‘Does It Work?’ Adapting Self-Regulated Strategy Instruction and Visual Mnemonics to Teach Argumentative Writing

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Abstract: The current study examined the impact of adapting an evidence-based instructional approach to develop ninth-grade students’ argumentative writing and self-regulated strategy use. Following the Self-Regulated Strategy Development (SRSD) model, strategies to plan and write argumentative texts were implemented in two Portuguese classrooms. The model relies heavily on the use of mnemonic strategies to support instruction. Thus, incremental effects of using dual-coding mnemonics (i.e., visual and verbal mnemonics) were explored when implementing SRSD instruction. For the first group (n = 23), SRSD instruction included verbal and visual mnemonics; for the second group (n = 25), SRSD instruction included verbal mnemonics alone. Groups were compared with a control group (n= 25) receiving standard writing instruction. The following findings were significant: a) SRSD instruction increased writing quality, organising, and spontaneous planning; b) dual-coding mnemonics enhanced writing quality, development of ideas, organising, language clarity, and spontaneous planning; c) national exams completed 15 weeks after instruction reinforced the effectiveness of the adapted SRSD strategies. The process of culturally adapting and implementing SRSD instruction to teach argumentative writing will be discussed, including the potential incremental effects of adding visual mnemonics to the SRSD instructional routine.

Keywords: argumentative writing, self-regulated strategies, writing instruction, cultural adaptations, visual mnemonics

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1. Introduction

Arguing about teaching writing effectively, Murray (2004) wrote "there is no single kind of person to teach, no one reason to write, no one message to deliver, no one way to write, no single standard of good writing" (p. 5). This assumption of "no one way" to write, teach, and assess writing mirrors the intricate nature of teaching writing in schools (Schultz & Fecho, 2000). It further highlights the need to locate writing instruction in its developmental context, as writing education may be different across languages and contexts of instruction (Graham, Rijlaarsdam, 2016; Malpique, Pino-Pasternak, & Valcan, 2017).

Learning how to write is a challenging process that requires formal and systematic instruction (Emig, 1977). In Portugal, data collected nationwide on secondary students' academic achievement suggested writing difficulties across subject areas (Malpique & Veiga Simão, 2012; Sousa, Ferreira, Romão, Pereira, & Lourenço, 2013). Results from a recent survey assessing writing instruction in middle-schools (Grades 5-9) showed Portuguese teachers devoted little time for writing instruction across grades (Veiga Simão, Malpique, Frison, & Marques, 2016). Taken together, these findings are worrisome when considering the potential of argumentative writing to develop students' critical thinking and its importance to students' academic success across subject areas (Ferretti & Lewis, 2013; Malpique & Veiga Simão, 2015).

This study was developed to evaluate the potential of self-regulated strategy instruction to promote ninth-grade students' argumentative writing skills. For that purpose, we adapted a strategy-focused intervention following the Self-Regulated Strategy Development (SRSD) model (Harris & Graham, 1996) to the Portuguese educational context. The SRSD model relies heavily on the use of mnemonic strategies to support instruction. Therefore, a subsequent aim was to explore the effects of using dual-coding mnemonics, which involves combining verbal mnemonics (i.e., relying on words to stimulate recall) and visual mnemonics (i.e., relying on images to stimulate recall) in the SRSD routine to improve students' writing performance. Together, these research options highlight the need to provide context-specific research-based options to guide teachers when considering ways to promote students' writing development.

1.1 Evidence-Based Practices for Teaching Writing

Evidence-based practices (EBPs) have been defined as "instructional approaches shown through high-quality research to result in generally improved student outcomes" (Cook, Smith, & Tankersley, 2012, p. 495). The fast sharing and tracking of information through the worldwide web has made cultural adaptations of EBPs for teaching writing a common practice (Budde, 2010; Torrance, Fidalgo, & García, 2007). Implementing EBPs in whole-classroom settings, however, imposes serious challenges. There, causal relations become difficult to confirm due to the multitude of individual, contextual, and cultural variables, which may either by themselves or in combination affect outcomes

(Rosenfield & Berninger, 2009; Schultz & Fecho, 2000). Over the last three decades, investigators have designed and tested new methods, models, and practices to improve students' writing performance. Authors have found strategy instruction to be a particularly effective method to improve the writing skills of all students, with or without Learning Difficulties (LD) (Deshler et al., 2001; Englert, Raphael, Anderson, Anthony, & Stevens, 1991). The explicit teaching and training of writing strategies (e.g., planning, organising, and revising) may make the writing process more visible and tangible, as a step-by-step problem-solving method. Despite the importance of understanding 'what works' for teaching writing (e.g., which particular EBPs and their effect sizes), we argue for the need to place the focus on 'how it works', 'in which contexts', and 'for whom' particular evidence-based instructional practices and interventions are implemented.

There are still no clear-cut guidelines, however, for how the adaptation of these models, methods, and practices should be conducted across educational contexts, cultures, and languages of instruction (Rosenfield & Berninger, 2009). The process of adapting EBPs for writing may impose serious constraints given the multidimensional nature of the construct. Cultural adaptation of EBPs is a complex process, which involves more than straightforward transportation and translation of methods and practices (Soydan & Palinkas, 2014). Different variables need to be considered toward a sustainable introduction, dissemination, implementation, and sustainability of EBPs and instructional models in a new country, including the country's acceptance to innovative educational practices (cultural and historical variables); the relevance of the instructional model within educational policies and priorities (political and economic variables); meaning and beliefs attributed by social agents, educators, families, and students to the benefits of implementing EBPs and foreign instructional models (social and educational variables). Thus, changes made to specific instructional models need to be evaluated to better fit the circumstances of implementation. In that process, a balance between cultural adaptation and fidelity becomes the ultimate goal, and fidelity threats must be carefully addressed. Thus, research is needed to validate the cultural and contextual sustainability of specific EBPs and instructional models to teach writing.

1.2 Self-Regulated Strategy Development (SRSD): An Integrative Approach

The SRSD model (Harris & Graham, 1996) was designed to address multiple aspects of writing development, including cognitive, behavioural, and affective states (Harris et al., 2012). Self-regulated writing has been defined as "self-initiated thoughts, feelings, and actions that writers use to attain various literacy goals" (Zimmerman & Risemberg, 1997, p.76). SRSD promotes the explicit teaching of strategies to plan and/or revise genre-specific writing tasks combined with the teaching of self-regulatory practices (e.g., goal setting and self-instructions) and faded scaffolding. Initially designed as an intervention model for LD students, SRSD is to be implemented in six flexible and recursive instructional stages, namely: 1) developing background knowledge, and

preskills to use the strategy; 2) discussing significance and benefits of learning the strategy; 3) teacher or peer modelling of the strategy; 4) memorising the steps for the composing strategy through mnemonic instruction; 5) supporting strategy use and writing development through collaborative practice and peer support; 6) fading assistance while promoting independent practice and mastery of the strategy (Harris & Graham, 1996). The model is presented as a "metascript" (Harris & Graham, 1996, p. 33), in which instructional stages are to be reordered and combined to meet both the teachers' preferences and their students' differences and needs. SRSD instruction has been validated in several English-speaking educational contexts and findings support its effectiveness to improve a variety of writing skills (Graham & Perin, 2007). In summary, SRSD instruction was found to improve students' skills for planning and revising (De La Paz & Graham, 2002), overall writing quality, self-efficacy, motivation, discourse knowledge, and text length (Harris, Graham, & Mason, 2006). These findings were reported in intervention studies with primary and middle-school students (Grade 1-6), with effect sizes typically exceeding 1.17 (see Graham, McKeown, Kiuhara, & Harris, 2012 for a review). The majority of these research studies, however, were delivered by tutors or research assistants outside the regular classroom (Harris et al., 2012). Early studies (De La Paz & Graham, 2002; Wong, Hoskyn, Jai, Ellis, & Watson, 2008) examined teacher-implemented SRSD in middle-school whole-classroom settings, and subsequent research extended these findings with primary students (Harris et al., 2012).

1.3 SRSD and Mnemonic Instruction: Images and/or Words?

Less is known about specific components which may determine or enhance the effectiveness of the SRSD instructional routine (Glaser & Brunstein, 2007; Harris, Graham, & Mason, 2006). When describing the fourth SRSD instructional stage – memorising the strategy – Harris and Graham (1996) argue that "a strategy that cannot be recalled cannot be used!" (p. 32). SRSD instruction uses first-letter mnemonic strategies for planning and revising to stimulate recall. In strategies such as POW – *P*ick my idea; *O*rganise my notes; *W*rite and say more -, and TREE – *T*opic sentence; *R*easons; *E*nding/*E*xplain reasons; *E*xamine/*E*nding - an image of a tree is offered to explain the steps of the strategies and included in cue cards and handouts. Other times, written mnemonics alone are provided to assist instruction, as in PLANS - *P*ick goals; *L*ist ways to meet goals; *A*nd; *M*ake Notes; *S*equence notes. In a subsequent book presented as a step-by-step guide for SRSD instruction (Harris, Graham, Mason, & Friedlander, 2008), the authors further propose that verbal (i.e., words) and visual (i.e., images) mnemonics should be combined when implementing SRSD instruction with younger students, apparently suggesting older students may require verbal mnemonics alone for learning and recall.

