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**DOI**

[10.17239/jowr-2018.10.02.05](https://doi.org/10.17239/jowr-2018.10.02.05)

**Publication date**

2018

**Document Version**

Final published version

**Published in**

Journal of Writing Research

**License**

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[Link to publication](#)

**Citation for published version (APA):**

López, P., Rijlaarsdam, G., Torrance, M., & Fidalgo, R. (2018). How to report writing interventions? A case study on the analytic description of two effective revision interventions. *Journal of Writing Research*, 10(2), 279-329. <https://doi.org/10.17239/jowr-2018.10.02.05>

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# How to report writing interventions? A case study on the analytic description of two effective revision interventions

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**Abstract:** In this study we present a comparative report of two effective instructional programs focused on the improvement of upper-primary students' writing competence through the promotion of revision skills. Both programs shared the main aim but had two different approaches. We contrasted writer-focused instruction with reader-focused instruction. To provide a valid report on the similarities and differences of the two programs, we applied two complementary dimensions. The first dimension, what the researcher intends students to achieve, provides insight into the types of students' intermediate learning objectives and how they are sequenced. The second dimension, how to teach, includes the instructional design principles which relate the intermediate learning objectives to the specific learning and instructional activities in certain conditions. We analyse similarities and differences between the instructional programs and discuss the implications of using this kind of reporting system as a useful tool for reporting – and designing – writing interventions.

**Keywords:** learning activities; design principles; revision instruction; strategy-focused instruction; reader-focused instruction



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In recent decades, writing research with proficient and novice writers has produced valuable insights into the processes and variables involved in skilful composition (Flower, 1979; Flower & Hayes, 1981; Graham, 2006a). While our understanding of how writing develops is certainly not complete, there is general agreement that the long road from novice to competent writer is strongly influenced by changes in students' self-regulatory or strategic behaviours, writing knowledge, writing skills, and motivation (Alexander, Graham, & Harris, 1998; Graham, 2006a). Since children do not acquire these complex writing skills or knowledge incidentally (Flower & Hayes, 1981), they need high-quality writing instruction (Graham, McKeown, Kihara, & Harris, 2012).

Many intervention studies looking at improving these critical areas have confirmed the effectiveness of different kinds of instruction at different ages and in various student populations. This is reflected in meta-analyses that shed light on the comparative effects of different instructional approaches on writing (Graham, 2006b; Graham et al., 2012; Graham & Sandmel, 2011; Koster, Tribushinina, De Jong, & Van den Bergh, 2015). Despite meta-analyses being critical to identifying the most effective instructional practices for improving students' writing competence, they do not provide comprehensive information about the instructional approaches tested. Moreover, the treatments analysed include various instructional components and content aimed at promoting the acquisition of different skills, knowledge, and increasing students' motivation. Therefore, it is difficult to determine what the critical variables are that contribute to students' growth as writers, and how these variables were operationalised in the studies. From just a clear description and operationalisation of skills or knowledge taught during interventions it would be possible to design comparative studies to test the effect of specific variables or to analyse possible differential effects of different learning sequences in a single instructional program. Those comparative studies would provide insights about whether a specific differential target skill or knowledge taught is critical for improving students' writing competence or whether there is an optimal sequence of learning activities. This would undoubtedly contribute to further development of writing theories. Therefore, we propose that an intervention report be built upon two dimensions:

1. The content dimension in terms of the sequence of intermediate learning objectives: this is the design of the learning path; the design of what should be achieved and in what order.
2. The instructional dimension in terms of learning activities that contribute to each of these intermediate learning objectives, and the instructional conditions to evoke, stimulate and guide these learning activities.

We will outline and apply a reporting system that includes four elements: one to report the content dimension as the intended intermediate learning objectives, and three to report the instructional dimension as design principles, learning and instructional activities. We adopted these elements from the system proposed by Rijlaarsdam and

colleagues (Rijlaarsdam, Janssen, Rietdijk, & van Weijen, 2018, page 307-309), although the focus in that system was the design and definition of learning activities, and the intermediate learning objectives were hidden behind these learning activities. We will bring these outcomes to the foreground in the design and report process since it is the first choice to be made when designing an intervention.

The first report element, describes the intended specific Intermediate Learning Objectives (ILO). These should be formulated from a student's perspective and may be specific knowledge (e.g., students have access to metacognitive knowledge about a certain writing process), attitudes/motivations (e.g., students are willing to invest time and effort in revising texts) or skills (e.g., students can apply/have acquired a self-regulation procedure to guide and monitor the revision process) in the intervention. These are intermediate objectives (e.g., students should acquire procedural knowledge about the revision process) as they support the achievement of the final learning outcome (e.g., improving the quality of students' texts). These intermediate learning objectives must be described in operational terms such that they can be observed or measured, directly or indirectly. For example, if the intended intermediate learning objective is the acquisition of procedural knowledge about the revision process, it will be necessary to describe how the revision has been operationalised, based on a particular theoretical framework (e.g., Bereiter & Scardamalia's CDO – Compare-Diagnose-Operate – model, 1987). We must also describe how we can observe in the learning materials that students were indeed acquiring this knowledge, for instance from recordings of students thinking aloud during revision practice, or from work book analysis. Reporting the intended sequences of intermediate learning objectives is crucial, because it sheds light on the concept of the target writing skill from an acquisition perspective.

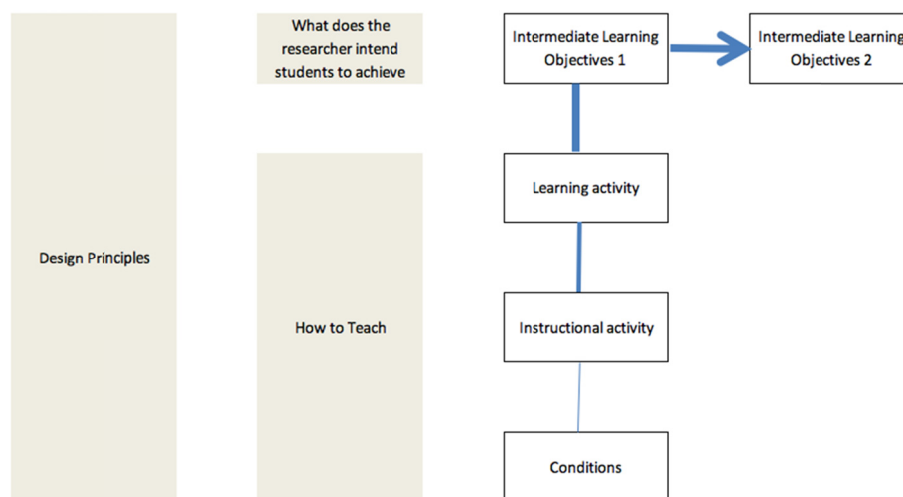
The other three report elements constitute the how-to-teach dimension. They provide insight into the instructional design for achieving each of these intermediate learning objectives.

The second report element refers to the intervention Design Principles (DP). These principles define the intervention in that they establish the parameters required to achieve the set of specific intermediate learning objectives. These principles should be based on theoretical insights or empirical findings and they should be defined as means-end-relationships (e. g. If you –instructional designer or researcher – want to achieve outcome Y you should probably create X). According to Reigeluth (1999), design principles are probabilistic, which means that when they are appropriately applied, the proposed goal is more likely to be achieved. Design principles create the space for instructional designers to plan learning and instructional activities that are in line with those principles.

The third report element includes the specific Learning Activities (LA) that represent the operationalisation of the previously established design principles. According to Rijlaarsdam et al., (2018), learning activities are defined as any activities a researcher/instructional designer sets for an individual that contribute to the acquisition

of knowledge, skills and competencies. They must be intentional, and have a predetermined purpose. In an intervention learning activities are mediating variables between the instructional act and the intermediate learning objectives. Therefore, in instructional design it is critical to select the most suitable learning activities for the intermediate learning objectives.

