

Week 4. Lessons 5-6: Memorization of strategies. Collaborative writing of a narrative text on the topic: “I narrate an accident I saw.” Students worked in pairs with direct and systematic guidance from the teacher and provision of procedural facilities.

Week 5 & 6. Lessons 7-8: Collaborative writing of a narrative text: “I narrate an adventure in the mountains.” Students practiced in pairs with the provision of procedural aids in the form of cards and descending guidance from the teacher.

Week 7. Lesson 9: Independent production of a narrative text: “I tell a fictional story.”

Week 8. Lesson 10: Reflection and program evaluation.

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***The Reliability and Validity of the Intervention***

Teachers received intensive practical training in applying all the instructional procedures. Moreover, they received a checklist with the steps of each lesson. Specifically, the teachers kept a record of the steps of their teaching on a specially designed self-observation sheet, to ensure fidelity to the implementation of the intervention. Finally, after each stage was completed, all teachers and the first author had a session to answer any questions and provide support if there was need, as well as to discuss the teaching steps on the checklists.

***Means of Data Collection***

**Writing Prompt Measures**

Before the beginning of the instruction and 1 week after the instruction was ended, students were asked to write a personal narrative in response to the writing prompt “I’m telling an adventure I had on vacation.” The topic was chosen because it met the criterion of being interesting and familiar for the age range of the students.

## Writing Scoring

The writing produced was assessed for length, overall quality, and textual structure (Harris & Graham, 1996; Glaser & Burnstein, 2007; Zumbunn & Bruning, 2013). Length referred to the number of words, while overall quality referred to the organization, coherence, ideation, and word choice. The textual structure referred to the structural elements of the narrative text: main character, location, time, problem, feeling, character action, consequence, and ending. The evaluation of the produced writings was carried out by two special education teachers, who were working in the 1st Interdisciplinary Assessment Center offering Consultation and Support of the 4th Region of Attica and did not know the purpose of the research. The teachers received training in how to reliably use the scoring system. More specifically, they were provided with papers that were representative of low, middle and high-quality scores, respectively. Before scoring, participants' personal information was removed, and the papers were typed to minimize the possibility of bias in the scoring process. The inter-rater agreement was .83 for overall quality features and .87 for textual structure. Harris and Graham's story grammar scale (1996) for scoring the inclusion and the quality of the parts of a story was used. A score of 0 was assigned if a given element was not present, a score of 1 was assigned if it was present, and a score of 2 was awarded if it was elaborated in depth. In addition, raters were asked to read papers attentively to obtain a general impression of the overall writing quality. More specifically, they were asked to use a 4-point Likert scale to rate the produced papers' organization (introduction, main body paragraphs and ending, clear sequence of episodes that moved logically though time) coherence (temporal and causal connections among episodes that moved logically though time and were developed with detail); ideation (the clarity of the logical flow of ideas, how vaguely or explicitly the subject and unifying events were stated, whether the writer used descriptive details), and word choice (use of exemplar vocabulary, dialogues, appropriate vocabulary, word repetition). The number of words produced was also measured and recorded.

## Metacognitive Knowledge of Writing Measure

Students' metacognitive knowledge of writing was assessed through writing interviews before and after the intervention. The interviews included the following five questions about declarative and procedural knowledge of writing. *Question 1: "If you were a teacher for a day and a student asked you what good writing means/is, what would you say?" Question 2: "Why do you think some children struggle with writing?" Question 3: "What do good writers do when they write?" Question 4: "What do you do to plan and check your text?" Question 5: "If a friend of yours asked you what things/elements his narrative should have in order to be good,*

*what would you tell him?*” (Olinghouse & Graham, 2009; Schoonen & Gloop, 1996; Zumbrum & Bruning, 2013).