Mnemonic strategies usually consisting of either images or words have been used throughout times, with different purposes (Greene, 1999). Mnemonics are defined as "learning strategies that make elements of abstract information more familiar, and encourage students to form meaningful associations to these elements" (Wang &

Thomas, 1996, p. 104.). First-letter mnemonics are beneficial for teaching students to successfully complete different process-oriented tasks (Hughes, 2011). Continued practice allows students to recall information when facing a task through a self-cueing process (Bellezza, 1981), and storing information as images grants larger memory benefits than verbally stored information (Carney & Levin, 2012). Better recall is expected when information is stored as both images and words, as a result of redundancy in stored material (Carney & Levin, 2012). There is ample evidence of the benefits of pairing visual and verbal elements in literacy instruction (Paivio, 2007; Sadosky & Paivio, 2001). Theoretical perspectives such as multiliteracy (Kellner, 2000), visual literacy (Kress & van Leuwen, 1996), multimedia learning (Mayer, 2005), and multiple representations-based instruction (Eilam & Poyas, 2008) support the effectiveness of integrating visual and verbal teaching strategies across content areas and grades. This argument finds theoretical support on Paivio's dual-coding approach (2007) of information processing. When considering memory as the engine of cognitive and linguistic evolution, combining verbal and visual materials may reduce memory load and boost long-term memories, which constitute knowledge (Paivio, 2007). This "conceptual peg effect" (Paivio, 1986) was also found in studies testing the importance of language concreteness to improve comprehension, interest, recall, and writing quality (Hillocks, 1986; Sadosky, Kealy, Goetz, & Paivio, 1997).

In a time when different formats and media come to us in fast and complex combinations, literacy research is challenged to provide solid instructional practices to be implemented across different educational settings. Word and images associations seem recurrent in SRSD mnemonics. Thus, examining incremental effects of adding visual elements to support strategy use and maintenance may expand knowledge on the effectiveness of the SRSD instructional package, substantiate instructional choices for older students, and provide clearer and more consistent research-based standards to guide researchers and practitioners when testing, implementing, and/or adapting SRSD instruction.

1.4 The Present Study

The primary purpose of this study was to investigate the effectiveness of adapting SRSD instruction to teach argumentative writing in Portuguese whole-class settings. Our aim was to examine the impact of adapting this evidence-based instructional approach on students' writing performance and on self-regulated strategy use. We further aimed to extend knowledge on the process of adapting SRSD instruction with older students (Grade 9). We adapted a planning strategy for persuasive writing developed by De La Paz and Graham (1997), STOP - *S*uspend judgment; *T*ake a side; *O*rganise ideas; *P*lan more as you write -, and DARE – *D*evelop a position statement; *A*dd supporting ideas; *R*eport and refute counterarguments; *E*nd with a strong conclusion .The mnemonics PARA and IDEIA were used to help students recall strategy steps, serving also as a reminder to plan before writing and to include five important elements when writing an argumentative text (see Figure 1).

Figure 1. Mnemonic Charts

Verbal mnemonic	*Visual mnemonic*
PARA - STOP	
Pensa no tema: considera diferentes ideias sobre o tema e regista-as. ***Think about the topic: consider different ideas about it and write them down.***	
Avalia ideias: ideias a favor e ideias contra. ***Evaluate ideas: ideas for and against.***	
Reorganiza ideias: escolhe as que vais usar e numera-as pela ordem em que as pensas colocar no texto. ***Reorganise ideas: pick those you want to use, and number them according to the order you wish to present them in the text.***	
Atualiza o plano enquanto escreves com… ***Update your plan while you write with…***	
IDEIA – IDEA	
Introduz o tema. ***Introduce the topic.***	
Defende argumentos a favor, com razões justificativas. ***Defend arguments for, with reasons to support these.***	
E apresenta contra-argumentos, com razões justificativas. ***And present counterarguments, with reasons to support these.***	
Inclui exemplos justificativos. ***Include supporting evidence.***	
Acaba com uma conclusão. ***Finish with a conclusion.***	

We revised and expanded the DARE strategy to include supporting evidence (e.g., facts, examples, and quotes) when presenting arguments and potential counterarguments. This option stems from research highlighting the role of evidence to support argumentative discourse (Ferretti & Lewis, 2013; Newell et al., 2011). Studies found high correlations between the development and progress of argumentative writing skills and age (Golder & Coirier, 1994; Song & Ferretti, 2013). Thus, the upgrading could also make the strategies more relevant for ninth-grade students. We focused on argumentative writing because it was included in the Portuguese schools' curriculum and targeted in Portuguese language arts national exams (Grade 9) to enter secondary education (Grades 10-12). The first author initially selected the images to match the adapted strategies steps considering sentence comprehensibility (e.g., overall simplicity, syntax and presentation) and imageability, described as the ease and/or difficulty with which "words arouse a sensory experience" (Paivio, Yuille, & Madigan, 1968, p. 4). Subsequently, we conducted an open-ended interview with 18 ninth-grade Portuguese students from a different school to evaluate sentence comprehensibility, imageability, and sentence/image associations (e.g., familiarity, concreteness, and semantic associations). We made several changes based on subsequent analyses, namely on sentence length and presentation.

Planning, which involves generating and organising ideas along with setting goals for the task, is considered a critical element for skilled writing (Kellogg, 1996, 2008). Still, researchers found middle-school students do not deliberately plan in advance of writing. For example, De La Paz and Graham (2002) found 80% of middle-school students did not produce any written plans before writing. Limpo and Alves (2013) also found sixth-grade Portuguese students did little advanced planning for opinion writing. Thus, a subsequent aim was to assess students' spontaneous planning before and after SRSD instruction. Finally, and considering that the SRSD instructional model builds upon mnemonic strategies to support instruction, we explored incremental effects of using dual-coding mnemonics to support strategy use and maintenance.

We addressed the following research questions:

Question 1: Does SRSD to teach argumentative writing significantly improve ninth-grade Portuguese students' writing performance and self-regulated strategy use?

Based on the research previously reviewed, we predicted a significant effect of SRSD instruction in most measures of writing performance. We anticipated a significant effect in the use of planning strategies since several studies found students (Grades 2-12) increased planning strategies after receiving SRSD instruction (Graham, McKeown, Kiuhara, & Harris, 2012; Graham & Perin, 2007). SRSD is developed in tandem with the explicit teaching of several self-regulatory strategies. Thus, we expected that positive effects of implementing SRSD to teach argumentative writing would have an impact on students' reported use of different self-regulation strategies for writing.

Question 2: Does adding visual mnemonics to verbal mnemonics in the SRSD routine produce incremental effects on students' writing performance and self-regulated strategy use?

As reviewed in the previous subsection, evidence supports the benefits of combining visual and verbal elements for learning and instruction. Given the lack of research investigating these benefits for SRSD instruction, and since this was an exploratory question, our hypothesis had only indirect empirical support. We anticipated that using dual-coding mnemonics (i.e., images and words) to support SRSD instruction would promote students' comprehension and recall of each step of the adapted strategies and, consequently, boost the overall quality of their argumentative texts.

Question 3: Will students and teacher find SRSD instruction in writing to have acceptable social validity?

Considering the research reviewed here, we anticipated a positive answer from all involved. The critical importance of such social validity, defined as the participants' perceptions of the usefulness of the strategies, ease of implementation, and overall effectiveness, has been examined in many SRSD studies and highlighted in whole-class implementation (Harris et al., 2012). Such widespread acceptance would also provide further evidence of SRSD validity in intact classroom settings and its cultural sustainability.

2. Method

2.1 Setting and Participants

This study took place in a Portuguese middle-school (Grades 5-9), part of a public cluster of schools located in an urban district in the Lisbon metropolitan area. Writing is systematically used as a learning and assessment tool across all subject areas. Statutory frameworks offer guidelines for the teaching of writing following the shift from product to process writing over the last two decades. Students are tested frequently and receive numeric marks on their writing assignments throughout a school year and on standardised tests (end of Grades 2, 5, 8, 9, 11, and 12). The population that the school serves is predominantly white, urban, and middle class.

Due to constraints inherent in how schools are organised in Portugal, it was not feasible to randomly assign teachers to instructional conditions or control condition nor to randomly assign students to treatment groups and control groups. The school's Principal allocated two Grade 9 classes to each of the three language arts teachers. The three teachers agreed to be part of this study and one teacher volunteered to implement the intervention. Consents were obtained from the Portuguese Ministry of Education and Science, the deontological committee of the authors' faculty, the Head of the participating school, the teachers involved, parents, carers, and participating students.

Students

Participants were 135 ninth-grade students enrolled in six language arts classes. Before intervention, we randomly assigned the two classes allocated to the teacher implementing SRSD instruction to each SRSD conditions: SRSD-DC receiving dual-coding (i.e., images and words) instruction and SRSD-VC receiving verbal-coding (i.e., words only) instruction were nearly equivalent in size (n = 23 and 25, respectively). From the four remaining classes, we randomly selected 25 students (initially 30, to account for students drop out) to form the control group. For that selection, we applied a stratified random sampling procedure using students' average marks in Portuguese (average marks from three terms, Grade 8). Marks are given on a scale ranging from 1 (lowest) to 5 (highest). Taken all participants together, 13% had marks below 3; 46% had marks equal 3; and 41% had marks above 3. We randomly selected from the four remaining classes six students below the 3 average marks, 14 students with equal 3 average marks, and 10 students above the 3 average marks to form the control group. During the 9-month course of the study, five students from the control condition were excluded either for absence in two of the three post or follow-up data collection sessions (4 students) or for voluntary dropout (1 student). Table 1 presents characteristics of the 73 students by condition and of the overall population of ninth-grade students (i.e., sampling frame). To control for potential confounding variables usually reported to be important outside the type of training, we preliminary compared groups regarding age, gender, and previous academic achievement. T-test results showed no statistically significant differences between students assigned to the three conditions regarding chronological age or average marks in Portuguese (all *p*s > .32). Chi-square analyses also revealed no statistically significant differences between conditions regarding gender (all *p*s > .69). We also found no significant differences between the

Table 1. Students Characteristics by Instructional Condition at the Start of the Study

	Condition			
Variable	SF	SRSD-DC	SRSD-VC	Control
Age				
M	14.24	14.13	14.24	14.14
SD	0.88	0.97	0.78	0.61
Gender				
Female	71	12	11	14
Male	64	11	14	11
Average marks in Portuguese				
M	3.31	3.30	3.23	3.34
SD	0.83	0.78	0.79	0.79

Note: SF = Sampling Frame (overall population of ninth-grade students); SRSD-DC = Dual-coding SRSD; SRSD-DC = Verbal-coding SRSD.

three conditions and the overall population of ninth-grade students regarding chronological age, average marks in Portuguese, and gender (all *p*s > .33).