The fourth report element describes specific Instructional Activities (IA) or tasks to engage learners in the proposed learning activities. The designer selects or creates the most suitable instructional activities and specific conditions that will stimulate the intended learning activities. This choice is particularly important when adapting or contextualising instructional practice to students' needs and educational contexts. See Figure 1 for a graphical representation of the proposed reporting system.



**Figure 1:** The intervention construct: two dimensions, four elements, and probabilistic relations (the relative width of a line represents the relative weight of the probabilities).

The resulting intervention report would therefore start with the definition of the series of specific *Intermediate Learning Objectives* expected as a means to achieving the final intervention learning outcome. This part is related to the *what the researcher intends students to achieve* dimension. Then we move on to define the intervention *Design Principles*. A design principle relates the intermediate learning objective to the best choice of *Learning activities* and *Instructional activities* given the circumstances (learners' prior competences, instructional and situational constraints), to ensure the achievement of the proposed intermediate learning objectives. The connection between learning activities and intermediate learning objectives is probably stronger (a key choice), than the relationship between learning and instructional activities (i.e. several instructional activities may lead to the same learning activity) or contextual factors (i.e.

conditions are highly dependent on the context). This is illustrated in Figure 1 by the relative thickness of the connecting lines.

## **1. The present study**

The main goal of the present study is to provide a comparative report of two intervention programs we tested which concentrated on the improvement of upper-primary students' writing competence through the promotion of revision skills. We apply the proposed reporting system, using the two dimensions, and addressing the four elements.

First, we provide context for the interventions with a short overview of the study which shows that both instructional programs were effective in improving the quality of 6th graders' texts and revision skills. The study is currently in the process of publication (López, Torrance, Rijaarsdam, & Fidalgo, 2018). We then present the comparative report of the two instructional programs as a demonstration of our proposed approach for reporting comparative or concurrent interventions in writing studies.

### **1.1 Overview of the empirical study**

We analysed the effects of two interventions to improve upper-primary students' written competence in their first language (Spanish) by promoting revision skills. There were two different instructional approaches: writer-focused instruction and reader-focused instruction. The sample was made up of six mixed ability classes from two schools with similar academic and socio-economic characteristics, and comprised 107 sixth-grade Spanish students. Classes were randomly allocated within each school to one of the three conditions. All three conditions started with learning to set communicative goals at the starting point of writing. The control condition did not receive any kind of instruction in revision.

The writer-focused instruction aimed to teach students explicit strategies for regulating their own revision behaviour, introducing between-draft revision procedures. The instruction in this condition was based on the assumption that revision is a complex process that requires substantial metacognition and self-regulation (Bereiter & Scardamalia, 1987; Hayes & Flower, 1980; Zimmerman & Risemberg, 1997).

The reader-focused instruction centred on providing students with the opportunity to observe and learn how readers respond to imperfect texts, making them aware of their audience and learning what the reading process entails as the driving force for revising their own texts. This condition was based on the assumption that developing writers have difficulty in taking the perspective of their readers, something which is critical for effective revision (Bereiter & Scardamalia, 1987; Hayes, Flower, Schriver, Stratman, & Carey, 1987; Sommers, 1980). All programs involved four sessions over four consecutive weeks, each lasting about 50 to 55 minutes.

The dependent variables were composition quality and revision skill. As measurements, we assessed composition and revision competence immediately before

and immediately after the intervention, and two months later. The tasks dealt with argumentative texts, the topics of which were familiar to students, so they did not need additional information to complete the tasks (The captivity of wild animals in the zoo: For or against?; New technologies: For or against?; Reading books: For or against?). The topics were evenly distributed between test and control conditions and the different assessment points. Written composition performance was assessed at each evaluation and the transfer task through overall ratings of quality measures such as goal orientation, audience focus, structure, and language use (Van den Bergh & Rijlaarsdam, 1986). Revision performance was assessed in terms of students' ability to detect and remedy various surface and substantive problems in a researcher-designed text. Using a researcher-designed text minimised differences in this variable due to variation in the quality of the students' own texts. Participants also completed a post-intervention composition task assessing the transfer effect in which students wrote an instructive text, a text type that had not been taught during the intervention.

We found evidence of immediate and sustained benefits for all composition quality measures and revision skills, as well as a transfer effect to another text type for both experimental conditions. We found no significant differences between the two experimental conditions.

At this point, what matters to us is whether the proposed system of intervention analysis helps us, in retrospect, to understand the success of the two different interventions.

There are two basic questions when analysing the instructional programs: (1) the analysis of the contrasts between the two experimental conditions must show that the conditions are indeed representing two different constructs, and (2) the analyses must show that interventions only differ in the intended contrast variable, with the other elements being similar. In the case of two concurrent experimental interventions, the designer must balance the similarities and differences: varying one element in two interventions must still be in balance with the intervention as a whole. The embedding of the key difference must be optimal in both conditions.

We expect that an in-depth analysis would allow a critical analysis and comparison between the interventions according to *what the researcher intended students to achieve and how it was taught*. From this analysis, the validity of the interventions can be examined, as well as the instructional sequence followed in each condition. This will also allow us to clearly establish to what extent the interventions differed. Additionally, the analysis will suggest future studies in which different contrasts between interventions or the reconsideration of some elements may be considered.

## **1.2 Comparative analysis of the “Reader-focused instruction” and “Writer-focused instruction” programs**

In this section we present a comparison between the interventions in the experimental conditions, using the proposed reporting system. We will not include the control

condition intervention in this comparison because we want to focus on the comparative analysis of two similar interventions.

### **Dimension 1: What does the researcher intend students to achieve**

Both instruction programs share intermediate learning objectives, considered critical aspects of effective revision, while other objectives are condition-specific, representing the theoretical assumptions of the two versions of the revision learning conditions (see Table 1).

**Table 1.** Overlapping and condition-specific intermediate learning objectives of both interventions in sequence (Students should...)

Writer-focused instruction	Both	Reader-focused instruction
	1. have acquired metacognitive knowledge about what revision processes are, and about when and how to revise  2. be able to formulate specific product goals linked to high quality-texts and specific audience responses	
3A. have access to procedural knowledge about how to revise their texts through the use of evaluative criteria to detect problems and correct them based on different textual aspects  3B. be able to achieve self-regulated control in the use of the revision strategy taught		3. have access to knowledge of how readers respond to imperfect texts, through consideration of the evaluative criteria previously taught and reader feedback about possible actions to improve texts
	4. have internalised/proceduralised the knowledge acquired during the intervention	

Metacognitive knowledge about the revision processes is critical for revision (MacArthur, 2012; 2016), as is setting goals (Hayes & Flower, 1980) in which evaluation criteria are considered (Fitzgerald, 1987). Therefore, both instructional programs started with the same two intermediate learning objectives, the students' acquisition of this metacognitive knowledge and the skill to set communicative goals linked to evaluation criteria (Table 1, Intermediate learning objectives 1 and 2).

First, students should have acquired metacognitive knowledge about what revision processes are, and about when and how to revise. Such knowledge plays a critical role in the revision process (MacArthur, 2012; 2016). One of the most important factors influencing revision is that students do not understand that revision entails more than just correcting surface errors in the text (Hayes, Flower, Schriver, Stratman, & Carey, 1987). The metacognitive knowledge taught in both programs was based on the view of revision as an evaluative, problem solving process in which the writer should detect, diagnose and correct the dissonances between the intended and the actual text (Bereiter & Scardamalia, 1987; Hayes et al., 1987).

