TITLE:

Improving written argumentative synthesis by teaching the integration of conflicting information from multiple sources

SUGGESTED RUNNING HEAD:

IMPROVING WRITTEN ARGUMENTATIVE SYNTHESIS

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Keywords: written argumentation, graphic guide, explicit instruction, collaborative argumentation, synthesis of multiple sources

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Abstract

The overall goal of this study was to assess the effectiveness of two different types of intervention aimed at improving written argumentative synthesis by integrating conflicting information from different sources. The participants were 114 undergraduate psychology students. Although the aims of both modalities were the same, the intervention with each group was different. More specifically, both interventions combined the use of a graphical guide that included critical questions with collaborative practice in pairs, but one of them also included explicit instruction in which the processes involved in performing the task were modelled and explained. Before and after the interventions, the students in both intervention groups produced syntheses while working individually without the help of the guide. The degree of integration of

conflicting information in the individual products, the number of arguments selected from the sources and the students' perceptions of the utility of the intervention were assessed. The results indicate that only students who received additional explicit instruction showed an improved ability to integrate conflicting information and increased the number of arguments they selected from the sources. Furthermore, it was found that students in that group tended to perceive the utility of the intervention more positively than those in the other group.

Keywords: collaborative argumentation, explicit instruction, graphic guide, synthesis of multiple sources, written argumentation.

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Written synthesis of multiple texts

Learning tasks that require students to consult, contrast and integrate information from multiple sources in written form are frequently required by universities, especially in certain fields (social sciences, humanities, etc.) (Authors, 2007; Authors, 2005; Tynjälä, 2001).

The production of a written synthesis of multiple texts, whether it is referred to by this or any other name (essay, review, report, etc.) is viewed as a complex task with strong potential for fostering learning (Flower, Stein, Ackerman, Kantz, McCormick & Peck, 1990; Segev-Miller, 2004; Spivey, 1997). The ability to select ideas from each source and relate them to one another (intratextual integration) is necessary but not sufficient for producing a written synthesis. It is also necessary to establish connections between the information in the various texts (intertextual integration). Indeed, this ability is the key to developing a synthesis (Perfetti, Rouet, & Britt, 1999; Segev-Miller, 2007). Moreover, during this process, it is equally necessary to choose a line of argument that allows one to articulate, organize and connect ideas from the selected source texts and to create a new structure to give meaning to the text (Spivey, 1997).

Writing a synthesis may require integrating complementary information about a topic (see, e.g., Boscolo, Arfé, & Quarisa, 2007; Cerdán & Vidal-Abarca, 2008; Segev-Miller, 2004). Often, however, it also requires contrasting conflicting information (Bråten & Strømsø, 2009; Britt & Sommer, 2004; De la Paz & Felton, 2010; Authors, 2011). In particular, in our study, we examined the ability to integrate information from different sources to present different viewpoints about a controversial topic.

According to Wiley, Steffens, Britt and Griffin (2014), an important element in writing to learn from multiple-source inquiry activities is the challenge of integrating conflicting information. The type of task or instruction given to students can influence the degree of integration of information from several documents. In particular, asking students to choose and defend a point of view on a controversial topic in an opinion essay, i.e., providing a *position-based* writing prompt, may steer them towards adopting a position early rather than lead them to identify and explore different positions or perspectives around a theme before they reach a conclusion. In a series of studies of both college and high school students, the authors manipulated the prompts they gave students for essays on historical topics based on multiple documents. The results showed that a *contributing-factors* prompt that required the students to construct an explanation led to better coverage of the information provided by the various documents and the inclusion of more varied perspectives than a *position-based* prompt.

Synthesizing information from different sources that offer different perspectives about a controversial topic can be understood as a type of argumentative essay writing in the sense that it is impossible to develop effective argumentation without considering the different perspectives from which one can approach any aspect of reality. This is impossible without identifying, contrasting and integrating the arguments and counterarguments that support the different points of view (Kuhn, 1999, 2005; Voss, 2001).

Writing argumentative essays

As Nussbaum (2008a) stated, the ability to critically evaluate and combine arguments and counterarguments into an overall, final position is an important part of writing argumentative essays. This author distinguished between persuasive and reflective writing. Persuasive writing tends to promote one-sided reasoning in the sense that it

may lead one to develop a thesis and defend it by citing reasons and evidence that support it. In contrast, reflective writing focuses on exploring and integrating various sides of an issue to reach a reasoned conclusion. Nussbaum and Schraw (2007) identified several strategies that can be used to integrate arguments and counterarguments. One strategy is refutation, in which arguments opposing one's own are considered erroneous, irrelevant or insufficiently supported. Although a rebuttal implicitly acknowledges and responds to the counterarguments, refutation is not a strong integration strategy because it tends to be associated with defending a single position. Nevertheless, as Nussbaum ascertained (2008a), refutation may be used selectively in the context of two-sided reasoning. Another strategy is weighing, which occurs when the author considers the advantages and disadvantages of both sides and then, explains which side has the stronger arguments. The third strategy is synthesis, in which, as the authors claim in a more recent study (Nussbaum & Edwards, 2011), the writer arrives at a final standpoint that lies between the opposing sides, i.e., finds a solution that preserves the benefits of one of the positions while reducing the negative consequences cited in a counterargument. Only the last two strategies are clearly involved in two-sided reasoning.

The point made by Nussbaum about the importance of developing the ability to consider both sides does not claim that the weighing and synthesis strategies are superior to the refutation strategy. Identifying the most appropriate strategy may depend, among other things, on the goals of the argumentation task. Argumentation may have a persuasive aim, i.e., be focused on convincing another person that one position is more favourable than the alternative, which Walton (1989, 1996) describes as "persuasive dialogue" and Bereiter and Scardamalia (2006) describe as discourse in "belief mode". In these cases, refuting the opposing position may be an appropriate

strategy. However, when argumentation is not oriented towards acceptance or rejection of a particular position but rather seeks to explore different perspectives on a problem to find solutions and reach consensus through inquiry and negotiation (Walton, 1989) or through "design mode" discourse (Bereiter and Scardamalia, 2006), the strategies associated with balanced reasoning—weighing and synthesis—may be more appropriate.

Taking these premises as a starting point, we have focused our study on argumentative writing that aims to explore different perspectives to find integrative solutions to a problem. Although in the majority of studies in this field, knowledge of different perspectives stems from the writer's prior knowledge or from previous discussions with others, in our study, this knowledge is also acquired by reading several texts that defend different visions. Using this approach, writing an argumentative text may be understood as a task that involves synthesizing diverse sources. The principal aim of this study has been to design and evaluate the effectiveness of different interventions used to teach university students how to approach argumentative writing tasks that use multiple texts with the goal of integrating different perspectives on controversial issues.