Questions were read aloud to students by their teachers and rephrased if the students had difficulty with interpretation. Interviews were read and broken down into idea units. Idea units were then classified into the following categories: (a) reports on the production procedures (e.g., “use capital letters,”) and on the substantive procedures (e.g., “use exciting/ appropriate words”) that constituted the result; (b) reports on the planning, coherence, textual structure, and revision of the text that constituted the process and C. references to teacher grade and help reports recommending seeking help. The absence or mention of each of the above elements was scored with a 0 or a 1, respectively.

## RESULTS

The data was recorded with the use of Statistical Package for Social Science (SPSS) 24, and the appropriate data processing techniques were applied in order to study the research questions. Descriptive analysis was applied to calculate means and standard deviations to present students’ writing performance, as well as metacognitive knowledge of writing before and after the implementation of the The Strategic Planners of Writing intervention program both for the control group and for the experimental group. A test of differentiation was then carried out through a t-test for independent samples to examine whether the production of the students’ writing differed in terms of its three criteria of length, overall quality, and textual structure, as well as whether students’ metacognitive knowledge (declarative and procedural) of writing had changed from the initial to the final measurement. In addition, a differential test was performed through a paired t-test for paired samples to examine whether the quality of the writing and metacognitive knowledge differed in both the control group and the intervention group before and after the implementation of the intervention program.

### ***Overall Quality of Writing***

Table 3 presents the statistics for the pretest and posttest performance of the students in the production of written speech. The comparison between the two groups in terms of performance in the three criteria that characterize the production of written speech was done with a t-test control for independent samples before the start of the program.

**Table 3. Pretest and Posttest Scores for Measures Associated with Quality of Written Expression (Length, Quality, Structure) Based on the Treatment (Exp/Con) and the Time of Intervention (Before/After)**

	Experimental group			Control group		
	<i>Length</i>	<i>Quality</i>	<i>Structure</i>	<i>Length</i>	<i>Quality</i>	<i>Structure</i>
Pretest Mean	54	1.8	3.9	36	1.3	4.6
SD	26	0.6	1.5	18	0.7	1.9
Posttest Mean	84	2.5	7.2	59	1.7	4.7
SD	37	1.0	2.5	28	0.7	2.2

Before the implementation of the program, the comparison of the results of the students’ performance in the production of written speech did not show a difference between the control group and the experimental group in two of the three criteria of the production of written speech. Specifically, in the first criterion, length, the difference between the two groups was considered statistically significant ( $t=-2.1$   $p=0.04$ ). In the second criterion, overall quality, the difference between the two groups was not statistically significant ( $t=-1.9$   $p=0.07$ ). And in the third criterion, textual structure, the difference between the two groups was also not statistically significant ( $t=1.1$   $p=0.24$ ). Therefore, the two groups, experimental and control, were equivalent before the intervention in two of the three criteria. Consequently, the two groups started from the same point in terms of the production of the written word apart from the length criterion, in which the students in the experimental group had, on average, a significantly higher performance ( $M=54.3$ ) than the students in the control group ( $M=36.3$ ). In the following analysis of the comparison of the differences between the two groups in the specific criterion after the intervention, we will check the performance of the children before the intervention as a covariate. If differences are seen in the final measurement after the end of the intervention, they can safely be attributed to the intervention program implemented in the experimental group.

Table 3 shows a significant difference in the performance of the students of the experimental group and the control group in terms of the criteria that were examined after the intervention. When it came to length, the difference in the averages between the two groups was 25 points and was deemed marginally statistically significant ( $t=-2.0$   $p=0.05$ ). Due to the absence of equivalence between the two groups, we proceeded to an ANCOVA analysis of covariance with the covariate of the children’s performance before the intervention. According to

Levene's criterion, the compared groups were homogeneous  $F(1.29=0.984)$ ,  $p=0.32$ . However, the interaction between the pretest and the two groups indicated that the homogeneity condition of the regression was violated  $F(1.29=3.771)$ ,  $p=0.03$ ). Therefore, it was not possible to proceed with an analysis of covariance. In the overall quality criterion, the students of the two groups showed a significant difference of 0.8 points, which was considered statistically significant ( $t=-2.5$   $p=0.01$ ). In the text structure criterion, the difference between the two groups was 2.5 points and was statistically significant ( $t=-2.8$   $p=0.00$ ). The comparison between the two groups in terms of performance in the three criteria was done with a t-test control for independent samples, from which it appeared that the differences in the performance of the students in two of the three criteria of written language were statistically significant. It can be argued that except for the length criterion, the differences between the two groups in the overall quality of produced papers were due to the intervention program.