The second intermediate learning objective was about goal setting: students should be able to formulate specific communicative goals. Communicative goals are understood as goals that the writer establishes both in terms of the text produced and considering the audience (cf., Midgette, Haria, & MacArthur, 2008). These communicative goals were the starting point of the revision process and included evaluative criteria linked to high-quality texts. Several studies have shown that even brief interventions instructing students in the use of revision goals linked to evaluative criteria have positive benefits in their understanding of the purpose of revision (De la Paz, Swanson, & Graham, 1998; Graham, MacArthur, & Schwartz, 1995; Wallace & Hayes 1991), as well as their consideration of their audience (Midgette, et al., 2008). The third intermediate learning objective was different in the two instructional programs.

The writer-focused instruction program had two specific intermediate learning objectives (Table 1, Intermediate learning objectives 3A and 3B). Students should acquire procedural knowledge about how to revise their texts through the consideration of evaluative criteria to detect problems and correct them in their texts to improve text quality. The students' ability to revise, and particularly to implement higher-level revisions of meaning and text structure, is affected by their knowledge of the processes involved in revision and evaluation criteria (Englert, Raphael, Anderson, Gregg, & Anthony, 1989; Hayes, 1996). Additionally, students should achieve self-regulated control when using the knowledge previously taught through the use of a revision strategy. The complexity and cognitive demands of the process of composition explains why skilled writing requires high levels of self-regulation (Graham & Harris, 2000).

The reader-focused instruction had a different intermediate learning objective (Table 1, Intermediate learning Objective 3): students' knowledge of how readers respond to imperfect texts, through the consideration of evaluative criteria linked to

goal setting, and reader feedback about different actions to improve texts aimed at encouraging student's revision. One possible reason why children rarely revise their texts is because developing writers are often unaware of the communicative deficiencies of those texts (Hayes & Flower, 1980; Beal, 1990; Sommers, 1980). The ability to take the perspective of the reader seems to be critical for effective evaluation and revision (Nystrand, 1986).

Finally, both learning conditions aimed for students to internalise/proceduralise the use of the knowledge acquired during the intervention (Table 1, Intermediate learning objective 4). Students had to apply and integrate the new knowledge in real, meaningful tasks to ensure significant learning (Ausubel, 1968).

### **Dimension 2: How to teach**

We present detailed information in summary tables showing commonalities (Table 2) and differences between the two intervention programs (Table 3 for the writer-focused program, and Table 4 for the reader-focused program). Additionally, we explain the instructional sequence followed according to the proposed reporting system and highlight those aspects relevant to the interventions and the rationale for the system.

The instructional design used for the first two intermediate learning objectives was the same in both conditions (see Table 2). The first intermediate learning objective, – the acquisition of metacognitive knowledge about the revision process – was sought through a design principle focused on providing students with the opportunity to activate their prior knowledge about the revision process, providing them with new information about what revision processes entail and when and how to revise. It also provided them with the opportunity to integrate that into their existing knowledge. This design principle was based on Ausubel's theory (1968), which claims that significant learning can only occur when learners examine their prior knowledge before learning something new and connect the new information to their existing knowledge. This design principle was operationalised through a set of learning and instructional activities centred on the activation of prior knowledge about the revision process through asking questions and whole-class discussion, and actively processing and memorising the new information about the revision process through explicit instruction performed under specific conditions to stimulate a positive outcome (see Table 2, ILO 1, DP 1, LA 1.1 and 1.2; IA 1.1 and 1.2).

**Table 2.** Commonalities of the two instructional programs according to the four levels of the proposed reporting system

Intermediate learning objectives (ILO)	Design principles (DP)	Learning activities (LA)	Instructional activities (IA) and implementation conditions
1. Acquire metacognitive knowledge about what revision processes are, and about when and how to revise.	1. Give students the opportunity to activate their prior knowledge about the revision process, provide them with new knowledge about what the revision processes are, when and how to revise, and give them the opportunity to integrate that into their existing knowledge.	1.1 Students activated their previous knowledge about the revision process, remembered and reflected on their own knowledge, limits and gaps about what the revision process is, and how to do it, the importance of doing it, if they do it, what kind of aspects they usually revise and so on through individual brainstorming and sharing these ideas in a whole-class discussion.	<p>1.1 The instructor asked questions and promoted a whole-class discussion based on students' responses about what the revision process is, how to do it, the importance of doing it, if they do it, what kind of aspects they usually revise and so on (e.g., what do you think the revision process is? How do you revise your texts? Do you all revise your texts in the same way?).</p> <p><i>Implementation conditions:</i></p> <ul style="list-style-type: none"> <li>- The sessions were implemented in the classroom to ensure that students felt safe.</li> <li>- The instructor introduced the instructional program explaining the importance and necessity of writing well, referring to aspects close to the student (e.g., making them aware that the way in which they express themselves in writing in an exam, for example, influences the marks they get in some subjects).</li> <li>-The instructor promoted the activation of prior knowledge through questions (e.g., What is the revision process?; What aspects do we have to take into account when revising a text?). At this point the instructor encouraged students to answer, emphasising that there were no wrong answers.</li> <li>- The instructor tried to involve all the students, making them actively</li> </ul>

			participate in the whole-class discussion. If any of the students did not participate, the instructor asked them directly (e.g., “Jorge, do you also check just the spelling when revising as Sara just told us?”).
		1.2 Students <i>read</i> a summarising table, <i>answered</i> questions, <i>listened</i> and <i>memorised</i> the new information about what the revision process is, how, when, and why to do it and <i>integrated</i> that into their previous knowledge through the comparison between their own knowledge and the new information: differences, similarities, previous misunderstandings and so on.	<p>1.2 The instructor provided students with a summary table and asked some students to read the information aloud for the whole class.</p> <p>The instructor noted the important aspects about (a) what is revision (key process to write good quality texts), (b) how to revise (detection and correction processes mainly focus on structure, organisation and meaning errors) and (c) when and why to revise (always after the first draft with the aim of improving the quality of the text), relating that to the students' previous responses.</p> <p><i>Implementation conditions:</i></p> <ul style="list-style-type: none"> <li>-The instructor supported the revision explanation with a summary table about the revision process (what it is, how to do it and when and why do it).</li> <li>-The instructor explicitly referred to students' previous ideas and examples emphasising the differences between their previous knowledge and the new information, discussing misunderstandings, and so on (e.g., Remember that you said that you only checked spelling issues in your texts, according to what we have just read we have to take into account many more things like structure, organisation... etc.).</li> </ul>
2. Formulate	2. Provide students	2.1 Students <i>read</i> a	2.1 The instructor instructed students explicitly in the INCA strategy to

<p>specific communicative product goals linked to evaluative criteria related to good quality texts in order to produce specific audience responses.</p>	<p>with a specific strategy that helps them to formulate communicative product goals linked to evaluative criteria intended to produce specific audience responses as a first step in their writing process.</p>	<p>worksheet with information about the INCA strategy and setting communicative product goals, <i>participated</i> actively in a classroom discussion in which students shared ideas about what goals could be set at each step of the strategy, <i>memorised</i> the INCA strategy and <i>reflected</i> on evaluative criteria related to good quality texts and audience responses.</p>	<p>set communicative product goals during planning linked to evaluative criteria and reader responses. The INCA strategy showed the steps that students should consider in order to set communicative goals (Introduction-Nudo [development]-Conclusion-Aspecto [Form]). Each step was explained according to the kind of goals that students should set in the form “I should do X with the aim to produce Y in the reader (e.g., for a communicative goal for introduction “I should present the topic in an attractive way to keep my teacher’s attention”).</p> <p><i>Implementation conditions:</i></p> <ul style="list-style-type: none"> <li>- The instructor used a specific mnemonic (INCA) to support students’ memorisation and retrieval of the strategy for setting communicative goals.</li> <li>- The instructor provided students a worksheet in which students could see the strategy and examples of different communicative goals for each of the steps of the strategy.</li> <li>- The instructor promoted the memorisation of the strategy through playful activities (e.g., the instructor wrote the letters of the strategy on the blackboard and the students had to say what it meant. The instructor wrote the letters out of sequence or skipped steps and the students quickly corrected the errors).</li> </ul>
		<p>2.2 Students <i>analysed</i> and <i>reflected</i> on different communicative goals linked to specific audiences and</p>	<p>2.2 The instructor provided examples of specific communicative goals aimed at specific audiences, linked to real writing texts (texts that included typical sixth graders errors).</p>