Teachers

The same teacher delivered both SRSD instructional conditions in a series of 10 lessons with an average of 90-minutes per week. Two teachers delivered regular writing instruction to students in the control group. This design leaves open the possibility that students' performance in both SRSD conditions would be, to some extent, the result of specific teacher effects not related to the intervention (Wearmouth, Soler, & Reid, 2002). Considering the limitations of this design, we attempted to control for teacher effects and isolate the effects of SRSD instruction using a nonexperimental method having teaching experience, certification, and teachers' reported writing practices as controlled variables (Weiss, 2010). First, all the participants had served as teachers for a long period of time, ranging between 12 to 33 years (M = 22.67; SD = 9.45). Second, all teachers hold credentials in education and in Portuguese language arts teaching. Third, and before intervention, we interviewed the three teachers using a semi-structured interview to assess their reported practices to teach writing. The interview contained two open-ended questions. The first question assessed the type of writing activities the participating teachers usually assigned. The three teachers reported combining process writing and basic skills instructional approaches. They asserted teaching planning and revising activities (100%), peer support (66%), and self-selection of writing topics (66%) at least every other week. The three teachers reported sentence construction, punctuation, and grammar activities were developed more often, on a weekly basis. The second question assessed genre-based writing activities that teachers would develop more recurrently in middle-school (grades 5-9). Teachers confirmed teaching opinion and persuasive writing from Grade 7 and reported working on narrative writing more frequently than persuasive/argumentative writing (100%).

To evaluate how writing was taught in the control condition during SRSD instruction, we interviewed the two participating teachers on a weekly basis. Interviews were conducted individually, according to each teacher's availability. Following national time allocation guidelines, all participating ninth-grade students attended a 90-minute lesson of Portuguese Language Arts three times a week. Having Grade 9 exams in perspective, both teachers reported teaching argumentative writing on a weekly basis. Both teachers reported that students produced argumentative essays individually as a homework activity. Teacher one indicated that argumentative writing was set as a homework activity once a week and teacher two twice a week. Both teachers reported that, subsequently, students' work was marked and the writing activity was revised in class (please see Table 2 for examples of the types of activities developed to support instruction). Teacher one reported allocating 60 minutes of a 90-minute lesson to these revising activities each week. Teacher two reported allocating 50 minutes to discussing students' homework and revising activities each week. She also indicated allocating between 20 and 30 minutes per week to teach students planning activities related to

Table 2. Stages of the Intervention Process by Condition

	Condition		
Stage/Time	**SRSD-DC**	**SRSD-VC**	**Control**
Pretesting Term 1, September	Students completed the Self-Regulated Strategies for School Writing Tasks (SRSSWT) questionnaire.	Same	Same
Term 1, October (three consecutive weeks)	Students wrote 3 essays. The administration of the topics was counterbalanced across students and probes to control for confounding due to differences in students' interest. Students were given 35 minutes to write each essay.	Same	Same
Instructional procedures developed during intervention	Students were taught to independently use the PARA and IDEIA strategies to compose an essay (this includes the 6 stages of SRSD instruction) through verbal and visual mnemonics as follows:	Students were taught to independently use the PARA and IDEIA strategies to compose an essay (this includes the 6 stages of SRSD instruction) through verbal mnemonics alone as follows:	Teachers reported working argumentative text writing as follows:
Term1-2, December –	a) Students were taught the knowledge and skills to use the	a) Same	a) Both teachers reviewed the characteristics of argumentative writing.

February (10 lessons)	PARA and IDEIA strategies. This includes instruction in composing a thesis sentence and introductory paragraph; use of evidence to support arguments and counter-arguments (e.g., facts, examples, and quotes); maintaining control of the topic; use of transition words and interesting vocabulary; and procedures for assessing the quality of an essay (e.g., rereading and peer feedback);		Both teachers reported teaching argumentative writing on a weekly basis. Teachers focused on idea generation and on organising ideas for writing. Teacher two reported using concept maps for that purpose;
	b) Students were taught to use self-regulatory procedures – goal setting, self-monitoring, self-instructions - to facilitate the acquisition and the use of the SRSD strategies.	b) Same	b) Students were taught a variety of writing skills (including vocabulary, grammar usage, planning, and revision);
	c) Students were provided with temporary support to help them initially use the SRSD strategies, including brainstorming sheets, graphic organisers, checklists, and cue cards with verbal and visual mnemonics. The same materials (e.g., mentor texts) and activities	c) Students were provided with temporary support to help them initially use the SRSD strategies, including brainstorming sheets, graphic organisers, checklists, and cue cards with verbal mnemonics alone. The same materials (e.g., mentor texts) and activities (e.g., whole-class and peer group) were used to support instruction. Students wrote four	c) Students were asked to complete argumentative essays as homework tasks once or twice a week (teacher one and teacher two, respectively). Students wrote between 10 and 20 essays independently;

	(e.g., whole-class and peer group) were used to support instruction. Students wrote four essays collaboratively (one in whole-class; 3 through peer support) and an average of two independently.	essays collaboratively (one in whole-class; 3 through peer support) and an average of two independently.	d) Students (34%) participated in two creative writing workshops.
Posttesting Term 3, March- (three consecutive weeks)	Students wrote 3 essays. The administration of the topics was counterbalanced across students and probes to control for confounding due to differences in students' interest. Students were given 35 minutes to write each essay.	Same	Same
Term 3, April	Students completed the Self-Regulated Strategies for School Writing Tasks (SRSSWT) questionnaire.	Same	Same
Follow-up Term 3, May	A single 35 min. session for essay writing (12 weeks after intervention).	Same	Same
After the end of school year, June	Students completed the Portuguese Language Arts national exam.	Same	Same

argumentative writing (i.e., concept mapping). Both teachers asserted that text production was also used to assess and revise content knowledge and to prepare students for the Portuguese language arts exam. Table 2 presents stages and times of the intervention process by condition to allow a comparison of data collection. Teachers delivering instruction to students in the control condition did not report teaching planning strategies similar to PARA and IDEIA. Thus, we reasoned that students in the control group were not learning argumentative writing through SRSD instruction.

2.2 Assessment Procedures

Reported use of self-regulated strategies for writing

Given the limited number of instruments measuring the use of self-regulated strategies for writing (Kanlapan & Velasco, 2009; Kaplan, Lichtinger & Gorodetsky, 2009), we used a self-report instrument developed by Malpique and Veiga Simão (2015). Theoretically supported by Zimmerman and Risemberg's socio-cognitive model for self-regulated writing (1997), the Self-Regulated Strategies for School Writing Tasks (SRSSWT) questionnaire measures the frequency with which students report using environmental, behavioural, and personal strategies to initiate and control general school writing tasks. The first scale - environmental processes - assesses environmental structuring, and help-seeking strategies; the second scale - behavioural processes - assesses self-monitoring, self-consequating, and self-verbalising strategies; the third scale - personal processes - assesses time planning, self-evaluating, recalling/creating mental images, and four cognitive strategies (i.e., planning, revising, organising, and reader's awareness).

Response options follow a five-point Likert-scale, from 1 = *Very Rarely* to 5 = *Very Frequently,* with 34 items. Confirmatory analyses and multi-group invariance supported the reliability of the questionnaire to assess Grade 9 students' reported use the 12 self-regulated strategies for writing (Malpique & Veiga Simão, 2015; Malpique, Veiga Simão, & Frison, 2017). Internal consistency coefficients ranged from .65 to .81, with multi-group invariance results supporting its validity to assess environmental, behavioural and personal strategies for self-regulated writing across Portuguese and Brazilian educational contexts, $\chi 2$ (1042) = 1712.176, $p < .05$, $\chi 2/df$ = 1.643, comparative fit index = .90, root mean square error of approximation = .030.

The questionnaire was administered before and after SRSD instruction. At pretest, 91% of the ninth-grade population of students (i.e., sampling frame) completed the questionnaire. This initial screening provided a contextualised identification of how students initiated and controlled their writings, yielding substantive information to optimise SRSD instruction. Before completing the questionnaire, the researcher read and explained instructions. Students were asked to report the frequency with which they used the strategies described when facing writing tasks in different subject areas across the curriculum. Mean time to complete the questionnaire was 15 minutes.

Argumentative writing performance

Students completed three essays before SRSD instruction (pretest), three essays after SRSD instruction (posttest), and one at the end of the school year (follow-up) (see Table 2). Each time, students were asked to write an argumentative essay in response to one of two prompts. Each prompt had been previously selected and judged to be similar in terms of interest and difficulty. Controversial yet familiar topics such as "How have new technologies changed communication?" were used to control for students' interest and knowledge. We used three measures of writing performance to analyse students' argumentative writing before and after intervention. The first writing performance measure assessed writing quality. We used an analytic scoring method adapted from the American National Assessment of Educational Progress (NAEP, 2010) and the Portuguese Language Arts curriculum (years 7-9) (Reis et al., 2009). The six-point scale - 6 representing the highest, and 1 representing the lowest - was developed to assess three traits of students' argumentative writing namely development of ideas; organising; and language clarity. The development of ideas scale assessed students' knowledge of the topic, how effectively he/she pondered alternative perspectives and provided supporting evidence considering purpose and reader. The organising scale assessed how effectively a student developed and presented ideas in a logical order, including introduction, arguments and counterarguments, supporting evidence, and conclusion. The language clarity scale assessed the overall clarity of discourse and respect for writing conventions (e.g., punctuation, grammar, and spelling) (see Appendix A for a description of essay scoring components). We reasoned that this analytical scoring method would allow distinguishing between different aspects of argumentative writing, offering a more comprehensive insight when evaluating the effectiveness of the adapted SRSD strategies.