### ***Changes in the Groups from the Initial to the Final Measurement***

#### **Experimental Group**

A difference test was performed through a paired t-test in paired samples to examine whether there were changes from the initial to the final measurement in the experimental group. Table 3 shows a significant improvement in the averages in the overall quality of the produced papers after the experimental intervention. The length criterion of the written narratives showed an increase of 30 points ( $M$  after the intervention =30). This difference in the means was statistically significant ( $t=-3.3$   $p=0.00$ ). The overall writing quality criterion also showed a satisfactory increase of 0.7 points ( $M$  after the intervention= 0.7), which is statistically significant ( $t=-3.8$   $p=0.00$ ). A very large increase of 3.3 units was observed in the textual structure criterion in the experimental group, in contrast to the control group, where the increase was only 0.1 units ( $M$  after the intervention = 3.3), which was considered statistically significant  $t=-5.2$   $p=0.00$ ). The students in the experimental group seem to have benefited in terms of the overall quality of writing and textual structure after Tier 2 SRSD intervention through The Strategic Planners of Writing as delivered by the teacher in the inclusive class.

#### **Control Group**

Differentiation control through paired t-test in paired samples was also done in order to examine if there were any changes from the initial to the final measurement in the control group. As can be seen from Table 3, there was initially a small improvement in the averages in terms of the quality of the written word after the typical writing intervention delivered in the inclusive class. The length criterion of the written word showed an increase of 23 points ( $M$  after the intervention =23). This difference in the means was considered statistically



significant ( $t=-2.5$   $p=0.02$ ). The quality criterion showed a small increase of 0.4 points ( $M$  after the intervention= 0.4) which is however not statistically significant ( $t=-1.3$   $p=0.18$ ). A minimal increase was observed in the structure criterion ( $M$  after the intervention = 0.1), which was not considered statistically significant  $t=-0.1$   $p=0.91$ ). Students in the control group benefited only in terms of the length criterion after the typical writing intervention delivered in the inclusive class by their special education teacher.

**Metacognitive Knowledge of Writing**

Table 4 presents the statistics for the pretest and posttest performance of the students in the metacognitive knowledge of writing. The comparison between the two groups in terms of performance in the five criteria characterizing metacognitive knowledge for the writing was done with a t-test control for independent samples before the start of the program. Before the implementation of the intervention program, the comparison of the results of the students’ metacognitive knowledge of writing did not show any difference between the control group and the experimental group.

**Table 4. Pretest and Posttest Scores of Measures Associated with Metacognitive Skills Based on the Treatment (Exp/Con) and the Time of Intervention (Before/After)**

	Experimental group					Control group				
	Prod.	Subs.	Plan.	Revis.	Help	Prod.	Subs	Plan	Revis.	Help
Pretest Mean	1.2	2.3	0.06	0.20	0.53	1.2	1.9	0.06	0.2	0.53
SD	1.2	1.4	0.06	0.20	0.53	1.2	1.6	0.25	0.41	0.63
Posttest Mean	1.7	1.9	0.33	0.33	0.33	1.7	2.2	0.33	0.33	0.33
SD	0.7	1	0.81	0.61	0.48	0.7	1.9	0.81	0.61	0.48

Abbreviation: prod: production procedures, subs: substantive procedures, plan: planning, revis: revising help: help seeking