		evaluated to what extent the goals were suitable for the audience considered	<p><i>Implementation conditions:</i></p> <ul style="list-style-type: none"> <li>- The instructor provided students with different worksheets in which different familiar audiences (teachers-children-parents...) were considered to encourage students to empathise with different audience needs and responses and check to what extent the goals met the needs of the audience.</li> </ul>
		2.3 Students applied the steps of the strategy to set goals, internalised the use of the strategy and evaluated possible misunderstandings about the use of the strategy, the meaning of a step, how to set the goals and so on.	<p>2.3 The instructor provided pre-planning activities to set communicative goals for specific audiences.</p> <p><i>Implementation conditions:</i></p> <ul style="list-style-type: none"> <li>- The instructor provided students a writing assignment in which they had to set communicative goals following the INCA strategy as a homework task. Familiar topics were considered which were motivating for the students (e.g., write a text to convince your parents to have a pet at home).</li> </ul>
4. Students should internalise/ proceduralise the knowledge acquired during the intervention.	4. Provide students with opportunities to apply the knowledge acquired in meaningful tasks with real communicative goals and audiences and compare that with model texts.	4.1 Students <i>revised</i> a previously written text, based on the establishment of communicative goals, through the application of the knowledge acquired during the intervention and <i>wrote</i> a final version of the text.	<p>4.1 The instructor gave students the opportunity to practice through tasks where students revised their own writing products collaboratively.</p> <p><i>Implementation conditions:</i></p> <ul style="list-style-type: none"> <li>- The instructor activated and reminded students of their knowledge acquired in previous sessions and prompted its application to the tasks.</li> <li>- Each student within a pair received the role of writer or helper. The</li> </ul>

	<p>writer was in charge of carrying out the task by verbalising all his actions (as similar as possible to the model). The helper monitored the writer's actions. Roles were swapped between sessions 2 and 3.</p> <ul style="list-style-type: none"> <li>- The instructor provided help when needed and gradually faded scaffolding and feedback in order to promote interiorisation and independent use of the knowledge acquired.</li> </ul>
<p>4.2 Students <i>revised</i> a researcher-created text, based on the establishment of communicative goals, through the application of the knowledge acquired during the intervention and <i>wrote</i> a final version of the text.</p>	<p>4.2 The instructor gave students the opportunity to practice through tasks where students individually revised a researcher-created text.</p> <p><i>Implementation conditions:</i></p> <ul style="list-style-type: none"> <li>- The instructor activated and reminded students of their knowledge acquired in previous sessions and prompted its independent application to the task.</li> <li>- The instructor provided help when needed and gradually faded scaffolding and feedback in order to promote interiorisation and independent use of the knowledge acquired.</li> </ul>
<p>4.3 Students <i>analysed</i> high-quality texts and <i>compared</i> them with their own texts, integrated the information and <i>reflected</i> on differences between texts.</p>	<p>4.3 The instructor gave students opportunities to compare the outcome of their revision process implemented according to knowledge they acquired with the outcome of an expert's revision of the same text.</p> <p><i>Implementation conditions:</i></p> <ul style="list-style-type: none"> <li>- The instructor promoted students' analysis of the expert and their own texts through questions (e.g., Do you think there is any difference between your text and the one you just read? Which text is easier to</li> </ul>

read and why?).

- The instructor promoted students' reflection about the importance of applying their acquired knowledge, its positive effects, and encouraged them to use the knowledge acquired (e.g., If you use the knowledge you acquired during the instruction program to revise your own text, you will get great results as you can see in the model text) as well as promoting generalisation (e.g., Do you think that what you have learned can only be applied to writing argumentative texts? Would it also be useful for other types of writing?).

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The second intermediate learning objective concentrated on the formulation of specific communicative goals linked to evaluative criteria. This objective was sought through a design principle focused on providing students with a specific strategy to help them formulate communicative goals as the first step of writing, including evaluative criteria. These communicative goals were also linked to the revision process. Setting communicative goals and relating them to the revision process allows students to revise their work, comparing what they wrote with what they wanted to say to the reader (Bereiter & Scardamalia, 1987). Those goals were set according to specific evaluation criteria. Evaluation criteria are a critical aspect of goal setting for revision (De la Paz et al., 1998). This design principle was operationalised through a set of learning activities and instructional activities focused on memorisation of the INCA strategy to set communicative goals linked to evaluative criteria. This was taught through explicit instruction, reflection and analysis of different communicative goals linked to specific audiences from different examples and applying the strategy to set goals in pre-planning activities (See Table 2, ILO 2, DP 2, LA 2.1, 2.2 and 2.3 and IA 2.1, 2.2 and 2.3). Each letter of the INCA strategy (in Spanish) represents one of the four steps that students need to consider to set their goals according to the evaluative criteria linked to each step. “I” means introduction (e. g., goals “I need to introduce the topic “have pets at home” in an attractive way to get my parents’ attention”), “N” (nudo, which means “knot” in Spanish) means development (e. g., goals “I am going to write every reason with a clear example to convince my parents about having pets at home”), “C” means conclusion (e. g., goals “I am going to remind my parents that I completely agree with having pets at home to show them that it is beneficial for me”) and “A” (aspecto: aspect in Spanish) means form (e. g., goals “I need to use paragraphs to make it easy for my parents to read”).

The third intermediate learning objectives were different in the two intervention programs. The predominant mode of instruction in both programs was observational learning complemented by explicit instruction (see Table 3 and 4).

In the writer-focused program (Table 3) the specific third intermediate learning objective was for students to acquire procedural knowledge about how to revise their texts through the use of the evaluative criteria provided in the previous stage, to detect problems and correct them, linked to different aspects of the text. The design principle was to provide students with a specific revision strategy that would guide them in the revision process, in which they detect problems through the evaluation criteria provided and correct those problems through different actions (e.g., add, delete, reorganise, change) following the steps of the strategy. Instruction was designed to enhance students’ knowledge of evaluation criteria and the processes involved in revision. Students’ understanding of revision goals has positive effects on the acquisition of revision skills and improvement in text quality (Fitzgerald & Markham, 1987).

**Table 3.** Summary table with the differential aspects of the writer-focused instruction program according to the four levels of the proposed reporting system

Intermediate learning objectives (ILO)	Design principles (DP)	Learning activities (LA)	Instructional activities (IA) and implementation conditions
3A. Acquire procedural knowledge about how to revise their texts through the use of the evaluative criteria to detect problems and correct them, linked to different aspects of the text.	3A. Provide students with a specific revision strategy that guides them in the revision process in which they detect problems through the evaluation criteria provided and correct the detected problems through different actions (e.g., add, delete, reorganise, change) following the steps of the strategy.	3A.1 Students <i>read</i> a worksheet with an explanation of each step of the PIENSO strategy and the evaluative criteria related to each step, <i>listened to</i> and <i>memorised</i> the information linked to the strategy and the processes that should be followed (detection and correction) to revise their texts.	<p>3A.1 The instructor explained, and gave explicit instruction in the PIENSO revision strategy which considers the steps and the evaluative criteria that students should consider to detect and correct mistakes when they revise their texts (Planes iniciales [initial goals]-Ideas-Estructura [Structure]-Syntax-Ortografía [Spelling]).</p> <p><i>Implementation conditions:</i></p> <ul style="list-style-type: none"> <li>-The instructor promoted students' activation of prior knowledge about revision and the need to set goals through questions (e.g., what did we learn the day before about the revision process, is it just checking spelling? why is it important to set goals? what strategy can we use to set goals?).</li> <li>- The instructor used a specific mnemonic (PIENSO) to support students' memorisation and retrieval of the strategy for revising/</li> <li>- The instructor provided and supported the PIENSO strategy explanation with a worksheet in which students could see the strategy with a detailed explanation of each step.</li> </ul>