Promoting the integration of conflicting information in argumentative essays

Various interventions have been designed to improve college students' argumentative writing. Studies by Nussbaum and colleagues (Nussbaum & Schraw, 2007; Nussbaum, 2008a; Nussbaum & Edwards, 2011) examined the effects of training students to use integration strategies while writing an argumentative essay by using a graphic organizer or an argumentation vee diagram as a prewriting tool to produce, in writing, a final conclusion on a controversial topic. In the first study, use of the graphic organizer only enhanced the refutation strategy. In the second study, because the graphic organizer

failed to promote integrative reasoning in the previous study, it was redesigned to facilitate integration using the weighing and synthesis strategies. Moreover, the intervention combined the organizer with more specific instructions on how to integrate arguments and counter-arguments, a discussion of "critical questions" that should be asked during the integration process, more practice and feedback on its use. This study found that although strong integration (by weighing or synthesis) emerged over time with additional practice and instruction, the effect disappeared when the support of the graphic organizer was withdrawn. In the third study, greater emphasis was placed on the development of critical questions that could help students evaluate the argument's strength. The researchers found that the combination of critical questions included with a graphic organizer and whole-class discussions of each topic that were moderated and scaffolded by a facilitator (one of the researchers) was associated with an increase in the number of arguments that weighed different perspectives about the controversy. However, this effect was not always observed when the class discussions and the critical questions were removed.

According to Ferreti and Lewis (2013), the lack of explicit instruction about the use of critical questions could explain why the students in the study of Nussbaum and Edwards (2011) did not master their use independently. Song and Ferreti (2013) included explicit instruction in the strategies via the self-regulated strategy development (SRSD) model (Graham & Perin, 2007; Graham, Harris & McKeown, 2013) in a study designed to teach college students to revise their argumentative essays by asking and answering critical questions about different argumentation strategies. In SRSD-based instruction, the teacher provides explicit support for the acquisition of specific strategies. This support includes activating the student's background knowledge concerning the strategies, discussing and modelling the use of the strategies, practicing strategies with support and using the strategies independently. These researchers found

that students who received this instruction wrote better essays and included more counterarguments, alternative positions and refutations than students in other groups did.

As we indicated above, an essential component of explicit instruction in these strategies is to model the processes involved in writing to enable observational learning. According to Braaksma, Rijlaarsdam, Van den Bergh and Van Hout-Wolters (2004), observational learning involves more than "blind imitation". This type of learning makes it possible to make covert writing processes visible. These authors point to three reasons why observational learning is more effective than learning by performing tasks: first, students are given an example in real time that focuses on the processes involved in writing from the desired perspective; second, the resources they would need to use to write, if the intervention were implemented with a focus on learning by performing tasks, can be used, in this case, to learn to write; and, third, it places special emphasis on regulation and metacognitive strategies. Raedts, Rijlaarsdam, Van Waes and Daems (2007) researched the role of modelling in a study in which undergraduate students were given a large and complex writing assignment, such as writing a literature review, that involved organizing, integrating and evaluating different source texts, i.e., a synthesis task involving multiple sources. The results illustrated that observing excerpts from peers' text production strategies and evaluating the approaches of the different models had a positive effect on writing performance. Much of this research has been conducted in the context of individual writing activities, but this approach might also be applicable to the collaborative writing of argumentative essays because it can make visible the collaborative processes of selecting the main arguments from sources, elaborating on them, integrating the information, organizing the content of the argumentative essay and writing it.

In fact, another approach to promoting the writing of argumentative essays is collaborative argumentation, which is based on the dialogic nature of argumentation. As Ferreti and Lewis (2013) argue, "argumentation is an inherently dialogic activity between people who have a difference of opinion about a controversial issue" (p.115). Nussbaum (2008b) defines collaborative argumentation as "a social process in which individuals work together to construct and critique arguments" (p. 349), in contrast with debate or adversarial argumentation, in which each participant takes a side and persuades others.

As prior research has demonstrated, collaborative argumentation can enhance dialogue between the different sides of an issue, promote greater exploration and elaboration of arguments and lead to a deeper understanding of controversial topics (Baker, 1999; Baker, Quignard, Lund & Séjourné, 2003; García-Mila, Gilabert, Erduran & Felton, 2013; Kanselaar, Andriessen, Erkens, Jaspers, Prangsma & Veerman, 2002; Kuhn & Crowell, 2011; Reznitskaya, Anderson, McNurlen, Nguyen-Jahiel, Archodilou, & Kim, 2001).

In some studies, different representational tools and diagrams have been used to support collaborative argumentation-based learning (Van Amelsvoort, Andriessen, & Kanselaar, 2007; Janssen, Erkens, Kirschner, & Kanselaar, 2010). As Janssen et al. (2010) stressed, when students use argumentation tools while collaborating, they benefit from the combined potential of both approaches. On the one hand, graphical or diagrammatic representations are used to stimulate students to externalize and explicate their claims and arguments. Students can add arguments, counter-arguments or evidence and draw different types of relationships between the elements of the diagram. Moreover, the construction of an argumentative diagram can also reduce the cognitive effort needed to do this complex task. On the other hand, through the co-construction of

a representational tool and the discussion it stimulates, students become more engaged in the process of interactive argumentation.

Ultimately, as Ferreti and Lewis (2013) conclude in their analysis of the best practices in teaching argumentative writing, using both dialogic and collaborative support that scaffolds students' representations of alternative perspectives and explicit strategic support for their self-regulation of the writing process can provide powerful integrated instruction. Collaborative argumentation and explicit instruction in strategies are complementary approaches to teaching effective argumentative thinking and writing.

Objectives

In this context, the overall goal of our study was to assess the effectiveness of two different types of intervention aimed at improving the degree of integration displayed in an argumentative essay based on the reading of two texts that presented conflicting perspectives on a topic. In this study, unlike many previous studies, the type of task performed by the students required them to construct a written argument from information provided by diverse sources. Both types of intervention sought to help students approach argumentation as a learning task that can bring about a deeper understanding of a controversial topic when different perspectives are explored with the aim of finding an integrative solution. With this goal, the intervention sought to improve students' ability to select arguments and counterarguments from the sources, to arrive at an integrated conclusion that takes both positions into account and, even, to suggest a possible alternative that goes beyond both of them.

Although the aims of both groups were the same, the intervention was different for each group. The first intervention, collaborative practice with the support of a guide (CPG), combined the features of collaborative argumentation and a dialogic approach, in the terms used by Ferreti and Lewis (2013). The second condition, collaborative

practice with the support of a guide plus explicit instruction in strategies (CPG+EI), combined this collaborative approach with explicit instruction in the strategies used in writing an argumentative text after reading texts that support different positions. More specifically, both interventions combined the use of a graphical guide that included critical questions with collaboration practice in pairs, but one of them also included explicit instruction in the form of video-models and explanations of the processes involved in performing the task. The present study addressed the following hypotheses:

1. Because both interventions prompted students to use the weighing and synthesis strategies, it was hypothesized that the overall integration associated with these strategies would increase but that this increase would be larger in the CPG+EI group.
2. It was expected that the intervention would lead to a more systematic selection of arguments in favour of and against the different positions, which would increase the number of arguments employed in the essays. This should occur to a greater degree in the CPG+EI group.
3. Finally, it was expected that, in comparison to the students in the CPG group, the students in the CPG+EI group would assess the intervention more positively as helping them complete tasks that require written argumentative synthesis.

Method

Participants

The participants were 114 undergraduates in an educational psychology course who were completing the final two years of their degrees in psychology at a large university. Of these students, 56 were in the CPG group, and 58 were in the CPG+EI group. The sample comprised 22.4% men and 77.6% women. The average age was 21.3 years. The

study was presented as a seminar on argumentative writing within the course. The participants received course credit, and participation was voluntary.