Two ninth-grade teachers who were blind to the purpose and design of the study were trained to use the rating scales. They were provided with representative anchor papers from high, middle, and low scores obtained from two ninth-grade classes that did not participate in the study to practice using the scales. Teachers were also encouraged to discuss the distinguishing features of each specific scoring component. After independently scoring each practice essay, raters compared scores and reached a level of agreement through discussion. The two teachers scored all essays composed by the 73 participating students (i.e., SRSD groups and control group) at pretest, posttest, and follow-up, and they rated students' performance on each trait. The average of the two raters' scores was used for each scale. The three separate traits were combined into a composite score (i.e., writing quality) because the measures of the three were correlated (median correlation between scales was .84). Inter-rater reliability for the final scores, calculated by a Pearson product-moment correlation, averaged .85 (range = .82 - .90) at pretest; .88 (range = .84 - .92) at posttest; and .83 (range = .79 - .88) at follow-up.

The second writing performance measure assessed the written plan. For each writing assessment, students were given a blank sheet and a lined paper sheet with

specific writing prompts. To assess spontaneous planning, students were not told to use the first sheet for any specific purpose. We used a scale ranging from 1 (*lowest*) to 5 (*highest*) to measure students' planning development based on the non-genre-dependent scale developed by Whitaker, Berninger, Johnston, and Swanson (1994). Plans that presented first draft writings or only one word or phrase received scores of 1. Plans that received a score of 2 to 4 reflected increasingly advanced planning, from listing words to presenting structural relationships between topics. Plans that received a score of 5 presented a map or outline identifying a central theme in response to the prompts with emerging topics logically related. The first author scored all plans, and a middle-school teacher unfamiliar with the purpose and design of the study independently scored a random sample of 20% of the plans. Inter-rater reliability, as assessed by the Pearson product-moment correlation, was .85.

Finally, we examined the Portuguese language arts national exams (Grade 9). In the Portuguese educational context, students are asked to complete two standardised tests for Portuguese and Mathematics at the end of Grade 9 to assess content knowledge and subject related skills. These national exams are designed, administered, and scored independently by the department of education. In the Portuguese language arts national exam, performance is evaluated in three key areas: reading and writing, language clarity, and extended writing. The extending writing prompt follows either a narrative or an argumentative discourse mode. The mode is not disclosed prior to the test day and students are not able to choose the mode in which they write their response. Opportunely, when this study was conducted, students were tested on argumentative writing. Individual student scores were made available for public consultation at schools. Thus, we were able to examine the impact of the adapted SRSD instruction on the quality of students' writing in real-life situations 15 weeks after implementing the strategies. We examined only extended writing scores for group comparisons. Scores ranged from 1 (lowest) to 5 (highest). Scoring criteria included: respect for topic and mode (opinion text following an argumentative mode); coherence, including evidence to support ideas; cohesive discourse (punctuation, and sentence connectors); syntax and morphology; vocabulary; and spelling (Ministry of Education and Science, 2013). Six students did not participate in the national exams and were excluded from the analysis based on one or more of the following criteria: failing in at least three subjects (3); failing in Portuguese and Mathematics (2); leaving the country (1). Subsequent analysis was based on the data of 67 students, SRSD-DC (n = 22; Mage = 14.11, SD = 0 .81; 11 male); SRSD-VC (n = 22; Mage = 14.19, SD = 0.92; 13 male); and control (n = 23; Mage = 14.14, SD = 0.96; 13 female).

Social validity

To assess students' perceptions about learning SRSD strategies, we used a stratified random sample of participants (n = 26) selected from SRSD-DC (*n* = 13; *M*age = 14.1, *SD* = 0.80; seven male), and SRSD-VC (*n* = 13; *M*age = 14.5, *SD* = 0 .87; eight male). *T*-tests analyses revealed no statistically significant differences among students assigned

to the two groups regarding chronological age or average marks in Portuguese (all ps > .25). Chi-square analyses also revealed no statistically significant differences among conditions regarding gender (p = .70). No significant differences were found between the random sample and the two groups regarding chronological age, average marks in Portuguese, and gender (all ps > .27). Interviews were administered by the first author in a quiet classroom two weeks after the final stage of data collection. Both SRSD-instructed groups were interviewed about their perceptions regarding the effectiveness of the implemented strategies (i.e., "Has learning PARA and IDEIA strategies helped you improve argumentative writing? How so?"). Answers were tape-recorded and subsequently transcribed. Students were prompted to add additional information if the question elicited responses such as "I don't know" or if a general or nonspecific response was given. The teacher implementing the strategies was also interviewed two weeks after the final stage of data collection. Students and teacher's responses were coded and managed using NVivo 9, and the categorisation of the data followed an inductive content analysis. The first author scored all interviews, and a PhD student independently scored a random sample of 20% of the interviews. Coder pair Cohen's Kappa estimates was .93.

2.3 Teacher Preparation

The teacher assigned to the two SRSD instructional groups received an instructor's manual with scripted lesson plans and other instructional material to guide practice (e.g., cue-cards, mnemonics sheets, and checklists). Following SRSD guidelines for implementation (Harris & Graham, 1996), the manual was presented as a metascript, allowing the teacher to intentionally adjust instructional practices to her preferences and students' differences and needs. Teacher preparation included a three hours' workshop about theoretical and empirical research on writing instruction and writing development and four individual meetings with the first author (16 hours total). An overview on how to implement SRSD instruction to develop students' writing skills, knowledge, and motivation was presented, including: a) describe and discuss the validity of the planning and writing strategy; b) activate background knowledge on the characteristics of argumentative writing; c) provide mentor texts as examples of good writing to guide students in understanding genre-specific characteristics; d) review students' initial writing abilities; e) model the strategies using think-alouds; f) insure writing activities and prompts conveyed Grade 9 national curriculum guidelines; g) implement collaborative practice; h) provide individual feedback; i) provide guidance when using materials (e.g., self-monitoring checklists); j) fade support during independent practice; and k) mastery criteria (for similar procedures see De La Paz and Graham, 2002). The value of both instructional conditions was made equally relevant to ensure the teacher was not predisposed to one condition over the other.

2.4 Adapting SRSD to Teach Argumentative Writing

Over the course of 10 lessons, students in both SRSD conditions developed mastery of the target strategies, knowledge, and skills to plan and write an argumentative text. Students wrote an equal number of essays in response to the same prompts. Average instruction was 90 minutes a week (see Table 2). Considering cultural adaptation issues, the instructional content and writing prompts were always delivered within the Portuguese national curriculum. By doing so, SRSD instruction was also used as a tool to promote understanding, learning, and retaining new content and skills (Graham, Harris, & McKeown, 2013).

Instructional procedures

SRSD was implemented in six stages, each involving one or more instructional sessions. The first stage of instruction – develop background knowledge – was implemented during the first two lessons. Mentor texts were provided to help students understand differences and similarities between writing genres (i.e., narrative, persuasive, and argumentative writing). The teacher emphasised the importance of developing powerful arguments as a way to support and empower one's opinion or claim in everyday situations. The teacher also stressed the importance of mastering argumentative writing skills for class assignments and national exams, explaining students would learn strategies to help them improve argumentative writing skills. With national exams in perspective, writing prompts were framed within the Portuguese Language Arts curriculum and mandatory readings. As an example, students were given 35 minutes to write an argumentative essay in response to a prompt introducing students to the study of Luís de Camões epic poem, The Lusiads, a main reading work included in Grade 9 Language Arts curriculum. The text produced would serve as guideline to help students in the continuous process of self-monitoring their achievement and progress, by comparing their performance before, during, and after SRSD instruction. Instructional procedures were kept similar in both SRSD conditions (see Table 2).

In the second stage of instruction, discuss it, the mnemonics PARA and IDEIA were introduced to help students remember the steps of each strategy. First, the general planning strategy – PARA – was introduced. Subsequently, the genre-specific planning strategy - IDEIA- was linked to the last step of the planning strategy (see Figure 1). Presentation and following discussion were developed using PowerPoint progressive disclosure to focus students' attention on each step of the strategies. For the SRSD-DC group, the presentation included visual and verbal mnemonics. The teacher explained each step of the strategies by reading the written mnemonics and making associations with the images provided. For the SRSD-VC group, the presentation did not include any visual mnemonics or illustrating pictures. The teacher explained each step of the strategies by reading the written mnemonics alone. In the following sessions, students were tested to determine whether they remembered what PARA and IDEIA stood for and why the strategies were important. This practice was included as a warm-up activity until mnemonics were memorised. During this stage, the teacher also asked the

students to review the argumentative essay written in the first stage of SRSD instruction to determine how many of the IDEIA strategy steps they included. Individually, students wrote the number of steps and elements in self-monitoring checklists provided. The teacher also introduced the idea of goal setting, encouraging students to include more elements as writing practice continued. She further stressed the importance of ensuring that when defending arguments and presenting conflicting views students should place their focus on organising arguments, supporting reasons, and providing evidence in a coherent fashion. She also highlighted the need to plan and write to persuade a potential reader. At this stage, mnemonic charts and self-monitoring checklists were introduced.