		<p>3A.2 Students <i>memorised</i> the strategy and the specific steps to follow according to the PIENSO revising strategy.</p>	<p>3A.2 The instructor gave students the opportunity to practice memorisation of the PIENSO strategy through playful activities (e.g., the instructor identifies the steps and the students have to detect errors in the sequence, "<i>The first step is the I of Ideas</i>" and students should identify that it is not correct).</p> <p><i>Implementation conditions:</i></p> <ul style="list-style-type: none"> <li>- The instructor provided students with enough opportunities to memorise the strategy and made sure they had memorised the strategy before continuing the program (e.g., the instructor asked questions about the sequence of the strategy and the meaning of each letter "<i>What is the first letter of the strategy?, What is the meaning of the letter E?</i>").</li> </ul>
<p>3B. Achieve self-regulated control in the use of the previously taught revision strategy.</p>	<p>3B. Provide students with the opportunity to observe a writer applying a revision strategy in a self-regulated way.</p>	<p>3B.1. Students <i>observed</i> a model applying the strategy while thinking aloud to revise an imperfect text, <i>acquired</i> knowledge about how to regulate the strategy execution and the actions to revise a text.</p>	<p>3B.1 The instructor provided students with cognitive modelling while thinking aloud in front of the class emphasising the steps of the PIENSO strategy to revise different quality texts, applying actions to improve text and regulating their own revision behaviour through self-questioning (e.g., <i>what is the next step? What can I do to solve this problem?</i>), self-instructions (e.g., <i>now I should carefully revise my text following the PIENSO strategy</i>), self-directive statements associated with the specific steps of the strategy and the specific self-regulatory processes (e.g., <i>The next step is E and I should revise the structure of my text</i>) and motivational aspects (e.g., <i>It is boring, but it is worth making the effort, My texts looks really good now after using the PIENSO</i></p>

*strategy*).

*Implementation conditions:*

- The instructor modelled the revision of different quality texts, which included sixth graders typical errors.
- The instructor used dramatisation and changes in the tone of voice and rhythm to keep students' attention or emphasise key aspects during modelling (e.g., the steps of the strategy, possible actions to solve the detected problems).
- The instructor provided students with a familiar model, that is, a student model including colloquial expressions to encourage the students' interest and attention
- The instructor focused students' attention and retention on the model: the revision process, the evaluation criteria used, the actions taken to solve problems and the kind of thoughts as self-instructions, questions and motivational beliefs emphasising these steps.
- The instructor prevented students from doing any other concurrent task during observation of the modelling (e.g., taking notes, asking questions).

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3B.2. Students *reflected* on their observations by analysing actions and thoughts of the model, and *integrated*

3B.2 The instructor gave students the opportunity to individually take notes after the modelling, then organised a whole-group discussion to share student reflections and emphasise the key

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their new knowledge.

aspects of the model's actions and thoughts.

*Implementation conditions:*

- The instructor guided students in their reflection through questions focused on the model revision process, evaluation criteria and thoughts (e.g., Did the writer apply the PIENSO strategy to revise his text? Did he follow all the steps? Did his text improve much?). The instructor only guided the questions, with no explicit instruction about the information.

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This design principle was operationalised through learning activities in which the students read a worksheet with an explanation of each step of the PIENSO strategy and the related evaluative criteria. Students listened to and memorised the information linked to the strategy and the processes they should follow (detection and correction) to revise their texts through direct instruction and playful activities (see Table 3, ILO 3A, DP 3A, LA 3A.1 and 3A.2 and IA 3A.1 and 3A.2). Each letter of the revision strategy PIENSO (I Think in Spanish) signifies the steps that writers should consider when revising their texts. P means Planes iniciales (initial goals), Ideas (content), Estructura (text structure), Nexos (links – the use of cohesive ties between sentences and paragraphs), Sintaxis (sentence-level grammar), and Ortografía (spelling). Students were instructed to read through their drafts, focussing on whether or not they felt it met their goals (Planes iniciales), previously identified via the INCA procedure, and make the necessary changes if not. Then they read and revised again for Ideas, and so on through the PIENSO steps.

The writer-focused program included a second additional intermediate learning objective which was the achievement of self-regulated control in the use of the previously taught revision strategy. The design principle centred on giving students the opportunity to observe and evaluate a writer applying the revision strategy taught in the previous intermediate learning objective following a self-regulatory approach. According to the social cognitive model of sequential skill acquisition (Zimmerman, 2000; 2002) the first phase by which students can develop self-regulation skills is observation. An effective way to operationalise the design principle set is through learning and instructional activities focused on observational learning from cognitive modelling and reflection about the model's actions and thoughts from taking notes and whole-class discussion. Although the conditions in which all learning and instructional activities are carried out are always important, they seem to be even more so in the case of observational learning. The effectiveness of this learning activity seems to be highly dependent on the conditions in which it is carried out (Braaksma, Rijlaarsdam, & Van den Bergh, 2002) so it is important to control the application conditions to ensure a positive outcome. For example, before starting the modelling the instructor made the general intention of the modelling clear and highlighted the need to pay special attention to critical aspects such as the revision process the model followed, the evaluation criteria used, the actions performed to solve problems and thoughts such as self-instructions, questions and motivational beliefs the model exhibited during the observational task. This was also the content of the reflection phase. Another important condition to ensure a positive outcome is the model should be familiar to the student. In this experimental condition the model acted as a student applying the PIENSO strategy to revise their own text. In addition, in order to engage the students' attention, the model included changes in tone, used expressions typically used by students at this age and so forth. Finally, concurrent tasks were avoided during the modelling to ensure

the students were completely focused on the observational activity (e.g., avoid students taking notes) (See Table 3, ILO 3B, DP 3B, LA 3B.1 and 3B.2 and IA 3B.1 and 3B.2).

In the reader-focused instruction (Table 4) the third intermediate learning objective was to improve students' knowledge of how readers respond to imperfect texts, considering evaluative criteria through goal-setting and reader feedback about possible actions to improve texts. This was done via a design principle based on the rationale that students' revision ability is influenced by what they know about readers. More specifically, students should know how readers think while they read and evaluate imperfect texts, and should think about different aspects that affect the reading process, and provide possible solutions to those problems. This rationale was based on studies that have demonstrated the potential value of observing readers as an input for revision (for a review see Rijlaarsdam et al., 2008; Moore & MacArthur, 2011).

This design principle was operationalised through a set of learning and instructional activities which included activating prior knowledge about the need to consider the audience when writing and especially revising through questions and whole-class discussion in which students shared ideas. The students also observed cognitive models of readers reacting and evaluating imperfect texts, providing problem-solving options, and then thought about the modelling they had seen. In this experimental condition, modelling was performed in a similar way to the writer-focused condition but adapted to the reader-focused approach. For example, before starting the modelling the instructor made the aim of the observational activity clear. The instructor also emphasised that students should pay attention to what kind of things made the reading easy or difficult, the evaluative criteria used by the reader, the solutions the reader proposed, and the readers' affective responses, which was also the object of the reflection phase. Here, instead of giving students a student model, we included different kinds of models in order to give students responses from different audiences (e.g., parent, teacher, student). During the modelling, the model engaged the students' attention in the same way as in the writer-focused condition through the inclusion of changes in tone, expressions typically used by students at this age and so on. Finally, once again, during the modelling, concurrent tasks were avoided in order for the students to be completely focused on the observational activity (e.g., students were asked not to take notes) (see Table 4, ILO 3, DP 3, LA 3.1, 3.2 and 3.3 and IA 3.1, 3.2 and 3.3).