Materials

Guide.

The students in both intervention groups received a guide with a graphic format that asked them to identify and list (in specifically reserved spaces) the arguments and counterarguments of the opposing positions put forward in the two texts. They were also given questions to help them weigh the importance of each argument and counterargument, compare and contrast the positions, select and organize ideas for the conclusion and revise their final draft (see the guide in Appendix A). The guide was developed based on diagrams that had been used in prior studies (Van Amelsvoort et al., 2007; Janssen et al., 2010; Nussbaum, 2008a).

Explicit instruction materials.

In the CPG+EI group, the instructor explained the objective of the intervention in the following way:

"When we are faced with this type of task, i.e., one in which we must develop a conclusion with an argument regarding a controversial topic, a common strategy is to take a position from the beginning and try to defend it by arguing in its favour and refuting arguments that support a different position. This is what we could call a persuasive strategy; it leads us to try to convince others of the superiority of our own position. However, this is not the goal of this seminar. Our intention is for you to learn to follow a more integrative strategy, that is, before arriving at a conclusion, you should explore different positions in depth (including their pros and cons) and contrast them to reach a conclusion that integrates them."

Next, the instructor explained that although the guide laid out a four-stage process, the process did not need to be viewed as linear because the stages tend to be performed recursively: first, different positions on the topic are identified and explored; second, they are compared and contrasted; third, a conclusion is elaborated; and fourth, a written synthesis that explains the conclusions arrived at is completed, and this text is reviewed at the end of the process. The instructor explained each of the four stages in detail and showed how the guide could help with each one (see the instructions given in Appendix B).

An example of each stage was also presented using a short illustrative video, and the instructor explained what it showed. The videos showed two students performing the task expertly with the help of the guide while the instructor-researcher identified the different stages of the process for the students. The models selected for this demonstration were two researchers whose ages were similar to those of the students to help them identify with the models. Although the video's duration did not correspond exactly with the time actually taken by the "model students" to perform the task, it did show all the debates, decisions and activities in which they engaged during the process in detail.

Texts.

Four pairs of texts argued for different positions on several hotly debated topics in education: the initial training of teachers, the evaluation of teachers, the organization of the school day in primary education and the external assessment of academic achievement. They were all similar in terms of their length (690 words) and the number of arguments that were for and against a position (8-10). For example, the text supporting teacher evaluation contained the claim that "it is also important to consider the evaluations of families and students themselves because they are essential

components of the educational process", while the opposing text asserted that "it is doubtful that families and students have the judgement necessary to evaluate sound educational practices".

Inventory of students' perceptions of the usefulness of the intervention.

The students' perceptions of the usefulness of the intervention were assessed using an ad hoc inventory consisting of six items with a six-point scale with 1 meaning "not very useful" and 6 meaning "very useful". In the first five items, the student was asked to assess the benefit he or she had received from each of the following elements of the seminar on argumentation: The explanation of the argumentative process, the video used to model completing the argumentation task in pairs, the guide to writing argumentative texts, the discussion and work in pairs and the practice tasks (two argumentative writing tasks). The last item asked them to evaluate the benefits they had received from the argumentation seminar as a whole.

Design and procedure

A pre-post study design with two groups (CPG+EI and CPG) was employed. The students who agreed to participate in the study were randomly assigned to intervention groups.

Before and after the intervention, the students in both groups were instructed to read two texts that defended distinct positions on a controversial topic in education and produce individual written argumentative syntheses of the texts they had read in which they supported the conclusions that they had arrived at. The students were given the following instructions:

“Below, you will read two texts that support distinct positions regarding a controversial topic in education. After reading the texts, you will write about the conclusion you have reached and justify it in a well-reasoned way.”

The students received the texts in printed form but composed their syntheses using laptops.

Table 1 shows the different phases in the intervention for each group.

- Insert Table 1 -

In the instruction phase (Phase II), the students in the CPG+EI group received the instructions described above. Students in the CPG group were given the guide and told that in that document, they would find guidance for performing the required tasks during the practice sessions, in the form of questions on the nature of the decisions they would need to make and some graphical resources for presenting them. They were also advised to read the guide in full and to use it on their own during the reading phase and later, while they met with their partners and wrote up the final joint text.

In the practice phase (Phase III), there were two sessions during which the students in both of the intervention groups worked in pairs and, with the help of the guide, produced written syntheses. The students in both groups were instructed to read both of the texts alone. Then, each pair of students was asked to draft a joint conclusion supported by arguments in the reading material and their own ideas. The following instructions were given:

“Separately, each member of the pair will read two texts about a controversial issue in the field of education (topic) that present different positions. You may write on the texts (underline or take notes). When you have finished this initial, individual stage of the task, you will draw a conclusion together, with both members of the pair analysing the

position that seems most appropriate and writing an argument using what you have read as well as your own ideas."

The instruction session lasted 30 min with the CPG group and 60 min with the CPG+EI group, and the practice sessions lasted between 90 and 120 min. All the sessions were completed in three weeks. The sessions for the two groups took place on different days and were conducted in a classroom. The students received printed versions of the texts to read and the guide, but they wrote their joint texts using laptops.

Two pairs of texts were used for the pre- and post-tests, and the other two pairs were used for the two syntheses written in pairs during the intervention. The texts that the students had used in the pre-test were used a second time with the CPG+EI group in Phase II to explain the stages of the process and model the steps in it.

The students' perceptions of intervention utility inventory was given to the students in the two groups after they completed the post-test synthesis. The students in the CPG+EI group answered all the questions, and those in the CPG group answered only the last four questions because they had received neither an explanation nor a model[i].

Scoring.

The syntheses written by students individually before and after the intervention were scored according to the degree of integration and the number of arguments in accordance with the following criteria.

Degree of integration.

First, the arguments selected by each student using the two sources and included in the essay were identified. Each was scored according to the argumentative strategy used (adapted from Nussbaum, 2008a):

- Arguing in support: An argument included in the text is used to support one position without consideration of or reference to opposing arguments.

- Integrating by refuting: An argument included in the text is developed by the student to enable its rejection or show its weaknesses. An argument can be refuted with arguments taken from the texts or with new arguments contributed by the student.

- Integrating by weighing: a) An argument is put forward with a statement that a value associated with one position is more important than a value associated with the other position, b) an argument is put forward stating that a certain advantage of one position has greater weight than a disadvantage of the same position, or vice versa, or that a certain advantage or disadvantage is of little importance or c) an argument is put forward that one advantage of a position is also an advantage of another position.

- Integrating by synthesizing: a) The condition(s) under which one position's argument(s) is (are) applicable and those under which the other position's arguments are applicable are specified, b) specification ensures that it is be necessary to reduce the negative consequences but does not specify how or propose a solution or c) a new alternative is proposed that reduces the negative consequences of one of the two positions.

Second, the final conclusion of each text written by the student was scored according to the following criteria:

0: The text does not include an explicit conclusion

1: The text includes an explicit but only partial conclusion using only one argument (even if this was previously cited in the body of the text) or includes one overall but generic conclusion without citing concrete arguments in the body of the text that can be referenced by the overall conclusion.

2: Includes an overall conclusion based on several arguments.

By analysing the argumentative strategies used in the essay and the final conclusion, the level of overall integration was scored on a scale from 0 to 6 according to criteria that are presented Table 2. A single category includes different types of text even if all of them have similar levels of integration.