During the third stage of instruction, *model it*, the teacher modelled the process of using the strategies following a writing prompt (i.e., "As smoke-free legislation produced a good impact in the way we live?"). Initially, the teacher modelled how to plan an argumentative text using PARA through think-alouds. The teacher believed that students would be more involved in the process if they were given a part in it and that this option would optimise whole-class behaviour and time management. Thus, students helped the teacher generating ideas for and against the topic acting as information sources. The teacher modelled the PARA strategy on an interactive board for both SRSD conditions, using cue cards to assist recall. For SRSD-DC, cue cards presented visual and verbal mnemonics; for SRSD-VC, verbal mnemonics alone. For example, the teacher modelled *P* (think about the topic) saying "yes, smoke-free legislation produced a good impact in our lives". Next, she modelled *A* (evaluate ideas for and against) by putting a plus next to the ideas which supported her position, and a minus next to all opposing ideas. Then, she modelled *R* (reorganise your ideas) by choosing the ideas to use and numbering them according to the order she wished to present them. At this point, she used a map analogy to stress the importance of organising ideas for writing as a way to guide and persuade the reader. She highlighted the need to organise and set goals for writing adding that "It's like when searching for directions in a map: if directions are confusing, the reader gets lost". Finally, the teacher modelled *A* (update your plan while writing), using self-statements during the process, such as "This is easy. I can do this!" and "No, this is not right! I need to look at PARA again!" and encouraging students to do the same when planning their writings. To model IDEIA, the teacher had previously prepared an argumentative text following the proposed prompt. The text was projected using PowerPoint progressive disclosure of each paragraph. The text had deliberately been written with blank spaces to provide the teacher with the opportunity to model writing and each step of the IDEIA strategy. The teacher suggested this option would better fit students' needs than having her writing the text alone, as it involved an extended and elaborate production at this grade level. In a following lesson, students produced a second essay through collaborative practice. Self-instructions were modelled, including goal setting, problem-solving, and self-reinforcement. During this stage, students were trained to use self-instructions while composing and cue-cards to help recall.

In the following three weeks of the *support it* stage, students worked in pairs to use the strategies and to learn content. SRSD-DC students were prompted to use dual-coding mnemonics for text composing; SRSD-VC students were prompted to use verbal mnemonics alone for text composing (see Table 2). Both SRSD groups had access to the mnemonics charts and were prompted to consult these when working in pairs and individually. Initially, students were not given a specific time to plan and write. However, they found it difficult to manage time for planning and writing, failing to finish the writing assignment during class time. Thus, the teacher explicitly taught students how to manage time for writing. Subsequently, in the last five testing lessons, students were given specific time for planning (10 minutes), composing (20 minutes), and revising (5 minutes). Because this was a final year of middle-school with national exams in perspective, managing time for writing was particularly important.The teacher provided individual feedback on a weekly basis focused on: using a strong introductory sentence to engage the reader; organising the text coherently and cohesively (e.g. introduction, body, and conclusion); using strong reasons and evidence to support arguments and questioning counterarguments and supporting evidence; using mature vocabulary, including transition words; and reviewing punctuation and language usage. For that, she provided individual feedback as a reader on student's strengths and weaknesses in argumentative writing followed by whole-class discussion of best practices.

In both SRSD conditions, students began to work independently. Students in both SRSD conditions verbally rehearsed the steps for PARA and IDEIA (*memorise it*) throughout the instructional period. In this final stage, the teacher faded assistance and shifted responsibility of using the strategies to the students. Guidance and supporting materials, including mnemonic cards, were gradually reduced, and students were responsible for independently setting goals, developing essay plans, and subsequently writing their essays following different prompts. *Independent performance* lasted four sessions.

Treatment-integrity

To increase teacher's fidelity to and sustainability of the adapted SRSD instruction, teacher's preferences on how to develop specific procedures (e.g., modelling), and specific materials (e.g., mentor texts) were discussed before and during SRSD implementation. In accordance with SRSD methods, the teacher was given flexibility to adapt instruction to students' differences and needs. The first author conducted observations for all teaching and testing sessions using a checklist containing key instructional components for each lesson. The teacher completed the same lesson-specific checklist. Meetings between the teacher and researcher were held to discuss SRSD implementation, and the first author provided supportive feedback to the teacher about the quality of specific instructional elements (e.g., modelling, think-alouds, and time management). When observed, departures from treatment fidelity were discussed,

and missed steps were addressed in the next lesson. Treatment integrity was above 90% for both SRSD-instructional groups.

3. Results

Before examining multivariate effects, we checked MANOVA assumptions for multivariate normality and homogeneity of variance and covariance matrices. To detect multivariate normality, we examined univariate normality of observations on each variable through the Shapiro-Wilk test (Stevens, 2002). Results revealed the dependent variables were normally distributed across groups ($p > .05$). Homogeneity of variance and covariance matrices was supported from the nonsignificant F tests from Box's M statistics ($p > .05$). We further computed one-way analyses of variance (ANOVAs) for all dependent variables to test if there were differences between classrooms at pretest. Results revealed no differences across the three groups in all measures assessing writing quality (i.e., developing ideas, organising, and language clarity) and spontaneous planning (all ps > .19). Results showed no differences across groups in the reported use of all self-regulated strategies for writing (i.e., environmental structuring; help-seeking; self-monitoring; self-consequating; self-verbalising; time planning; self-evaluating; planning; revising; organising; and reader awareness, all ps > .16), except recalling/ creating images, $F(2,70) = 4.910$, $p = .010$; $\eta^2 = .123$.

3.1 Writing Performance

We computed MANOVA with repeated-measures to evaluate the relationship between conditions and the five measures of writing performance to determine whether scores differed significantly at posttest and follow-up. Results showed a significant multivariate main effect for group, $F(12,130) = 9.66$, $p < .001$, Wilk's lambda = .28, $\eta_p^2 = .47$, and time of testing, $F(12,59) = 12.32$, $p < .001$, Wilk's lambda = .28, $\eta_p^2 = .71$. There was also a significant multivariate interaction effect across time of testing and group, $F(24,118) = 6.27$, $p < .001$, Wilk's lambda = .19, $\eta_p^2 = .56$, indicating that depending on time of testing there were differences between groups in writing performance variables. Given the significance of the overall test, we examined univariate main effects for each of the writing performance measures. We subsequently corrected for multiple testing by setting a false discovery rate (FDR) of $q = .05$, leading to a revised critical value of $p < .0357$ for each hypothesis. Table 3 presents means and standard deviations for each writing performance measure by time of testing and condition and corresponding effect sizes.

Writing quality

Results showed a statistically significant main effect for condition, $F(2,70) = 10.53$, $p < .001$, time of testing, $F(2,70) = 12.70$, $p < .001$, as well as for the interaction between time of testing and condition, $F(4,140) = 16.57$, $p < .001$. Tests of simple main effects for the interaction revealed a statistically significant difference in the quality of

Table 3. Means (and Standard Deviations) for Writing Performance Measures by Condition and Time of Testing

	Condition			
Variable	**SRSD-DC**	**SRSD-VC**	**Control**	**d**
Writing Quality				
Pretest	3.99 (0.79)	3.85 (0.61)	3.96 (0.84)	
Posttest	5.05 (0.97)	4.14 (0.63)	3.76 (0.71)	SRSD-DC > Control** = 1.52
				SRSD-VC > Control * = .56
				SRSD-DC > SRSD-VC** = 1.11
Follow-up	4.95 (0.94)	4.13 (0.71)	3.50 (0.95)	SRSD-DC > Control** = 1.52
				SRSD-VC > Control* = .75
				SRSD-DC > SRSD-VC** = .97
Developing Ideais				
Pretest	4.40 (0.93)	4.02 (0.69)	4.10 (0.91)	
Posttest	5.21 (0.99)	4.33 (0.57)	4.14 (0.75)	SRSD-DC > Control** = 1.20
				SRSD-VC > Control = NS
				SRSD-DC > SRSD-VC** = 1.36
Follow-up	5.19 (0.98)	4.34 (0.79)	3.91 (0.95)	SRSD-DC > Control** = 1.31
				SRSD-VC > Control = NS
				SRSD-DC > SRSD-VC** = .94
Organising				
Pretest	3.85 (0.73)	3.69 (0.62)	3.81 (0.84)	
Posttest	5.15(0.96)	4.22 (0.60)	3.90 (0.55)	SRSD-DC > Control** = 1.60
				SRSD-VC > Control* = .55

				SRSD-DC > SRSD-VC** = 1.16
Follow-up	5.23 (0.89)	4.34(0.79)	3.76 (1.08)	SRSD-DC > Control** = 1.49
				SRSD-VC > Control* = .61
				SRSD-DC > SRSD-VC** = 1.05
Language Clarity				
Pretest	4.02 (0.80)	3.82 (0.50)	3.89 (0.80)	
Posttest	4.62 (1.00)	3.88 (0.59)	3.77 (0.71)	SRSD-DC > Control** = .97
				SRSD-VC > Control = NS
				SRSD-DC > SRSD-VC* = .90
Follow-up	4.42 (1.11)	3.69 (0.73)	3.34 (0.98)	SRSD-DC > Control** = .62
				SRSD-VC > Control = NS
				SRSD-DC > SRSD-VC* = .77
Planning				
Pretest	1.23 (0.67)	1.14 (0.32)	1.09 (0.29)	
Posttest	3.87 (1.30)	2.13 (1.27)	1.40 (0.71)	SRSD-DC > Control** = 2.42
				SRSD-VC > Control* = .70
				SRSD-DC > SRSD-VC** = 1.39
Follow-up	3.66 (1.25)	2.08 (1.46)	1.12 (0.60)	SRSD-DC > Control** = 2.59
				SRSD-VC > Control** = .86
				SRSD-DC > SRSD-VC** = 1.25

Note: SRSD-DC = Dual-coding SRSD; SRSD-VC = Verbal-coding SRSD.