**Table 4.** Summary with the differential aspects of the reader-focused instruction program according to the four levels of the proposed reporting system

Intermediate learning objectives (ILO)	Design principles (DP)	Learning activities (LA)	Instructional activities (IA) and implementation conditions
3. Acquire knowledge about how readers respond to imperfect texts, through the consideration of previously taught evaluation criteria and reader feedback about possible action to improve texts.	3. Give students the opportunity to observe real reader(s) thinking aloud when reading and evaluating imperfect texts providing comments about how to solve problems.	3.1 Students <i>activated</i> prior knowledge about the need to consider the audience, <i>reflected</i> on their own knowledge, limits and gaps, about why it is important to consider the audience when writing and revising.	3.1 The instructor asked questions about the consideration of the audience when writing (e.g. ,Is writing a text for your teacher the same as for a classmate?), engaged students in brainstorming about it and prompted a whole-class discussion based on student responses about consideration of the audience when writing, its importance, if they do it, how, and so on. Implementation conditions: - The instructor created a safe classroom context in which students felt safe to actively participate. -The instructor promoted the activation of prior knowledge through questions. At this point the instructor encouraged students to answer, emphasising that there were no incorrect answers. - The instructor tried to involve all the students, making them actively participate in the whole-class discussion. If any of the students did not participate, the instructor asked them directly (e.g., Do you think it is the same to write a text for your parents as it is for your teacher? What is the difference?).
		3.2 Students <i>observed</i> a model acting as a reader, responding and evaluating from imperfect texts and providing different options	3.2 The instructor provided students with cognitive modelling showing positive and negative reader evaluation responses when reading texts of various quality levels and provided suggestions about how to improve texts (e.g., “but this reason is exactly the same idea as the first reason given. If I were him I would remove it”, “It is not clear why social networks are addictive, maybe if he

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<p>to solve the problems.</p>	<p>explained it with more information I could understand it better”).</p> <p>Implementation conditions:</p> <ul style="list-style-type: none"> <li>- The instructor provided students with different models, such as teachers, children and parents, to provide students different audience responses.</li> <li>- The instructor modelled the reader’s evaluation process of texts of different quality which included problems and errors typical of sixth graders.</li> <li>- The instructor used dramatisation and changes in the tone of voice and rhythm to hold students’ attention or emphasise key aspects during modelling (e.g., different audience responses, possible actions to solve the problems they found)</li> <li>- The instructor focused students’ attention and retention on the information provided by the reader (e.g., what kind of things make the reading easy or difficult, what were the evaluation criteria the reader used, what kind of solutions the reader suggested for the issues detected and what were readers’ affective responses).</li> <li>- The instructor focused attention on the model avoiding students doing any concurrent tasks (e.g., taking notes, asking questions).</li> </ul>
<p>3.3. Students <i>reflected</i> on the information provided by the reader, <i>analysed</i> the actions and thoughts of the reader during the task, and <i>integrated</i> the information.</p>	<p>3.3 The instructor provided students with the opportunity to individually take notes after the modelling and then discussed it in a whole-class discussion.</p> <p>Implementation conditions:</p> <ul style="list-style-type: none"> <li>- The instructor guided students in reflection, without providing explicit information, through questions aimed at audience emotional responses, reader evaluation criteria and the kind of suggestions provided to improve texts (e.g., What aspects negatively affected the reading? What were the reader’s feelings about the negative aspects? What solutions did the reader suggest?).</li> </ul>

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The same instructional technique, cognitive modelling, was used to achieve different intermediate learning objectives. In this study modelling was thought to provide students with procedural knowledge about how to regulate the revision process as well as to give them knowledge of the communicative effectiveness of their writing. The key difference in the application of this technique in the two learning conditions was the approach used: a writer applying a strategy or a reader evaluating a text. In the writer-focused instruction, students watched a model emulating a student applying the PIENSO strategy to revise an imperfect text (e.g., *The next step of the strategy is E, I have to check the structure of my text. I will check that my text is structured and has an introduction, development and conclusion*). Whereas in the reader-focused instruction, students saw how different readers reacted and evaluated imperfect texts, providing possible solutions to the problems they noticed (e.g., *This paragraph is confusing, there is a lot of information here. If I were her, I would split it into two different paragraphs with clear information in each*). Despite this difference, both conditions had the same set of evaluation criteria. The modelling was performed similarly in the two experimental conditions, as described above, because the implementation conditions (e.g., avoid taking notes, dramatisation) are related to the instructional technique, rather than the content or approach.

Finally, the last common intermediate learning objective included in the sequence in both learning conditions was the interiorisation of the knowledge acquired during the interventions. To achieve this intermediate learning objective, the instruction was based on a design principle of giving students opportunities to apply their new knowledge to meaningful tasks with real communicative goals and a real audience. Based on Ausubel's theory (1968), students had to apply their new knowledge to specific tasks and relate it to previous knowledge, fostering integration of the new knowledge. In both instructional programs this was operationalised through a set of learning and instructional activities in which students revised their own texts collaboratively or a researcher-provided text individually, applying the knowledge acquired, and writing a final text. Students were also able to compare their final output, from the individual task to the output of an expert as a means of encouraging them to use their acquired knowledge (See Table 2, ILO 4, DP 4, LA 4.1, 4.2 and 4.3 and IA 4.1, 4.2 and 4.3).

### **Implementation of the instructional programs**

Both instructional programs were implemented by the first author, who has previous educational experience in the implementation of this kind of program, over four consecutive weeks (one session per week). Table 5 is an overview showing the order of implementation of the intermediate learning objectives, design principles and learning and instructional activities (combined and summarised in the table for ease of reading). Both instructional programs shared most intermediate learning objectives (ILO 1, 2 and 4) and only differed in the third intermediate learning objective. In the writer-focused

instruction students were explicitly instructed in, and observed the model application of the PIENSO revision strategy (ILO 3A and 3B), while in the reader-focused instruction students observed a model trying to understand a text and suggesting possible improvements to it (ILO 3).

All sessions were similar, sharing some intermediate learning objectives with others being different according to the differences between the two instructional programs. The final session was the same for the two programs. As Table 5 shows, even for the specific-condition intermediate learning objectives the instructional design was similar, so the differences were almost exclusively related to the content.

In both instructional programs the instructional design mainly involved observational learning plus collaborative practice in pairs in which students revised a text and wrote a final version. Each student in the pair had the role of writer or helper. The roles were swapped between the second and third sessions. The writer was in charge of carrying out the task by verbalising all his or her actions (as similar as possible to the model). This collaborative task lasted around 15-20 minutes.

Table 5 also includes information about the instructional materials used to support the learning and instructional activities in both instructional programs. In all sessions, support material was provided for the instructor (e.g., a modelling script) as well as for students (e.g., a PIENSO strategy worksheet). For the common aspects in both interventions the materials were exactly the same. For the specific content in the interventions, similar material was provided to the students which varied slightly depending on the content in each program (e.g., a notes sheet).