- Insert Table 2 -

Number of selected arguments.

In addition to the degree of overall integration, the number of selected arguments from source texts included in each essay was calculated.

Three independent judges encoded 50% of the written material (pre- and post-intervention). The code specifying which group wrote the material was eliminated so that the judges were unable to determine which experimental group each written synthesis belonged to during the scoring process. Cronbach's alpha was calculated to measure the inter-rater reliability. The values were .88 for the degree of integration and .91 for the number of selected arguments. Disagreements were resolved through discussion.

Results

The results presented here refer only to comparisons between the pieces of writing that the students produced individually before and after the intervention. We used an alpha level of .05 for all the statistical tests.

- Insert Table 3 -

To contrast the efficiencies of the two intervention programmes, a repeated-measures ANOVA with two factors, a between-subjects (group) factor and a within-subjects (time) factor, was performed for the degree of the syntheses' integration and the number of arguments. With respect to the degree of integration, no main effects were found for group variable (F (1, 112) = 1.73, MSe = 5.31, p = .19). However, a significant effect was found for the time variable (F (1, 112) =16.02, MSe = 35.56, p < .001, η^2_p = .13); the written argumentative synthesis scores were greater on the post-test than on the pre-test (see Table 3). However, this result should be qualified because the interaction between the time (pre vs post) and group (CPG vs CPG+ EI) factors was significant (F (1, 112) = 5.64, MSe = 12.51 p < .05, η^2_p = .05). The Bonferroni post hoc test revealed that the scores of the students in the two groups varied differently over time; there were no significant changes in the CPG group's scores on the pre- and post-test tasks (p = .25), whereas those of the CPG+EI group indicated improvement in the degree of written syntheses' integration over time (p <. 001) (see details in Figure 1). Similarly, while the degree of integration of the syntheses written by both groups was equivalent to (p = .56) in the pre-test, it was greater for the CPG+EI group in the post-test (p < .05).

- Insert Figure 1 –

Analogous results were obtained for the number of arguments. A main effect was found for the time variable (F (1, 112) = 21.23, MSe = 153.85, p < .001, η^2_p = .16) but not for the group variable (F (1, 112) = 3.47, MSe = 31.39, p = .06). Interaction between the

time (pre-post) and group (CPG vs CPG+EI) factors was significant (F (1, 112) = 5.54, MSe = 40.19, $p < .05$, $\eta^2_p = .05$). The Bonferroni post hoc test revealed that there were no significant changes between the pre- and post-tests in the number of arguments that students from the CPG group included in their syntheses ($p = .12$). In contrast, the students in the CPG+EI group included more arguments in the post-test than in the pre-test ($p < .001$) (the details are shown in Figure 2). Additionally, before the intervention (i.e., on the pre-test), students from both groups included equal numbers of arguments in their syntheses ($p = .86$). However, following the intervention, the students who received a more complete intervention included more arguments than students in the CPG group did ($p < .01$).

- Insert Figure 2 -

To contrast the perceptions that the students from the two groups held regarding the usefulness of the common components of the two interventions, an ANOVA 2×3 inter (group)/intra (subject) (component of the programme) was used (see table 4). Main effects were found for the group (F (1, 107) = 6.68, MSe = 13.28, $p < .05$, $\eta^2_p = .06$) and intervention (F (1, 107) = 3.581, MSe = 2.54, $p < .05$, $\eta^2_p = .03$) component variables. Additionally, interaction between the group and intervention component variables was significant (F (1, 107) = 3.43, MSe = 2.43, $p < .05$, $\eta^2_p = .03$). The Bonferroni post hoc test revealed that the two groups did not differ in the degree of usefulness they attributed to the collaboration component ($p = .57$) or the practice component ($p = .05$). In contrast, the perception of usefulness attributed to the guide by the group that received a more complete intervention (the CPG+EI group) was greater ($p < .01$). Additionally, the CPG+EI group considered the following three components equally useful: the guide, collaboration and practice. In contrast, the CPG group perceived the

guide as being less useful than the other components (collaboration and practice).

- Insert Table 4 -

Within the CPG+EI group, the usefulness that the students assigned to the model and the explanation of the processes involved in completing the task was compared with that of the other three components. To do this, a repeated-measures ANOVA (components) was used. An effect was detected for the component variable (F (4, 55) = 32.42, MSe = 30.63, $p < .001$, $\eta^2_p = .37$). The Bonferroni post hoc test revealed that the students perceived the guide, collaboration and practice as more useful than the model ($p < .001$) and the explanation ($p < .001$). However, the explanation was considered more useful than the model ($p < .001$).

Finally, an inter-subject ANOVA (group) was used to contrast the overall usefulness attributed to both interventions. In this case, the CPG+EI group perceived the intervention as more useful than the CPG group did (F (1, 108) = 6.946, MSe = 5.39, $p < .05$, $\eta^2_p = .06$).

Discussion

The general aim of this study was to assess the effectiveness of two different types of intervention (collaborative practice with the support of a guide (CPG) and collaborative practice with the support of a guide plus explicit strategy instruction (CPG+EI)) aimed at improving written argumentative synthesis involving the integration of conflicting information from several sources.

In accordance with our first hypothesis, the group that received explicit instruction via explanations and models of the processes involved in the argumentative synthesis task,

in addition to practice in collaboration with a partner and the support of the guide, showed a significantly increased degree of integration of the different positions.

Before the intervention, the students from this group tended not to fully use integrative argumentation strategies but rather to adopt one of the positions using what Nussbaum (2008a) called *one-sided reasoning* or to refute the opposing position. Following the intervention, they improved; a significantly larger number of students tended to integrate both positions using weighing or synthesizing strategies.

In contrast, and against expectations, the group that performed the task with the support of a guide but did not receive explicit instruction did not exhibit a significant change in the degree of integration of its syntheses. Indeed, the tendency to refute the opposing position did not change.

It should be noted that the size of the effect we have found is moderate despite being about a brief intervention because the students completed only two practice syntheses between the pre-test and post-test.

These results are consistent with those obtained in studies by Nussbaum (Nussbaum, 2008a; Nussbaum & Edwards, 2011) in which progress in the use of more integrative argumentation strategies (weighing and synthesis) was observed when students were given a pre-writing tool and participated in a group discussion and disappeared when the graphic tool and group discussions were removed. In our study, the group of students who completed the task in collaboration with a partner and the support of a guide during the intervention did not benefit from that support when they completed the post-test task alone and without the support of the guide. As findings of Nussbaum and Schraw (2007) and Nussbaum (2008a) do, our results indicate that when the intervention consisted of providing students with a guide but no instruction on how to use it to integrate arguments and counterarguments, the students tended to use refutation more than integration.

In accordance with the interpretation of Ferreti and Lewis (2013), the use of the guide and the collaborative practice were not enough for students to learn to better select arguments from sources and to integrate different positions using the strategies of weighing and synthesis to a significant degree. Explicit instruction through models and explanations of the processes involved in the task were necessary to produce significant improvement, which coincides with the results obtained by Song and Ferreti (2013). Weighing arguments on controversial positions and integrating them into a new proposal is a very complex task that involves going beyond *persuasive writing* and adopting a *reflective* writing (Nussbaum, 2008a). The support provided by collaboration and the guide do not appear to have been sufficient for students to disentangle and take ownership of the logic of integration. The tendency towards *one-sided reasoning* seems strongly rooted in the students, and changing it would require explicitly teaching students to identify and explain each of the processes involved in the integration process modelled in the video.