In the first criterion, production procedures, the difference between the two groups was not considered statistically significant ( $t=-1.8$   $p=0.07$ ). In the substantive procedures criterion, the difference between the two groups was not statistically significant ( $t=-0.4$   $p=0.6$ ). In the planning the text criterion, the difference between the two groups was also not statistically significant ( $t=0.04$

p=0.9). In the revising the text criterion, the difference between the two groups was also not considered statistically significant ( $t=1.9$   $p=0.08$ ). Finally, in the help-seeking criterion, the difference between the two groups was also not considered statistically significant ( $t=0.7$   $p=0.4$ ). Therefore, the two groups, experimental and control, were equivalent before the intervention in the five criteria that constituted the metacognitive knowledge of writing. The two groups started from the same point in terms of their metacognitive knowledge of writing, and as a consequence, any differences in the final measurement after the end of the intervention can be attributed to The Strategic Planners of Writing as applied to the experimental group.

As shown in Table 4, it appears that there was a difference in the reports of the students in the experimental group and the control group related to the criteria of metacognitive knowledge, after the intervention. In terms of the first criterion, production procedures, the difference in the means between the two groups was -0.4 points and was not statistically significant ( $t=-0.6$   $p=0.5$ ). In the substantive procedures criterion, the students in the experimental group scored more references by 1.1 points, which was considered marginally statistically significant ( $t=-1.9$   $p=0.05$ ). In the planning criterion, the students in the experimental group also scored more references by 2.06 points. Therefore, a statistically significant difference was observed with the control group ( $t=-1.0$   $p=0.04$ ). In the revising criterion, the students in the experimental group also scored more reports by 0.56 points, which not statistically significant ( $t=-2.8$   $p=0.3$ ). In the help-seeking criterion students in the control group also scored more reports by 0.06 points, which was not statistically significant ( $t=-0.1$   $p=0.9$ ) either. In conclusion, differences were found between the control group and the experimental group in two of the five criteria established to assess their metacognitive knowledge. In particular, the students in the experimental group demonstrated awareness of the substantive procedures of writing and the importance of the planning phase of the writing process as well as of the structural elements of a good narrative text.

### ***Group Changes Between the Initial and Final Measurements of Metacognitive Knowledge***

#### **Experimental Group**

A paired t-test of variance was performed to examine the existence of changes from the initial to the final measurement. Table 4 shows differences in the averages for metacognitive knowledge after the experimental intervention. The production procedures criterion showed a decrease of 0.4 points (M after the intervention = -0.4), which was not statistically significant ( $t=0.7$  , $p=0.4$ ). The substantial procedures criterion showed an increase of 0.3 points (M after the intervention= 0.3), which was also not statistically significant ( $t=-0.5$   $p=0.57$ ). A

significant increase was observed in the planning criterion ( $M$  post-intervention = 2.06), which was statistically significant ( $t=-4.0$   $p=0.01$ ). Students had zero references to planning at the pre-measurement, so they appear to have benefited greatly from the intervention in terms of understanding the importance of the planning phase and the structural elements of a good narrative text. The criterion of revising showed an increase of 0.56 points ( $M$  after the intervention =0.56), which was not considered statistically significant ( $t=-3.5,0$   $p=0.03$ ). This difference may not seem significant at first glance; however, if the null reports of the students in the pre-measurement stage are considered, it can be seen that this marked a significant change in the metacognitive knowledge of the students. The help-seeking criterion showed a small decrease of 0.06 points ( $M$  post-intervention= -0.06), which was not statistically significant ( $t=0.5$   $p=0.5$ ). In conclusion, the students in the experimental group who took part in the Tier 2 intervention through The Strategic Planners of Writing program benefited in terms of the metacognitive knowledge of writing, specifically declarative and procedural knowledge, as far as planning phase and awareness of structural elements of a good narrative text were concerned.