Table 5. Overview of the implementation sequences for the instructional programs

Intermediate Learning Objectives		Design principles		Learning and Instructional sequence activities <sup>1</sup>		
Session	Writer-focused	Reader-focused	Writer-focused	Reader-focused	Writer-focused	Reader-focused
1	1 and 2		1 and 2		1. Activation of prior knowledge ( <i>Metacognitive revision student matrix in Appendix A</i> ) 1.2 Integrate new knowledge into existing knowledge 2.1 Presentation communicative goal setting strategy ( <i>Communicative goals student worksheet in Appendix B</i> ) 2.2 Reflection about different goals ( <i>Communicative goals student worksheet with a real example in Appendix C</i> ) 2.3 Application of the strategy	
					3A.1 Presentation revision strategy ( <i>Revision strategy student worksheet in Appendix D</i> ) 3A.2 Student memorisation of the strategy	3.1 Activation and reflection on prior knowledge 3.2 Observation of a model acting as a reader – ( <i>Model script instructor worksheet in Appendix G &amp; Take notes student worksheet in Appendix H</i> )
	3A and 3B	3	3A and 3B	3	3B.1 Observation of a writer applying the strategy ( <i>Model script instructor worksheet in Appendix E &amp; Take notes student worksheet in Appendix F</i> ) 3B.2 Reflection about model actions and thoughts	3.3 Reflection about model actions and thoughts

2/3					3B.1 Observation of a writer applying the strategy <i>(Model script instructor worksheet &amp; Take notes student worksheet)</i>	3.2 Observation of a model acting as a reader <i>(Model script instructor worksheet &amp; Take notes student worksheet)</i>
	3B	3	3B	3	3B.2 Reflection about model actions and thoughts	3.3 Reflection about model actions and thoughts
					4.1 Revise a previously written text and write a final version collaboratively <i>(Previous student text and goal setting worksheet &amp; Final student worksheet in Appendix I)</i>	
4					4.2 Revision of a researcher-created text and writing a final version individually <i>(Researcher created text (Appendix J) and goal setting &amp; final student worksheet)</i>	
	4			4	4.3 Analysis of high-quality texts (Student model text in Appendix K)	

<sup>1</sup> Materials in brackets

## **2. Discussion**

In this section, we discuss the implications of using the proposed reporting system for the analysis of interventions. We will first discuss the validity of our study's interventions according to the content and instructional dimensions. Then we will examine some possible explanations for the similar results from the two experimental conditions and some aspects to consider in future studies. We will provide three recommendations for using the reporting system based on our experience in reporting interventions and discuss the educational implications of using the proposed reporting system.

### **2.1 Improvement of the validity of the independent variable**

The contrast between the interventions being examined allowed us to test whether both conditions were indeed valid representations of the intended approaches; a writer-focused instruction or a reader-focused instruction. Based on the theories underlying strategy-focused instruction we included two specific intermediate learning objectives in our writer-focused condition: (1) procedural knowledge about how to revise texts, and (2) self-regulated control in the use of a revision strategy. The knowledge and skills in this kind of instruction are typically imparted to students via various components such as direct teaching, modelling and collaborative or individual practice (Fidalgo & Torrance, 2018; Harris & Graham, 2018). These were exactly the components that we considered in the writer-focused condition. The intermediate learning objectives and instructional design used are in line with the most effective approaches to teaching students to regulate their own behaviour (Graham 2006b; Graham & Harris, 2018a; Graham & Harris, 2018b in this special issue; Harris & Graham 2018). Therefore, the writer-focused instruction condition seems to be a valid representation of the intended approach.

The reader-focused condition was rooted in the communicative paradigm of writing, in which students should be aware of the aim of their communication and their audience, and should be able to gauge their needs. This knowledge can be taught through learners observing readers reading texts aloud (Crasnich & Lumbelli, 2005; Couzijn & Rijlaarsdam, 2005; Lumbelli, Paoletti, & Frausin, 1999) or learners moving from their writer's role into the reader's role (Couzijn, 1999; Couzijn & Rijlaarsdam, 2005, Holliway & McCutchen, 2004). In our reader-focused instruction students observed how readers responded when reading and evaluating imperfect texts, including suggestions about how to correct the problems they saw. However, an in-depth analysis following the proposed reporting system raised certain concerns about the validity of the condition as we designed it. It became evident that the model scripts and subsequent reflection phase after observation emphasised not only how readers responded to texts, but also the reader's evaluation of the text and their specific suggestions to improve it. So the model in this condition was not just a reader trying to

understand a text, but also a reviewer who evaluated the text and provided alternative solutions to problems they noticed. In other words, what students observed was a reflective reader, the reader as reviewer, as an evaluator who also suggested improvements rather than a communicative reader trying to understand. Normally, studies following the reader-focused approach only give students information about how readers respond to imperfect texts (for a review see Rijlaarsdam et al., 2008), without providing evaluation of the text based on specific evaluative criteria and feedback on how problems might be solved. It is therefore possible that the students in this condition acquired more revision knowledge than they would have had, had the intervention been validly based on the literature about observing readers.

From the discussions we had between subsequent versions of the analysis it became clear that the designing author deliberately included this so-called reflective reader, aiming to create two interventions as similar as possible by providing learners with the same set of text evaluation criteria, related to the goal setting process. Obviously, striving to keep the content as similar as possible in the two conditions led to the loss of one of the intended key differences between the interventions. The whole process of analysing the already tested interventions taught us that we must embed the second intervention in a different theoretical framework from the one we started with. It is not the case that the two comparisons between the two conditions are no longer valid after the analysis, but rather that the construct validity of one of the conditions was low: we compared different constructs than we first intended. We assume that this might not be an uncommon experience: it is part of many publication practices that intervention labels or descriptions change along the way, in response to critical questions from reviewers.

Yet it would be preferable for theoretical and practical reasons, to create an intervention report as we reported here along similar lines *before* the actual implementation, and to organize a trial phase where experts can question the interventions, their operationalisation and their theoretical embedding. Trialling interventions before actual data collection would be similar to pretesting measuring instruments. Such a validation check, signed off by experts, might be part of the publication requirements of high standard journals in the near future.

Also, the use of the proposed reporting system would allow to better understand the results of an intervention and help authors to detect possible weaknesses which can be improved in future interventions studies (Grabowski, Mathiebe, Hachmeister, Becker-Mrotzek, 2018 in this special issue). In the present study, the lack of results could be explained by the common elements of the contrasting design variable. A common key element in the modelling phase was the text evaluation criteria that were learnt in another stage (communicative goal setting) and now applied by the models to detect inconsistencies, mistakes and so on, while thinking aloud as a reviser or as a reflective reader. It seems, therefore, that the use of these criteria is key, and not the reviewer-model demonstrating the process of making changes. This might imply that part of the intended contrasting intermediate learning objective 'knowledge and application of the

revision process' (see Table 3, DP 3A) did not happen. As long as we do not know the extent to which the intermediate objectives were achieved, we cannot say more about the contrasts. It would be important, therefore, to include the evaluation of the intervention's intended intermediate learning objectives in the measurement design.

Finally, now that we know that both conditions were effective, that they were valid in terms of content, but that one of the conditions was not a representation of the intended construct, we must consider new contrasts. Considering the role of the three components in the CDO-strategy, it might be important, given our results, to test whether the addition of the revision-implementation phase as part of the revision process (Operating) has added value over and above comparing, and diagnosing errors. Another contrast, one that we had initially intended to address in this study, is to steer the revision process from a writer to a reader perspective. The modelling in the reader-focused instruction condition should focus on how readers react to imperfect texts, without including more information about evaluative criteria or how to solve problems: this condition should align with the text's communicative function, demonstrating a reader trying to understand the message in the text (Rijlaarsdam, Couzijn, Janssen, Braaksma & Kieft, 2006). In such a condition, the model should represent the intended reader.

## 2.2 Recommendations

We would like to propose the following recommendations:

1. We recommend that JoWR requires detailed descriptions and validity checks of the independent variable. Only after an in-depth analysis of our instructional programs in several rounds of critical readings and careful analyses following the proposed reporting system did the concerns about the validity of one of our instructional programs become evident to us, even when high-fidelity measures were considered in the study under analysis (e.g., lesson audio recordings, portfolios, model scripts). Therefore, mandatory use of such a detailed reporting system in instructional research may make it clear what was really taught and how it was taught in each condition in a comparative way (for a guidelines on how to report similarities and differences between interventions see De Smedt & Van Keer, 2018 in this special issue), something that sometimes remains unclear or hidden under labels and commonly-used terms in descriptions of the independent variable. At the same time, using the proposed reporting system would encourage replication of research which is critical to ensure contributions to the developmental and instructional theories of writing.
2. We recommend including intermediate learning objectives in the measurement design. This would make it possible to test the extent to which the students achieved the specific intermediate learning objectives during instruction, as well as to test whether the instructional design was effective in the achievement of those

objectives. It would make it possible to analyse how far intermediate objectives contribute to final objectives.