Our results also support the role of observational learning described in prior studies such as that of Raedts et al. (2007), in which university students were also taught to complete a complex task using multiple sources that present both complementary and conflictive positions on a topic, such as writing a literature review. When the students were exposed to different models that illustrated the application of more or less appropriate strategies during different stages of the writing process and were asked to reflect on the different approaches to the task used by the models, the quality of the resulting research reviews was higher than it was when students limited themselves to practicing the task by means of several short writing exercises.

With respect to our second hypothesis, the results reveal an analogous tendency. The number of arguments selected from the sources improved significantly in the CPG+EI group but not in the CPG group.

The guide was designed to encourage students to explore the arguments for and against in a more systematic manner and thereby to improve their selection of arguments, which constitutes a first and necessary step towards integrating different positions (Spivey, 1997). However, to do this, it is necessary to understand the purpose of this choice as part of an integrative strategy in which the number and relevance of arguments are the basis of proper argumentation. If, as we indicated, this way of understanding argumentative reasoning was not shown by the CPG intervention group, it follows that the emphasis placed on selection did not increase.

Ultimately, according to our results, it is the combination of a collaborative approach, support from a guide and explicit instruction that has a significant impact. Focusing on the processes that were modelled and explaining their functions and strategies for completing them successfully can lead to a stronger selection of arguments and better use of the integrative strategies taught.

In support of this explanation, according to our third hypothesis, students in the group that combined the two approaches described were those who assessed the intervention they had received as the most useful overall. Therefore, it seems that the students in the CPG+EI group were conscious of the type of support the intervention was intended to provide. The student evaluations of each component of the intervention make it possible to better understand this overall result.

The students in the CPG group rated the guide as less valuable than those in the CPG+EI group did. Additionally, they considered collaboration and practice more useful than the guide, while the students in the CPG+EI group rated these three components as equally useful. It is reasonable to think that this group's perception of the guide as more useful was due precisely to the fact that they were required to use it after receiving explicit instruction, which consisted of observing a pair of model

students completing the task with the help of the guide and explanations of the processes they observed. In this context, the guide developed a meaning that allowed it to be used in writing as a mediator that helped regulate the argumentation process. For the CPG group, these processes were neither disentangled nor modelled, and the guide was not as useful. Therefore, for the students in the CPG+EI group it is the combined activity—collaborative practice with the help of the guide—that was considered useful. However, the CPG group perceived the guide as an isolated component because it did not seem to have been truly incorporated into the writing process.

Interestingly, the students in the CPG+EI group rated the guide as more useful than the explanation or the model. One possible explanation, which corroborates our previous statement, is that these two elements do not make sense by themselves but act only as tools to help students understand the use of the guide and put it into practice during the process of writing the successive syntheses.

The usefulness attributed to the collaboration by both groups was similar. The design of the study does not allow a specific analysis of its role. This is one of the study's limitations. In future studies, one should compare the effects of an intervention with a guide and explicit instruction in both individual and collaborative writing scenarios.

Additionally, this study is focused on written products. To better understand the results, it would be useful to analyse the processes used by the students during the intermediate sessions in which students in both groups worked in pairs with the support of the guide.

Similarly, it would be useful to pay greater attention to the instruction task given to the students. As Wiley, Steffens, Britt and Griffin (2014) demonstrated, the task prompt can influence the directions selected by the students. In our study, the prompt was neutral with respect to the goal of synthesis, favouring neither *position-based writing*

nor *contributing-factors writing*. However, in the CPG+EI group, the instructions emphasized avoiding concluding a synthesis of opposing positions merely by choosing one of the positions and refuting all the arguments of the other. In the CPG group, although the questions included in the guide invited students to integrate both positions before refuting one of the two as they developed their conclusions, the questions were insufficient to help the students make progress towards integration. One would have to analyse whether using a prompt that more explicitly stated that integration was a goal could have helped students to achieve that goal.

The brevity of the intervention may also have been a limitation. On the one hand, the fact that the CPG+EI group improved with only two practice sessions illustrates the usefulness of explicit instruction and modelling. However, it would be interesting to verify whether with more practice the less complete support—that is, practice in combination with assistance from the guide—could have a positive effect.

The contributions of our study include its educational implications. The results illustrate the need to use explicit instruction to teach the writing of argumentative syntheses using multiple sources. However, this type of teaching requires a greater commitment on the part of instructors. If the guide helped students learn this type of writing, as long as enough practice time was allotted, more teachers might be interested in teaching these skills.

Similarly, that argumentative writing can be simpler when sources that provide arguments from different positions on a theme are used rather than only one's own knowledge alone must be taken into consideration. It is possible that when one's arguments are based on sources, the arguments for and against the different positions are more visible, which makes it more difficult to eliminate one of them and easier consider both. Therefore, in teaching, it would be worth using multiple sources that reinforce the dialogic nature of argument by making it stand out in the texts themselves.

We should not forget that integrating information from sources that support controversial positions can contribute to developing perspectivism in students (Kuhn, 1999, Kuhn & Weinstock, 2002). Critical thinking requires evaluating different ways of seeing a problem and trying to overcome the tendency to focus on a single position. This type of reasoning constitutes a basic characteristic of scientific knowledge, and thus, developing it is a priority for university education. Therefore, it is important to provide crucial guidance that helps professors teach this type of academic literacy via complex interventions such as those illustrated in this study.

References

Baker, M.J. (1999). Argumentation and constructive interaction. In J.E.B. Andriessen & P. Coirier (Eds), *Foundation of argumentative text processing* (pp. 179-202). Amsterdam: Amsterdam University Press.

Baker, M., Quignard, M., Lund, K., & Séjourné, A. (2003). Computer-supported collaborative learning in the space of debate. In B. Wasson, S. Ludvigsen & U. Hoppe (Eds), *Designing for change in networked learning environments* (pp. 11-20). Dordrecht, The Netherlands: Kluwer Academic.

Bereiter, C., & Scardamalia, M. (2006). Education for the knowledge age: Design-centered models of teaching and instruction. In P.A. Alexander & P.H. Winne (Eds.), *Handbook of educational psychology* (2nd ed., pp. 695-713). Mahwah, NJ: Erlbaum.

Boscolo, P., Arfé, B., & Quarisa, M. (2007). Improving the quality of students´ academic writing: an intervention study. *Studies in Higher Education, 32*(4), 419-438.

Braaksma, M.A.H., Rijlaarsdam, G., Van den Bergh, H., & Van Hout-Wolters, B.H.A.M. (2004). Observational learning and its effects on the orchestration of writing processes. *Cognition and Instruction, 22*(1), 1–36.

Bråten, I., & Strømsø H.I. (2009). Effects of task instruction and personal epistemology on the understanding of multiple texts about climate change. *Discourse Processes, 47*(1), 1-31.

Britt, M.A., & Sommer, J. (2004). Facilitating textual integration with macrostructure focusing tasks. *Reading Psychology, 25*(4), 313-339.