### **Control Group**

A paired t-test for variance was used to examine whether there were changes from pre to post measurement. As presented in the Table 4, there was no significant increase in the averages regarding the metacognitive knowledge of writing after the intervention. The production procedures criterion showed an increase in students' reports by 0.5 points ( $M$  after the intervention =0.5), which was not considered statistically significant ( $t=-1.4$   $p=0.16$ ). The substantive procedures criterion showed an increase of 0.3 points ( $M$  after intervention= 0.3) which was also not statistically significant ( $t=-0.5$   $p=0.57$ ). A minimal increase was observed in the planning criterion ( $M$  after the intervention = 0.27), which was not considered statistically significant ( $t=-1.2$   $p=0.21$ ). The criterion of revising showed an increase of 0.13 points ( $M$  post-intervention =0.13). This difference in the means was not statistically significant ( $t=-1.0$   $p=0.33$ ). The help-seeking criterion showed a decrease of 0.2 points ( $M$  post-intervention=-0.2), which was not statistically significant ( $t=-1.8$   $p=0.08$ ). We could therefore conclude that students in the control group did not benefit in terms of metacognitive knowledge of writing after receiving the typical writing intervention in the inclusive class delivered by their special teacher.

## **DISCUSSION**

In this study, we investigated the contribution of the intervention program The Strategic Planners of Writing to the writing performance and metacognitive knowledge of students with writing difficulties. The program was completed by special teachers at a Tier 2 intervention level. Eight teachers and

their students were randomly assigned to experimental and control groups. Students assigned to The Strategic Planners of Writing received instruction at Tier 2 and worked in small groups with their special education teachers in inclusive classrooms to learn strategies for narrative writing using the SRSD approach during the regularly scheduled time for writing instruction. Collaborative practices, as well as implementation of metacognitive strategies, were emphasized as structural elements of differentiated instruction. Moreover, teachers' role as facilitators through thinking aloud, modeling, and the provision of procedural facilitators was stressed.

### **Writing Outcomes**

The results of the final measurement highlighted the existence of a statistically significant difference in the textual structure and the overall quality of the texts produced by the experimental and control groups. The texts the experimental group produced were more informative and contained more elaborate vocabulary and dialogues than those written by control group. At the same time, they had an integrated and more complete structure, as they clearly referred to characters, locations, times, problems, character actions, feelings, consequences, and endings. Furthermore, the episodes followed the chronological sequence of the narration and were organized in clear paragraphs. This result indicated that specific strategy instruction, through the teacher's verbalized thinking, allowed students with writing difficulties to understand the inner cognitive processes of experienced writers and to acquire more complex cognitive schemas, which guided the composition of their texts (Graham, 2006). In particular, the improvement in the textual structure of the produced texts confirmed that the teaching of textual structure is a successful strategy that promotes the production of informative and integrated narratives among students with writing difficulties (Saddler & Graham, 2007). In addition, teaching textual structure in conjunction with story mapping encourages students to structure the mental representation of a complete narrative texts. In this study, the story map, as a visual aid, probably supported the students mnemonically (Malpique & Simão, 2019), a fact that was reflected in their produced narratives. At the same time, the provision of procedural facilities seemed to encourage students mnemonically and metacognitively, and led them gradually to authorial autonomy. This autonomy was reflected in the quality of the produced writings (Baker et al, 2002; Ralli, 2011). These results were consistent with outcomes reached in previous studies in which Tier 2 SRSD instruction was introduced to teachers (Harris, Graham, & Adkins, 2014).

In addition, the present intervention program encouraged the acquisition of metacognitive knowledge, declarative and procedural, as students in the experimental group gained awareness of the structural elements of a good nar-

rative, but also of the importance of the planning phase of the writing process. The above finding was consistent with the findings of other studies noting that specific strategy instruction with an emphasis on the provision of metacognitive knowledge by the teacher-model encourages the acquisition of awareness regarding the process of the writing production and the strategies that govern it (Harris et al, 2006). At the same time, the results of the present research agreed with those of other research pointing out that the knowledge of the structural elements of each textual genre, as well as the process of writing is characteristic of experienced writers (Hayes, 1996) and plays an important role in the production of informative and of complete texts (Olinghouse & Graham, 2009; Saddler & Graham, 2007). In the present study, the use of procedural facilitation encouraged conscious writing behavior, something that was reflected in the verbal reports of the students regarding the writing production. However, students' awareness mainly focused on the structural elements of a good narrative and the planning phase. This was probably justified by the short period the intervention was implemented, which seems not to have been enough for the students to internalize the procedural knowledge of the revision phase (Harris, Graham & Mason, 2006).