*$p \leq .05$, **$p \leq .01$.

argumentative writing at posttest, $F(2,70) = 17.31$, $MSE = 10.55$, $p < .001$, and follow-up, $F(2,70) = 16.27$, $MSE = 12.55$, $p < .001$. Posttest analyses showed SRSD-instructed students wrote qualitatively better argumentative essays than control. Results also indicated SRSD-DC wrote qualitatively better essays than SRSD-VC at posttest. At follow-up, results were replicated, except no statistically significant differences were found between SRSD-VC and control. It should be added that the quality of argumentative essays produced by all conditions showed some decline from posttest to follow-up.

Developing ideas. Results showed a statistically significant main effect for condition, $F(2,70) = 9.91$, $p < .001$, time of testing, $F(2,70) = 9.60$, $p < .001$, as well as for the interaction between time of testing and condition, $F(4,140) = 5.24$, $p < .001$. Tests of simple main effects for the interaction revealed that there was a statistically significant difference in developing ideas at posttest, $F(2,70) = 12.39$, $MSE = 7.74$, $p = .002$, and follow-up, $F(2,70) = 12.05$, $MSE = 10.03$, $p < .001$. After instruction and 1 weeks later, SRSD-DC developed ideas qualitatively better than SRSD-VC and control. Moreover, no statistically significant differences were found between the last two groups in this measure.

Organising. Results showed a statistically significant main effect for condition, $F(2,70) = 20.67$, $p < .001$, time of testing, $F(2,70) = 19.94$, $p < .001$, as well as for the interaction between time of testing and condition, $F(4,140) = 24.03$, $p < .001$. Tests of simple main effects for the interaction revealed that there was a statistically significant difference in organising scores at posttest, $F(2,70) = 35.27$, $MSE = 18.54$, $p < .001$, and follow-up, $F(2,70) = 26.85$, $MSE = 23.58$, $p < .001$. Posttest analysis showed students in both SRSD conditions wrote qualitatively better organised essays than did students in the control condition. There were also statistically significant differences at posttest between SRSD conditions, results indicating SRSD-DC produced qualitatively better organised essays than SRSD-VC. These results were replicated at follow-up. It should be added that the argumentative essays produced by SRSD students in both conditions showed some improvement in organising from posttest to follow-up.

Language clarity. Results showed a significant main effect for condition, $F(2,70) = 6.14$, $p = .003$, time of testing, $F(2,70) = 5.60$, $p = .005$, as well as for interaction between condition and time of testing, $F(4,140) = 6.29$, $p < .001$.Tests of simple main effects for the interaction showed that there was a statistically significant difference in students' language clarity at posttest, $F(2,70) = 8.28.05$, $MSE = 5.507$, $p = .001$, and follow-up, $F(2,70) = 8.01$, $MSE = 7.23$, $p = .001$. Analyses indicated that immediately following instruction and 12 weeks later SRSD-DC wrote papers that were judged to show better overall clarity of discourse and respect for writing conventions than SRSD-VC and control. No statistically significant differences were found between the last two conditions in this measure.

Spontaneous planning. Results revealed a statistically significant main effect for condition, $F(2,70) = 37.72$, $p < .001$, time of testing, $F(2,70) = 56.22$, $p < .001$, as well as for the interaction between time of testing and condition, $F(4,140) = 17.71$, $p < .001$. Tests of simple main effects for the interaction showed that there was a statistically significant difference in students' planning scores at posttest, $F(2,70) = 30.15$, $MSE = 38.18$, $p < .001$, and follow-up, $F(2,70) = 28.97$, $MSE = 39.37$, $p < .001$. Posttest analysis showed SRSD-DC produced better developed plans than SRSD-VC and control at posttest and follow-up. Results further indicated differences between SRSD-VC and control at follow-up, suggesting the former did more advanced planning than the latter at this stage.

National exams. We computed a one-way ANOVA to examine possible differences in students' argumentative writing scores on the Portuguese language arts national exams. Results showed statistically significant differences between SRSD students and control, $F(2,68) = 3.53$, $p = .035$. Post-hoc comparisons using Tukey's HSD test indicated that SRSD-DC got higher marks than control, $M = 3.50$, $SD = 0.80$ vs. $M = 2.88$, $SD = 0.17$, $p = .015$, $d = 1.07$. Statistically significant differences were also found between SRSD-VC ($M = 3.36$, $SD = 0.79$) and control at the .10 level, $p = .055$, $d = .84$. No statistically significant differences were found between SRSD conditions.

3.2 Self-Regulated Strategy Use

We computed a repeated-measures MANOVA to evaluate the relationship between conditions and the reported use of 12 self-regulated strategies for writing to determine whether scores differed significantly at posttest. Results indicated a statistically significant multivariate main effect for condition, $F(24,118) = 1.15$, $p = .004$, Wilk's lambda = .48, $\eta_p^2 = .30$, and time of testing, $F(12,59) = 7.09$, $p < .001$, Wilk's lambda = .41, $\eta_p^2 = .59$. Findings also showed there was a significant multivariate interaction effect across time of testing and group, $F(24,118) = 1.66$, $p = .040$, Wilk's lambda = .039, $\eta_p^2 = .25$, indicating that depending on time of testing there were differences in the reported use of the strategies between groups. Table 4 presents mean scores and standard deviations for each of the 12 strategies by time of testing and condition. Results from the initial contextual screening ($n = 135$ ninth-grade students, sample frame) showed self-evaluating, recalling/creating mental images, and revising were the three most frequently reported strategies. Self-monitoring, help-seeking, and reader's awareness were the least reported strategies used in the process of initiating and controlling school writing tasks. Given the significance of the overall test, univariate main effects were examined. Tests of simple main effects for the interaction revealed there was a statistically significant difference in the reported use of planning strategies at posttest, $F(2,140) = 8.12$, $MSE = 2.98$, $p < .001$. A follow-up posttest analysis indicated that, after instruction, SRSD-DC students reported using more frequently planning strategies than control, $d = 1.27$. Tests of simple main effects for the inter-

Table 4. Means (and Standard Deviations) Results for Strategy Scores by Condition and Time of Testing

	Strategy Score						
	Pretest				Posttest		
Variable	SF	SRSD-DC	SRSD-VC	Control	SRSD-DC	SRSD-VC	Control
Environmental Processes							
Environmental structuring	3.59 (1.06)	3.99 (0.94)	3.47 (0.91)	3.64 (1.00)	3.77 (1.03)	3.08 (1.02)	3.37 (0.82)
Help-seeking	2.47 (1.21)	2.33 (1.17)	2.46 (1.30)	2.32 (1.09)	3.15 (1.23)	3.08 (1.28)	2.28 (0.80)
Behavioural Processes							
Self-monitoring	2.17 (0.99)	2.22 (0.84)	2.09 (0.98)	2.19 (1.14)	2.49 (.89)	2.07 (0.76)	2.12 (0.81)
Self-consequating	3.31 (1.00)	3.14 (1.12)	3.61 (0.87)	3.35 (1.06)	3.32 (1.06)	3.60 (0.73)	3.39 (1.07)
Self-verbalising	3.23 (0.93)	3.49 (0.86)	3.37 (0.80)	3.47 (0.65)	3.49 (0.73)	3.25 (0.81)	3.35 (0.97)
Personal Processes							
Time planning	3.13 (0.87)	3.19 (0.57)	3.11 (0.74)	3.23 (0.87)	2.93 (0.79)	2.99 (0.85)	3.11 (0.85)
Self-evaluating	3.98 (0.79)	4.07 (0.75)	3.88 (0.75)	4.12 (0.77)	4.28 (0.75)	3.96 (0.77)	4.00 (0.77)
Planning	3.74 (0.60)	3.76 (0.65)	3.82 (0.59)	3.59 (0.58)	4.30 (0.58)^{ab}	4.02 (0.73)^{b}	3.63 (0.46)^{a}
Revising	3.78 (0.94)	3.30 (1.32)	3.21 (1.22)	3.42 (1.15)	4.01 (0.60)	3.52 (0.99)	3.86 (1.04)
Organising	3.11 (1.01)	3.48 (0.88)	3.10 (0.84)	3.04 (1.21)	4.41 (0.63)^{a}	4.02 (0.73)	3.18 (1.30)^{a}
Reader awareness	2.87 (1.13)	2.99 (1.28)	2.95 (1.06)	2.75 (1.19)	3.78 (1.17)^{a}	3.12 (1.10)	2.69 (0.94)^{a}
Recalling/creating images	3.85 (0.93)	3.44 (0.94)	3.51 (1.14)	3.33 (1.25)	4.06 (0.91)	3.52 (1.14)	3.73 (0.70)

Note: SF = Sampling Frame (overall population of ninth-grade students); SRSD-DC = Dual-coding SRSD; SRSD-VC = Verbal-coding SRSD. Coefficients in the same row that share a superscript are significantly different from each other. Coefficients without superscript letters are not significantly different from the other coefficients. *$p \leq .05$, **$p \leq .01$.

interaction also revealed differences in the reported use of organising strategies at posttest, $F(2,140) = 10.26$, $MSE = 9.617$, $p < .001$. A follow-up analysis indicated that immediately after instruction SRSD-DC students reported using more frequently strategies to organise writing than control, $d = 1.20$. Tests of simple main effects for the interaction revealed statistically significant differences in the reported use of reader's awareness strategies at posttest, $F(2,140) = 5.80$, MSE = 7.18, $p = .004$. At posttest, SRSD-DC students reported using more frequently strategies to accommodate writing to a potential reader than control, $d = 1.03$.