Cerdán, R., & Vidal-Abarca, E. (2008). The effects of tasks on integrating information from multiple documents. *Journal of Educational Psychology, 100*(1), 209-222.

De La Paz, S., & Felton, M.K. (2010). Reading and writing from multiple source documents in history: Effects of strategy instruction with low to average high school writers. *Contemporary Educational Psychology, 35*(3), 174-192.

Ferreti, R.P., & Lewis, W.E. (2013). Best practices in teaching argumentative writing. In S. Graham, C.A., MacArthur & J. Fitzgerald (Eds.), *Best practices in writing instruction* (2nd ed., pp.113-140). New York: The Guilford Press.

Flower, L., Stein, V., Ackerman, J., Kantz, M. J., McCormick, K., & Peck, W.C. (1990). *Reading to write: Exploring a cognitive and social process.* New York/Oxford: Oxford University Press.

García-Mila, M., Gilabert, S., Erduran, S., & Felton, M. (2013). The effect of argumentative task goal on the quality of argumentative discourse. *Science Education, 97*(4), 497-523.

Graham, S., Harris, K.R., & McKeown, D. (2013). The writing of students with learning disabilities, meta-analysis of self-regulated strategy development writing intervention studies, and future directions: Redux. In H.L. Swanson, K.R. Harris,

& S. Graham (Eds.), *Handbook of learning disabilities* (2nd ed., pp. 405-438). New York: Guilford Press.

Graham, S., & Perin, D. (2007). *Writing next: Effective strategies to improve writing of adolescents in middle and high schools.* New York: Carnegie Corporation.

Janssen, J., Erkens, G., Kirschner, P.A., & Kanselaar, G. (2010). Effects of representational guidance during computer-supported collaborative learning. *Instructional Science, 38*(1), 59-88.

Kanselaar, G., Andriessen, J., Erkens, G., Jaspers, J., Prangsma, M., & Veerman, A. (2002). Co-construction of knowledge in computer supported collaborative argumentation (CSCA). In P. Kirschner (Ed.), *Three worlds of CSCL: Can we support CSCL?* (pp. 93-130). Heerlen, The Netherlands: Open Universiteit.

Kuhn, D. (1999). A developmental model of critical thinking. *Educational Researcher, 28*(2), 16-26.

Kuhn, D. (2005). *Education for thinking*. Cambridge, MA: Harvard University Press.

Kuhn, D., & Crowell, A. (2011). Dialogic argumentation as a vehicle for developing young adolescents' thinking. *Psychological Science*, *22*(4), 545–552.

Kuhn, D., & Weinstock, M. (2002). What is epistemological thinking and why does it matter? In B.K. Hofer & P.R. Pintrich (Eds.), *Personal epistemology: The psychology of beliefs about knowledge and knowing* (pp. 121–144). Mahwah, NJ: Laurence Erlbaum Associates.

Nussbaum, E.M. (2008a). Using Argumentation Vee Diagrams (AVDs) for promoting argument–counterargument integration in reflective writing. *Journal of Educational Psychology, 100*(3), 549–565.

Nussbaum, E.M. (2008b). Collaborative discourse, argumentation, and learning: Preface and literature review. *Contemporary Educational Psychology, 33*(3), 345-359.

Nussbaum, E.M., & Edwards, O.V. (2011). Critical questions and argument stratagems: A framework for enhancing and analyzing students' reasoning practices. *Journal of the Learning Sciences, 20*(3), 443-488.

Nussbaum, E.M., & Schraw, G. (2007). Promoting argument–counterargument integration in students' writing. *Journal of Experimental Education, 76*(1), 59–92.

Perfetti, C.A., Rouet, J.F., & Britt, M.A. (1999). Toward a theory of documents representation. In H. Van Oostendorp & S.R. Goldman (Eds.), *The construction on mental representation during reading* (pp. 99-122). Mahwah, NJ: Erlbaum.

Raedts, M., Rijlaarsdam, G., Van Waes, L., & Daems, F. (2007). Observational learning through video-based models: Impact on students' accuracy of self-efficacy beliefs, task knowledge and writing performances. In G. Rijlaarsdam (Series Ed.) & P. Boscolo & S. Hidi (Volume Eds.), *Studies in Writing, vol. 19, Writing and Motivation* (pp. 219-238). Oxford: Elsevier.

Reznitskaya, A., Anderson, C., McNurlen B., Nguyen-Jahiel, K., Archodidou A., & Kim, S. (2001). Influences of oral discussion on written argument. *Discourse Processes, 32*(2-3), 155-175.

Segev-Miller, R. (2004). Writing from sources: The effect of explicit instruction on college students' processes and products. *L1-Educational Studies in Language and Literature, 4*(1), 5-33.

Segev-Miller, R. (2007). Cognitive processes in discourse synthesis: The case of intertextual processing strategies. In G. Rijlaarsdam (Series Ed.), M. Torrance, L. Van Waes & D. Galbraith (Vol. Eds.), *Studies in Writing: Vol.20: Writing and cognition: Research and applications* (pp. 231-250). Amsterdam: Elsevier.

Song, Y., & Ferreti, R.P. (2013). Teaching critical questions about argumentation through the revision process: Effects of strategy instruction on college students'

argumentative essays. *Reading and Writing: An Interdisciplinary Journal, 26*(1), 67-90.

Spivey, N.N. (1997). *Reading, writing and the making of meaning. The constructivist metaphor*. San Diego, CA: Academic Press.

Van Amelsvoort, M., Adriessen, J., & Kanselaar, G. (2007). Representational tools in computer-supported collaborative argumentation-based learning: how dyads work with constructed and inspected argumentative diagrams. *The Journal of the Learning Sciences, 16*(4), 485-52.

Tynjälä, P. (2001). Writing, learning and the development of expertise in Higher Education. In P. Tynjälä, L. Mason & K. Lonka (Eds.), *Writing as a learning tool. Integrating theory and practice* (pp. 37-56). Dordrecht, The Netherlands: Kluwer Academic Press.

Voss, J. F., & Van Dyke, J. A. (2001). Argumentation in psychology: Background comments. *Discourse Processes, 32*(2-3), 89-111.

Walton, D.N. (1989). Dialogue theory for critical thinking. *Argumentation, 3*(2), 169-184.

Walton, D.N. (1996). *Argumentation schemes for persuasive reasoning*. Mahwah, NJ: Lawrence Erlbaum Associates.

Wiley, J., Steffens, B., Britt, M.A., & Griffin, T.D. (2014). Writing to learn from multiple-source inquiry activities in history. In G. Rijlaarsdam (Series Ed.) & P.D. Klein, P. Boscolo, L.C. Kirpatrick & C. Gelati (Vol. Eds.), *Studies in Writing: Vol.28, Writing as a learning activity* (pp. 120-148). Leiden: Brill.

Table 1

Intervention phases

Phase	Collaborative practice and guide (CPG group)	Collaborative practice and guide plus explicit strategy instruction (CPG + EI group)
Phase I: Pre-test synthesis	The students write syntheses individually	
Phase II: Instruction	The researcher presents the guide, which the students read	The students watch a video and the researcher explains the four stages of the writing process, including the role of the guide
Phase III: Practice	In two sessions, the students, working in pairs with the aid of the guide, write two syntheses	
Phase IV: Post-test synthesis	The students write syntheses individually	

Table 2.