We can conclude that the Tier 2 intervention implemented by the teachers through the program The Strategic Planners of Writing, which mirrored the SRSD stages, appeared to be effective for story writing and cultivated the metacognitive knowledge of students with writing difficulties. SRSD offers a dynamic learning environment that drives students to learning autonomy with gradually fading scaffolding and enhances their learning pace. Collaborative practices and the application of metacognitive routines are structural features of SRSD intervention and of a differentiated learning environment. Both highlight the active role of students by encouraging the development of metacognitive skills. The fading scaffolding environment of SRSD offers an effective intervention response environment in the field of teaching writing (Ortiz Lienemann, Graham, Leader Janssen, & Reid, 2006).

### **Limitations**

One limitation of this study is the small number of participants, which does not allow for generalized conclusions. An additional limitation is the absence of observation of the writing behavior of the participants, which made it impossible to make assumptions about the metacognitive strategies that the students might have applied. At the same time, the reliability of the implementation of the lesson plans could be further strengthened if, in addition to being recorded by teachers, the teaching steps were observed by an external observer.

## **Educational Extensions and Future Research**

The positive results of the present research underline the importance of specific strategy instruction and collaborative writing practices in the cultivation of metacognitive knowledge of writing and in improving the overall quality of the narratives produced by students receiving a Tier 2 intervention in inclusive classes into public schools through The Strategic Planners of Writing. Simultaneously, the key role of teachers as mediators is highlighted. They, equipped with a specific strategy instruction SRSD protocol, educational material with visualized work steps, cards with structured cooperation roles, and self-regulation routines, can successfully implement differentiated teaching of writing strategies in collaborative context in a Tier 2 intervention. Furthermore, the present research points out the importance of shared knowledge between the teacher and the students, as both are involved in structured roles as observers, the former of their own teaching practices and the latter of the learning practices applied during the interactions with them in class.

At the same time, the results of the present research highlight the necessary change in the teaching of writing. More specifically, they illuminate the need for the implementation of evidence-based programs both by the teacher in the general classroom and the special teacher who delivers special education in inclusive classes, and emphasize the importance of teacher training as part of professional development in writing instruction. This is crucial, as the majority of teachers report inadequate preparation in writing instruction as well as failure to implement evidence-based practices (Gilbert & Graham, 2010). Furthermore, a recent analysis of survey examining classroom writing instruction found that writing instruction was not adequate in many classrooms and schools worldwide (Graham, 2019).

Finally, the results of the current research indicate that the cultivation of metacognitive strategies, which highlight the active role of the student-writer involved in problem-solving processes, as well as the application of structured collaborative practices that highlight the social aspect of the constructive process of text composition, should be the two structural elements of differentiated writing instruction in modern schools.

## **Conclusion**

There is a lot of research to be done in the future; however, this study provides initial evidence that teachers using RTI approach with SRSD instructional approach in small groups could facilitate the metacognition and improve the writing performance of their students if they received appropriate, intensive professional training. SRSD and differentiated teaching strategies complement each other, as they share a common respect for the student's learning pace; the encouragement of active learning through the application of self-regulation rou-

tines and cooperative practices; and the mediating role of the teacher who provides the appropriate tools to support their students and gradually withdraws their help, leading the students gradually and effortlessly to autonomy in learning.

The Strategic Planners of Writing is a Tier 2 intervention program mirroring the SRSD stages, which seems to be a promising development in the field of differentiated writing instruction. Finally, while the small number of students in this study evince significant outcomes, longitudinal research is needed to determine how effective the intervention would continue to be in supporting students with writing difficulties.

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