3.3 Social Validity

We investigated students' and teacher's perceptions about the implemented strategies. Students' responses were highly positive about the procedures they were taught. Five categories accounted for 85% of responses: 1) organising ideas (81%), as in "it helped me structure my text; 2) planning (50%), as in "I didn't usually plan and this helped a lot. Because just using them we are developing our ideas. After finishing our plan, it helps us write the text because we have that plan to support writing"; 3) transforming ideas into written language (42%), as in "before learning the strategies, ideas would come to my mind and I would just write them, and texts were not that good. Now, as I write, and because I tell myself what I am going to write first, my texts are better"; 4) recalling ideas (23%), as in "we don't forget. We have that organisation, we can change it but it's there. It's like having less to worry about. It's more about focusing on writing; we don't have to... worry about forgetting ideas"; 5) and managing time for writing (19%), as in "now, I write faster". After generating the five coding categories, we searched for meaningful differences between students in the two SRSD conditions through independent-samples t-test. There were no statistically significant differences between the two groups on any of the five categories assessed (all ps $> .12$). The implemented strategy instruction was also viewed positively by the teacher. She listed several reasons to confirm its validity, namely: more students - proficient and less proficient writers – were planning their writing, with effects on text organisation (e.g., coherence and cohesion) and on writing quality; students felt more confident when facing an argumentative writing task; students became more aware of the need to accommodate writing to a potential reader; and test results improved after implementing the strategies. The teacher also perceived differences between groups during instruction in memorising the strategies and motivation. She stated that it took SRSD-DC students only two lessons to understand the strategies and remember the mnemonics, while it took longer for SRSD-VC students to do so. Observation notes confirmed the teacher's statements. SRSD-VC students found it more difficult to memorise the second part of the strategies (IDEIA) and were only able to name both strategies' steps in the fourth lesson. The teacher also perceived SRSD-VC students to be less motivated when presented with the strategies.

4. Discussion

4.1 Question 1: The Impact of Adapting SRSD for Teaching Argumentative Writing to Ninth-Grade Portuguese Students

The adapted evidence-based instructional approach taught ninth-grade students strategies to plan and write argumentative texts. Students were also taught the knowledge, skills, and self-regulated procedures to initiate and control argumentative writing tasks. We anticipated that such instruction would have a significant impact on their writing performance. As predicted, teacher-implemented whole-class SRSD instruction enhanced the writing performance of this study's participants. Immediately after instruction, students wrote argumentative texts that were judged to be of higher overall quality than students in the control group (effect sizes ranging from .56 to 1.52). Furthermore, students were judged to produce better organised texts immediately and 12 weeks after instruction (effect sizes ranging from .55 to 1.60). A subsequent aim was to examine students' deliberate planning after SRSD. Before intervention, 82% of the participating students (SRSD groups and control) did not generate any written plan in advance of writing. At posttest and follow-up, written plans were more common for SRSD-instructed students, with more students developing detailed plans before writing. Taken together, these results replicate findings from similar studies with younger middle-school students in English-speaking whole-class settings (De La Paz & Graham, 2002) and extend knowledge on the effectiveness of SRSD instruction outside English-speaking contexts of instruction. Notably, this is the first study examining ninth-grade national exam results in Portuguese language arts after the implementation of SRSD instruction and findings confirmed expectations. We found that 15 weeks after instruction, SRSD-instructed students wrote papers that were judged to be of higher quality than students in the control group (effect sizes exceeding .87). These results further support the sustainability of the adapted SRSD instructional model in real-life situations.

Current findings also add knowledge about generalisation or transfer effects of SRSD instruction. For the current study, students were taught strategies emphasising planning in advance of writing an argumentative text. After instruction, we found changes in the reported use of personal strategies to self-regulate general school writing tasks. Unlike control students, SRSD-instructed students reported using more frequently planning and organising strategies for writing (effect sizes exceeding .80). Interestingly, when examining argumentative writing performance, we also found differences between groups in both measures of performance. SRSD includes the explicit teaching of self-regulatory strategies that may be transferred to other uninstructed genres (Graham & Harris, 2003; Harris, Graham, & Mason, 2006; Limpo & Alves, 2013). For example, Harris, Graham and Mason (2006) found that after SRSD instruction to plan narrative and persuasive writing, Grade 2 students would devote more time also on planning in advance of writing informative texts. Current findings suggest that teaching students to plan ahead of writing might transfer to other genres not focused during instruction.

Interestingly, no meaningful differences were found between students in the reported use of strategies tapping environmental or behavioural processes. These findings may be explained by at least two reasons. First, the assessment instrument included a larger number of personal self-regulated strategies for writing, thus enhancing the probabilities of finding more significant differences in that category. Second, environmental and behavioural strategies may be more stable categories in the process of self-regulated writing at this particular stage of writing development. Writing development is a highly demanding and protracted process, which generally takes more than two decades to master (Kellogg, 2008). For the current study, we focused on students in transition to high-school, who according to Kellogg's (2008) model of writing development would still be approaching writing tasks relying heavily on knowledge of the topic - *knowledge-telling* - but beginning to understand the needs to coordinate authors and texts representations while composing- *knowledge transforming*. Literature shows secondary-school students in the US (Grades 7-12) make greater use of certain strategies to initiate and control text composing. In particular, high-achieving writers have demonstrated a greater reliance on planning, revising, organising, and help-seeking strategies (Harris & Graham, 2009; Kellogg, 2008). Considering this study's preliminary results, a context-specific approach is needed to replicate these findings and ascertain the use of self-regulated strategies for text composing and its impact on students' writing performance.

The main aim of the current study was to assess the effectiveness of adapting a specific EBP for writing instruction – the SRSD model – to a new context and culture. As previously reviewed here (see section I, subsection I), cultural adaptations of EBPs are a common feature of our global network society. Considering the complexity involved in this process, the current study adds knowledge about several issues to be taken into account when designing cultural adaptations. First, the current study highlights the importance of assessing context before intervention. For the present study, it involved assessing students reported strategy use to initiate and control general school writing tasks. With this information, we gained valuable insights on the writing strategies used in the school context before implementing the adapted SRSD instruction. Second, of paramount importance for cultural adaptations of EBPs are the relevance and the benefits of implementation. In a recent study examining middle-school teachers practices and perceptions about writing instruction (Veiga Simão et al., 2016), findings suggested Portuguese teachers strongly agree that writing is an important competence to be developed and taught through schooling. Indeed, one of the reasons behind the successful implementation of the current SRSD strategies was the relevance that educational agents, including the Head, teachers and parents, attributed to teaching writing and writing development.

4.2 Question 2: Incremental Effects of Adding Visual Mnemonics to the SRSD Instructional Routine

Despite the statistically significant differences between SRSD students and control students, SRSD-VC students did not exhibit the same advantages over the control group as SRSD-DC students. Differences between the two SRSD conditions were found in all measures of writing performance. These findings suggest using dual-coding mnemonics in the SRSD instructional routine may be advantageous to improve students' writing performance for two main reasons. First, dual-coding students wrote papers that were judged to be of higher quality. They developed their ideas more effectively, presented more coherent and organised texts, and showed more clarity of discourse and respect for writing conventions. All of these differences were large at posttest and follow-up (effect sizes exceeding .77). Second, they created more written plans than verbal-coding students with effect sizes higher than 1.24. The plans of these students tended to be more elaborate and included organised hierarchical elements about the topic, creating plans that received a score of 4 or 5 at posttest and follow-up. In contrast, only a minority of verbal-coding students received equal scores. Thus, dual-coding SRSD instruction seems to have enhanced argumentative writing performance. Finally, independent results from the Portuguese national exams showed a larger effect size between SRSD-DC and control. No statistically significant differences were found, however, between SRSD instructional groups at this stage. One reason explaining this result may be related to the fact that after follow-up SRSD instructional groups and control students attended a workshop developed by the first author in which students learned more about the adapted SRSD strategies for argumentative writing. This workshop took place at the end of the school year and all groups were provided with the dual-coding version of the mnemonics chart. Hence, we could speculate that SRSD-VC students were then able to make links between the verbal mnemonics they had already learned and the visual mnemonics presented during the workshop, with subsequent implications on their performance on the national exams.

As previously reviewed here (see section I, subsection II), theoretical and empirical research supports the use of dual-coding strategies to enhance learning and instruction. This is, to our knowledge, the first study investigating the role of dual-coding mnemonics in SRSD instruction. SRSD instruction aims to develop students' writing performance, knowledge and motivation by including the explicit teaching of genre-specific writing strategies and several self-regulated strategies to help students manage the composing process. Therefore, as an instructional package, it is important to understand which components of the SRSD model may extend its positive effects on students writing performance, knowledge, and motivation (Graham, Harris & McKeown, 2013). Monitoring the process of text composing places high demands on the writer's working memory (Kellogg, 1996, 2008). During the process, providing fast and effortless access to knowledge stored in long-term memory may reduce this load. In the context of teaching SRSD for writing, and in a world more often controlled by a visual culture, such goal may be achieved through the use of dual-coding mnemonics

to act as mediators between the learning stimuli and the strategies to be remembered and later used by the learner. Considering the exploratory nature of this study, however, future evidence is needed to investigate predictive associations between verbal and/or visual mnemonics and SRSD instruction.