Levels of overall integration in the synthesis

Overall argumentative strategy	Type and frequency of specific argumentative strategy	Presence and type of final conclusion
0. Personal opinion not based on source texts	Gives personal opinion on the topic without including arguments from the texts. The argument is based on an argument from the texts but wanders far from them.	
1. Neutral	Does not take a clear position. Describes or lists arguments for both positions (either in a linear way, laying out all arguments for one position and then all the arguments for the other, or by alternating arguments for both positions).	Does not conclude or concludes by asserting that both positions must be taken into account (the pros and cons of both positions) without integrating them in any way (they are neither weighed nor synthesized into a new position).
2. Argues in support	Takes one of the two positions and argues in favour of that position without considering the opposing position. May include some refutation or integration but basically relies on the defended position. Lists arguments for both positions and concludes by taking a stance in support of one of the positions.	Does not conclude or concludes in support of one of the two positions. Concludes by taking a stance in favour of one of the two positions.
3. Integration via refutation	Takes a position in support of one of the two perspectives and argues in its favour while refuting the opposing perspective (approximately 50% of arguments used are rebuttals).	May not have a conclusion. If there is one, it may be in favour of the supported position and/or in opposition to the refuted position.
4. Minimum integration via weighing or synthesising	Takes a position in support of one or both perspectives and argues by weighing or synthesizing arguments from both positions (two integrations) throughout the text. Includes two integrations, one in the body of the text and another in the conclusion. Includes two integrations, both in the conclusion.	Does not contain an explicit conclusion or contains a conclusion that is not integrative (this can be neutral or in support of one of the positions). Contains a partial conclusion. Contains a conclusion with two integrations.
5. Average integration via weighing or synthesising	Takes a position in support of one or both perspectives and argues by weighing or synthesizing arguments from both positions (integrating at least two) throughout the text. Weighs or synthesizes arguments from both positions throughout the text (integrating three or more).	Contains a conclusion that is partially integrated, which may have been used earlier in the text or be new. Does not contain an explicit conclusion, or the conclusion is neutral.
6. Maximum integration via weighing or synthesising	Integrates throughout the text (at least twice). Presents both positions.	Contains a conclusion that is an overall integration. Contains a conclusion that weighs or synthesizes various arguments (more than two on each side).

Table 3.

Descriptive statistics for each of the intervention groups in the pre- and post-tests of the variables.

	Intervention group														
	Collaborative practice and guide (CPG group)					Collaborative practice and guide plus explicit strategy instruction (CPG + EI group)					Total				
		PRE		POST			PRE		POST			PRE		POST	
Variable	*N*	*M*	*SD*	*M*	*SD*	*N*	*M*	*SD*	*M*	*SD*	*N*	*M*	*SD*	*M*	*SD*
Degree of syntheses' integration	56	2.73	1.68	3.05	1.67	58	2.57	1.31	3.83	1.81	114	2.65	1.5	3.45	1.77
Number of arguments selected	56	5.82	3.12	6.62	2.59	58	5.72	2.69	8.21	2.96	114	5.77	2.90	7.43	2.89

Table 4.

Means scores of each group's perception of utility of the intervention programme with standard deviations

	Intervention group						
	Collaborative practice and guide (CPG group)			Collaborative practice and guide plus explicit strategy instruction (CPG+EI group)			Tota
Variable	*N*	*M*	*SD*	*N*	*M*	*SD*	*M*
Perceived usefulness of the explanation	---	---	---	56	3.87	1.28	3.87
Perceived usefulness of the model	----	---	---	56	3.09	1.59	3.09
Perceived usefulness of the guide	52	4.00	1.15	56	4.72	.99	4.37
Perceived usefulness of collaboration	52	4.58	1.16	56	4.70	1.12	4.64
Perceived usefulness of practice	52	4.42	1.14	56	4.79	.79	4.61
Overall perception of the usefulness of the programme	52	4.00	.95	56	4.45	.82	4.24

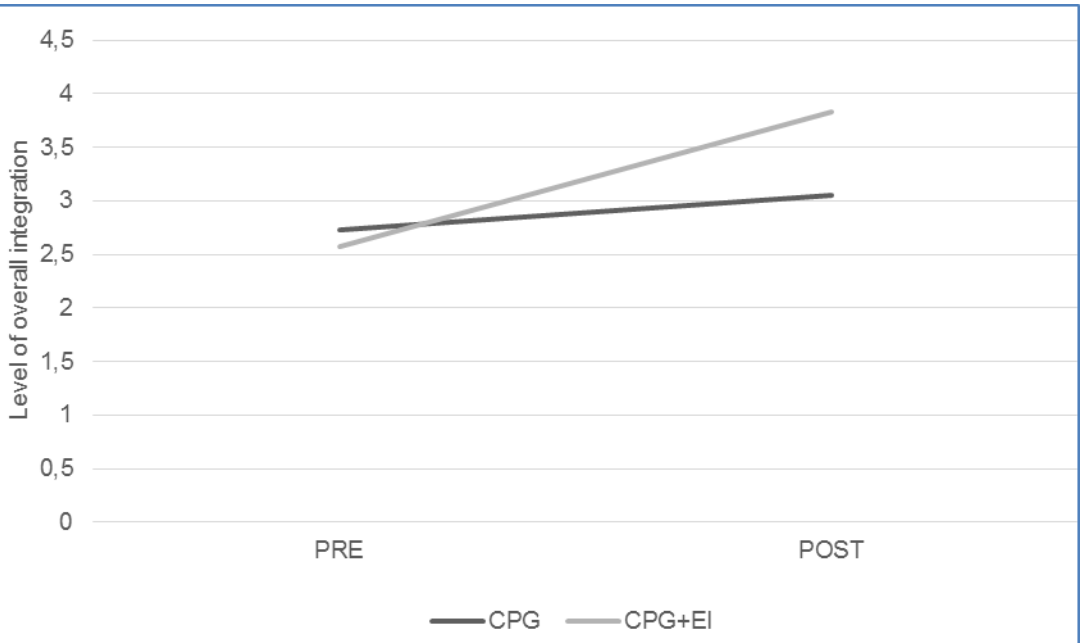

Figure 1. Degree of syntheses integration over time for each group: Modulated effect of the intervention program

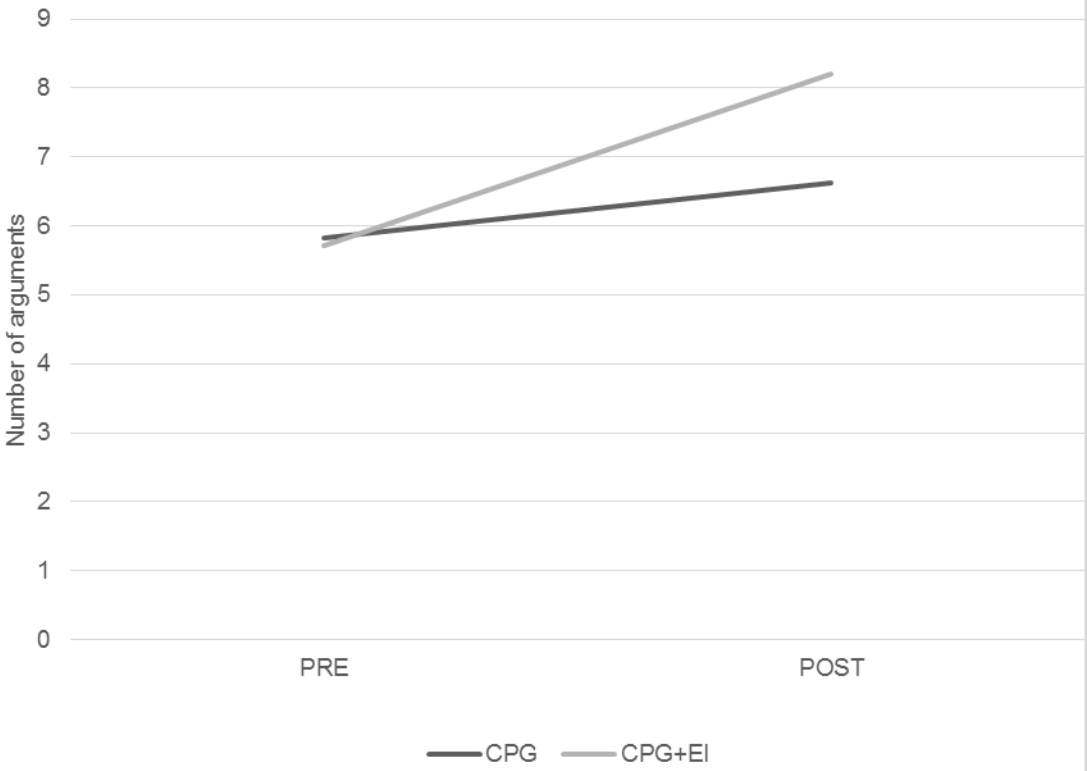

Figure 2. Number of selected arguments over time for each group: Modulated effect of the intervention program

Appendix A.

Guide for writing argumentative texts from multiple sources

POSITIONS REGARDING THE ISSUE UNDER DEBATE

Below you will find a table containing some questions that will help you to identify and organize the different debating positions and the arguments you can use in each position.

What is the issue being debated?

What are the different points of view on this issue?

Position in favour			**Position against**		
Arguments What are the reasons that support this position?	**Points of support** How can you justify these reasons? On what evidence are they justified?	**Relevance** What is the value of this argument? How relevant is the evidence it is based on?	**Arguments** What are the reasons that support this position?	**Points of support** How can you justify these reasons? On what evidence are they justified?	**Relevance** What is the value of this argument? How relevant is the evidence it is based on?

CONTRASTING POSITIONS

Below you will find some guidance and questions designed to help you establish a contrast between the different positions:

- Do the arguments for one position counter-argue those held by another position? How can those defending position 1 refute those defending position 2? How can those defending position 2 refute those defending position 1?
- Please use arrows to indicate on the table above the relationships between the arguments and counter-arguments.
- Can you think of any further arguments in favor or against any of the positions held?
- Which arguments carry the greatest importance?
- Please arrange the arguments in function of their importance.

CONCLUSION

Below you will find some questions that may help you in drawing your conclusions.

- Does any single position carry greater weight? Why?
- Is there any means of reconciling two positions? Is there any new alternative position that will integrate the different positions?
- Is there a position which only holds if a certain conditions occur?

THE TEXT WRITING PROCESS

Organization of ideas:

- In what order will you set out your argumentation? In the previous order, first the arguments and then the counter-arguments, jumping from one to the other, or inserting them alternately?
- Is it better to begin with the strongest argument or to leave it to the end?
- Is it necessary to repeat your point of view at the end?

Review / Self-evaluation:

- Is your position clearly stated?
- Have you included all the arguments you have thought of to justify your conclusion?
- Are they convincing, and justified with solid reasons?
- Are your ideas well linked? Is it clear how all the sentences in your text are related? Is there anything that may lead to ambiguity?
- Does your text contain any errors of orthography, syntax, etc.?

Appendix B.

Instructions given in the CPG+EI condition

¨*In the first phase,* as you can see in the guide, once you have identified the topic of the debate and the different positions concerning it, you need to find what arguments or reasons are put forth by the author regarding the different positions, how they support or justify these arguments (using data, facts, experiments, quotes, personal experience, etc.) and how much weight they carry. The criteria used to determine how much weight an argument carries is determined, in part, by the evidence that supports it, not only the type of evidence (for example, it is not the same to support an argument with personal experience than with a research study) but also the quantity of evidence. It is also important to consider the value of an argument, in other words, the significance of its consequences, the probability that it can occur, etc. The arguments, evidence and weight can be laid out in the respective columns in the provided square (Using PowerPoint, they show an example of how to fill in what they have explained).

(Show the fragment of the video including an example of how to explore the different positions in pairs and discuss it).

In the second phase, the goal is to compare and contrast the different positions by analyzing how, while defending a position, the author tries to refute the arguments made by another author that defends the other side of the position, or in other words, to what extent the arguments used by one side are also counterarguments of the other side. In this phase it can be helpful to mark these contrasting relationships between each side´s arguments with arrows in the previous square. In addition to exploring how each side refutes the arguments of the other, it is important to try and find new arguments in favour of both positions that are not found in the text, and finish selecting the arguments that you have considered carry more weight, in terms of their importance.

(Show the fragment of the video including an example of comparing and contrasting and discuss it. Emphasize that they do not necessarily need to respond in order to the questions in the guide, that they are questions to orient them with the type of decisions they should be making).

The third phase deals with arriving at a conclusion that integrates the two positions. This integration can be done in two ways. The first one consists in considering the value or weight of the advantages and disadvantages of the different positions and arriving at the conclusion that one of the positions carries more weight than the other, or because a certain advantage carries more weight than a certain disadvantage, or because a certain advantage or disadvantage is of little importance. The second strategy to integrate the different positions consists in looking for a way to reconcile the different stances, proposing a new alternative position that maintains the benefits of one position and reduces the negative aspects or disadvantages of the other or recognizes that the strength of one position depends on if certain conditions, set forth by the other side, are met.

As we have been pointing out, the goal of this process is to integrate it in the conclusion. It does not aim to highlight the advantages and pick apart the arguments of the other side. This would be a persuasive strategy that, as we have previously mentioned, is less complex, less demanding and therefore leads to a less powerful argument. Nor does it aim to merely juxtapose

the positive key elements of each position. Integration requires the processes that I just explained, in other words, fully assessing the arguments of both sides, clearly discriminating their importance and concluding what this analysis stems from. Or you can think of possible alternatives that may transcend the positions, taking into account whether or not they would require changes in the current situation in order to make it a viable alternative. (Show the fragment of the video including an example of how to develop conclusions and discuss it).

Once you have arrived at a conclusion you will have to elaborate a text in which you argue this conclusion. In the guide you will find some questions that can orient you regarding the decisions that you must make when you elaborate the text (how to explain the topic so that it seems interesting), how to organize the text (begin or end with the conclusion, begin with the strongest argument or not, intermix arguments and counterarguments, etc.) and how to revise it. (Illustrate with some questions, show the fragment of the video including an example of the writing and revision process and discuss it).

[i] After the intervention and after completion of the post-test synthesis and the inventory of students' perceptions of the usefulness of the intervention, students in the CPG group received the same instruction as the CPG+EI group, for ethical reasons.