4.3 Question 3: Social Validity of the Adapted SRSD Strategies

Results were positive in terms of social validity for both students and teacher. Ninety-six percent of the students reported having improved their argumentative writing performance. One student thought that learning the strategies had not improved his writing performance, which was already good, but stated his peer was writing much better. The teacher recommended implementing the strategies with other students. Subsequently, the Head of the school showed interest in providing in-service professional development in SRSD instruction. Thus, in the following school year, 48 primary and middle-school teachers (years 1-9) from five schools belonging to the same public cluster enrolled in a 25 hours in-service training course in teaching writing and SRSD instruction developed by our research team. Several empirical studies testing SRSD implementation in the US have supported the social validity of the model. Teachers recommend SRSD instruction and report improvements in students' writing performance, discourse knowledge, and motivation (Harris, Graham, & Adkins, 2015; Kiuhara, O'Neill, Hawken, & Graham, 2012). Research also shows students perceive the learning benefits of SRSD instruction, including in writing performance (Kiuhara et al., 2012) and self-efficacy (MacArthur & Philippakos, 2010). For the current study, the versatility of the SRSD instructional framework might have been critical to the effectiveness of the adapted strategies. In the initial professional training sessions and during SRDS implementation, the practicality of SRSD practices and procedures was always valued by the teacher, especially the autonomy to connect SRSD instruction to the curriculum and to students' needs. The impact of SRSD for teaching argumentative writing in Portuguese contexts was further supported by national exam results, particularly relevant to support the ecological validity of the adapted SRSD strategies. Thus, the focus on making teaching and learning meaningful for teachers and students may explain the social validity of the adapted SRSD strategies.

4.4 Limitations and Future Research

The current study has several limitations, which should guide future research. First, due to contextual restrictions (please see section II, subsection I), we conducted a quasi-experimental study, collecting data from a single school and with only one teacher implementing SRSD instruction. This design may mask, however, teacher effects for SRSD instruction and control comparisons. To increase the chances of isolating the effects of SRSD instruction, we used teaching experience, certification, and teachers' reported writing practice collected before and during implementation. Our findings also corroborated similar research supporting the effectiveness of the SRSD model in Portuguese educational contexts with younger students (Festas et al., 2015; Limpo &

Alves, 2013). Nevertheless, and considering these limitations, research is needed to examine instructional effects at the student and classroom levels, including large-scale studies using multilevel analyses to accommodate nested data. The option of having the same teacher delivering both SRSD instructional conditions also needs to be considered in light of this study's second question. Unarguably, random assignment of several teachers to both SRSD conditions would avoid potential confounds, including teacher effects. Again, that was not feasible due to this study's constraints linked to the context of SRSD implementation. However, we reasoned that with only one teacher implementing both SRSD conditions impact estimates could reflect the core components under study (i.e., dual-coding SRSD and verbal-coding SRSD) since teacher effects would influence both groups approximately equally (Weiss, 2010). For that, instruction was kept similar for each SRSD group (see Table 2). Despite this, caution is needed in interpreting findings comparing SRSD instructional groups. Moreover, and given the exploratory nature of this study, no short-term memory tests were administered to measure individual differences, which could provide stronger evidence of the role images may play in circumventing student's working memory capacity limits. However, long-term maintenance data (follow-up and national exam results) suggested more stable effects produced by dual-coding SRSD instruction. Future research is needed to replicate this study's preliminary findings, extending knowledge about the use of dual-coding mnemonics to enhance comprehension and recall of SRSD instruction.

5. Conclusion

The findings of this study have several important implications for research and teaching practice. First, this research was developed under the conditions of everyday classroom instruction and writing assessment. In the current study, SRSD instruction was implemented following the Portuguese language arts curriculum, with instructional activities designed to empower students to write content-area arguments. By doing so, it extends findings about the effectiveness of implementing SRSD instruction delivered by regular classroom teachers in whole-classroom settings. Second, this study extends knowledge on the effectiveness of SRSD instruction in Portuguese educational contexts, outside non-English speaking classroom environments (Festas et al., 2015; Limpo & Alves, 2013). Finally, results regarding the positive gains of using dual-coding mnemonics in the SRSD routine expand knowledge on the components that may enhance SRSD effectiveness to improve students' argumentative writing.

There is not, unarguably, one way to teach writing. Teachers' professional practices and perceptions about teaching usually reflect the policies and expectations of a particular educational system (Hooper, Knuth, Yerby, & Anderson, 2009). Thus, we argue for the need to study and discuss cultural adaptations of EBPs to teach writing, including SRSD instruction, to define clear-cut guidelines on how to plan and manage these adaptations. Importantly, such research should primarily focus on investigating

writing in context to provide clearer and more coherent research-based standards to inform context-specific teaching practices and teacher training programs that foster students' effective writing development.

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Appendix A: Argumentative writing scoring components

Score 6: Responses in this range demonstrate effective skills in responding to the argumentative writing task. In this range, the student is able to:

a. Development of ideas - Formulate a clear position that acknowledges multiple significant aspects about the topic (for/against/neutral); Validate and question arguments and counterarguments with clear and strong persuasive reasons to support them; Include persuasive evidence to support arguments and counterarguments (e.g., facts, examples, and quotes).

b. Organising - Identify and introduce the topic relevant to the assigned task, examining it insightfully; Develop and organise arguments and counterarguments always in a logic and articulated fashion; Provide a coherent conclusion summarising with clarity the writer's ideas and position about the topic.

c. Language clarity - Consistently provide relationships among ideas with effective transitions (e.g., connectors); Use effective vocabulary, well-structured sentences and sentence variety; Demonstrate superior facility in respecting conventions of standard written Portuguese (e.g., grammar, punctuation, mechanics) but may have minor errors.

Score 5: Responses in this range demonstrate competent skills in responding to the argumentative writing task. In this range, the student is able to:

a. Development of ideas - Formulate a position about the topic (for/ against/neutral) but may not fully address some of the complexities of the issue; Provide arguments and counterarguments, often including persuasive reasons to support them; Include evidence to support arguments and counterarguments (e.g., facts, examples, and quotes).

b. Organising - Identify and introduce the topic relevant to the assigned task, and skillfully examine it; Develop and organise arguments and counterarguments usually in a logic and articulated fashion; Provide a coherent conclusion summarising with some clarity the writer's ideas and position about the topic.

c. Language clarity - Provide usually skilfully relationships among ideas using transitions words (e.g., connectors); Use appropriate vocabulary, well structured sentences and sentence variety; Demonstrate facility in respecting conventions of standard written Portuguese (e.g., grammar, punctuation, and mechanics), but may have a few distracting errors that do not impede understanding.

Score 4: Responses in this range demonstrate adequate skill in responding to the argumentative writing task. In this range, the student is able to:

a. Development of ideas - Take a position with ideas usually focused on the topic; Provide arguments and counterarguments with usually persuasive reasons to

support them, but their development may be somewhat uneven; Include some evidence to support arguments and counterarguments, but their relevance may not always be clear.

b. Organising - Identify and introduce the topic relevant to the assigned task and adequately examine it; Develop and organise arguments and counterarguments adequately. Relationships among ideas are mostly clear; Provide a conclusion summarising some of the writer's ideas about the topic.

c. Language clarity - Provide relationships among ideas using transitions words (e.g., connectors); Use appropriate vocabulary, usually well-structured sentences, and sentence variety; Demonstrate sufficient respect for the conventions of standard written Portuguese (e.g., grammar, punctuation, and mechanics) including some errors that do not impede understanding.

Score 3: Responses in this range demonstrate developing skills in responding to the argumentative writing task. In this range, the student is able to:

a. Development of ideas - Take a position but addressing only some of the aspects of the topic; Provide arguments supporting the writer's position, but with little understanding of other perspectives; Include mostly tangential or irrelevant reasons and evidence to support arguments.

b. Organising - Identify and introduce the topic relevant to the assigned task examining some of its aspects; Develop argumentation with some competence, but sometimes with unclear relationship among ideas; Provide a conclusion summarising part of the writer's ideas about the topic, but they may not be clearly relevant, or they may be confusing.

c. Language clarity - Provide little relationships among ideas with little resource to transitions words (e.g., connectors); Use appropriate vocabulary with little sentence variety, but sentence structure is usually correct; Demonstrate some problems respecting the conventions of standard written Portuguese (e.g., grammar, punctuation, and mechanics), with distracting errors that may occasionally impede understanding.

Score 2: Responses in this range demonstrate marginal skills in responding to the argumentative writing task. It demonstrates problems respecting the conventions of standard written Portuguese. In this range, the student is able to:

a. Development of ideas - Take a position but provide limited reasons to support it; Some ideas may not be clearly focused on the topic, with minimal evidence of relevant approaches to the development of ideas; Provide brief, general, or inadequate evidence (if any) to support a mainly personal opinion about the topic.

b. Organising - Identify the topic but if any introduction is made examines only part of its aspects; Shows an attempt to organise thoughts by grouping ideas, but organization if often illogical and unclear; May not provide a conclusion summarising the writer's ideas about the topic, but if so ideas may not be clearly

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focused on the topic.

c. Language clarity - Rarely provide relationships among ideas using transitions words (e.g., connectors); Make usually clear word choices, with sentence structure sometimes correct, but with little sentence variety; Demonstrate problems respecting the conventions of standard written Portuguese (e.g., grammar, punctuation, and mechanics). It shows many distracting errors that impede understanding.

Score 1: Responses in this range demonstrate little or no skills in responding to the argumentative writing task. In this range, the student is able to:

a. Development of ideas - State a position but provide no reasons to support it; Provide ideas which may not be clearly focused on the topic, with no evidence of relevant approaches to the development of ideas; Provide general examples (if any) to support a personal opinion about the topic.

b. Organising - Identify the topic along the response, not providing an introduction to present it and examine it; Show no evidence of relevant approaches to organisation, grouping ideas in an illogical and unclear fashion; May not provide a conclusion, but if so ideas are not focused on the topic.

c. Language clarity - Provide no relationships among ideas; Make often unclear and inappropriate word choices, with sentence structure often incorrect, and little sentence variety; Demonstrate serious problems respecting the conventions of standard written Portuguese (e.g., grammar, punctuation, and mechanics); Shows many errors that impede understanding.

Score 0 = Off topic (i.e., provides no evidence of an attempt to respond to the assigned topic)/Too brief to score/Not written in Portuguese/ Illegible/ Nonverbal

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