3. We recommend that researchers and instructional designers start to apply the descriptive system not only as a reporting tool, but also as a validity check during the design process. In addition to being useful for reporting interventions in scientific publications, such a system may also help in the design of the interventions themselves. Designing interventions is an extremely complex task, entailing juggling many constraints. This system could help researchers and instructional designers to clearly define the rationale for the selection of intermediate learning objectives and the instructional design for the achievement of those objectives. This analysis in the design phase could provide information about gaps, undefined actions, lack of rationales in some of the choices, etc. We would expect that the use of this reporting system as an instructional design matrix would stimulate deeper thinking and therefore improve the quality of instructional design. It would be preferable to validate the design via an expert panel before the design is operationalised in practice as a research tool.

### 2.3 Educational implications

Reporting interventions in detail has educational and practical consequences in addition to theoretical implications. Some studies have focused on analysing the inclusion of evidence-based practices in schools in various countries (e.g., Dockrell, Marshall, & Wyse, 2015 in the UK; De Smedt, Van Keer, & Merchie, 2016 in Belgium; Graham, Capizzi, Harris, Hebert, & Morphy, 2014 in the USA; Rietdijk, Janssen, Van Weijen, Van den Bergh, & Rijlaarsdam, 2017 in the Netherlands). A common finding of these studies is that despite teachers indicating that they use a majority of evidence-based practices in teaching writing in their classrooms, the frequency of use was low in all contexts and educational levels examined. This is an issue if we consider the negative findings in various educational reports across many countries where student's writing performance seems not to meet required standards at varying educational levels (e.g., Department of Education, 2012 in the UK; Kühlemeier, Van Til, Feenstra, & Hemker, 2013 in the Netherlands; Ministerio de Educación, 2010 in Spain).

From our point of view, teachers are the key to reducing the gap between research and practice. Of course, providing more details about interventions in empirical papers will not, on its own, have a direct effect on whether teachers use the intervention. However, detailed analyses of the instruction as described in the reporting system would increase pedagogical knowledge on how to teach writing (Koster & Bouwer, 2018 in this special issue; Koster, Bouwer & Van den Bergh, 2017). The availability of such knowledge in teacher education and professional development programs may contribute to the implementation of empirically based writing education, and therefore the improvement of student writing skills and encourage knowledge transfer from scientific to educational fields.

### Acknowledgements

The first author has benefited from a research grant (FPU13/06428) awarded by the Ministerio de Educación, Cultura y Deporte de España [Spanish Ministry of Education, Culture and Sport]. Also, this research was funded by Ministerio de Economía y Competitividad de España [Spanish Ministry of Economy and Competitiveness] grant (EDU2015-67484-P) awarded to the fourth author.

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**Appendix A: Metacognitive revision student matrix**

AFTER WRITING YOU ALWAYS MUST:



# REVISE



WHAT IS REVISION?	HOW TO REVISE?	WHEN AND WHY TO REVISE?
<p>REVISION is an essential and necessary sub-process to write a good text.</p>	<p>In your draft you have to:</p> <ul style="list-style-type: none"> <li>- Detect errors or deficiencies at the grammar structure and organization level.</li> <li>- Diagnose content or rhetorical problems.</li> <li>- Correct or modify the aspects that can be improved (add/delete/substitute/reorganize).</li> </ul>	<p>You ALWAYS have to REVISE it after the first draft is done.</p> <p>It is essential and it also will determine the quality of the final text.</p> <p>It helps you to detect many things which can be improved, things that are not well understood, whether or not you have achieved your goals, etc.</p>

**Appendix B: Communicative goals student worksheet**

**GENERAL GOALS**

1. Convince the reader about my opinion (for or against) on a given topic
2. Write the text taking into account who will be the reader

**SPECIFIC GOALS**

**I INTRODUCTION**

- I am going to start my text by presenting the topic in an attractive way in order to get the reader's attention
- I am going to introduce my topic first and then give my opinion so that the reader can understand easily the importance of this topic.
- I am going to take into account who is the reader to choose the way in which I will present the topic.
- I am going to make my opinion very clear so that the reader has no doubt about it.

**N NUDO (DEVELOPMENT)**

- I am going to give important reasons to the reader in order to support my opinion
- I am going to look for examples for each reason which will help the reader to better understand what I want to say.
- I am going to begin this section with the most important reason to gain the reader's credibility.
- I am going to follow a consistent line in the arguments (all in favor or all against) so as not to confuse the reader.
- I am going to organize my text by giving only one reason with its examples in each paragraph so that the reader is clear on each argument.

**C CONCLUSION**

- The text is going to be ended by reaffirming my opinion for the reader.
- I am going to support my opinion on the arguments I have already given in the development section so that the reader understands the justification for my opinion.
- First, a brief summary of my arguments will be made and then I am going to give my opinion so that the last thing the reader reads will be my opinion.

**A ASPECTO (FORM)**

- I am going to be very careful not to misspell so that the reader is not discouraged while reading.
- I am going to use links between paragraphs and ideas so that the reader follows the coherent thread of the text.
- I am going to make my handwriting pleasant to read.

### Appendix C: Communicative goals student worksheet with a real example

**GENERAL GOALS**

1. Convince the reader about my opinion (for or against) on a given topic
2. Write the text taking into account who will be the reader

**SPECIFIC GOALS**

**I INTRODUCTION**

- I am going to start my text by presenting the topic in an attractive way in order to get the reader's attention
- I am going to introduce my topic first and then give my opinion so that the reader can understand easily the importance of this topic.
- I am going to take into account who is the reader to choose the way in which I will present the topic.
- I am going to make my opinion very clear so that the reader has no doubt about it.

**N NUDO (DEVELOPMENT)**

- I am going to give important reasons to the reader in order to support my opinion
- I am going to look for examples for each reason which will help the reader to better understand what I want to say.
- I am going to begin this section with the most important reason to gain the reader's credibility.
- I am going to follow a consistent line in the arguments (all in favor or all against) so as not to confuse the reader.
- I am going to organize my text by giving only one reason with its examples in each paragraph so that the reader is clear on each argument.

**C CONCLUSION**

- The text is going to be ended by reaffirming my opinion for the reader.
- I am going to support my opinion on the arguments I have already given in the development section so that the reader understands the justification for my opinion.
- First, a brief summary of my arguments will be made and then I am going to give my opinion so that the last thing the reader reads will be my opinion.

**A ASPECTO (FORM)**

- I am going to be very careful not to misspell so that the reader is not discouraged while reading.
- I am going to use links between paragraphs and ideas so that the reader follows the coherent thread of the text.
- I am going to make my handwriting pleasant to read.

Appendix D: Revision strategy student worksheet

**REVISE** P I E N S O

AFTER WRITING I HAVE TO...

WITH THE STRATEGY...

**P**LAN INICIAL  
Initial goals

**I**DEAS

**E**STRUCTURA  
Structure

**N**EXOS  
Links

**S**INTAX

**O**RTOGRAFÍA  
Spelling

WHAT WERE YOUR INITIAL GOALS?  
Check that you have met the initial goals of your text:

WHAT IDEAS HAVE YOU WRITTEN?  
Review the ideas you have written, do not repeat information, if you have given examples with each idea...

DID YOU STRUCTURE THE INFORMATION WELL?  
Consider if your text has an Introduction which presents the subject and purpose of the text; Development where you explain the reasons and examples and Conclusion where you reaffirm your opinion/be careful with the paragraphs...

HAVE YOU USED LINKS?  
You should use links between and within each paragraph and ideas

DID YOU WRITE YOUR SENTENCES CORRECTLY?  
Check that your sentences are well constructed, simple, clear, with only just one idea....

DID YOU SPELL THE WORDS RIGHT?  
Attention to the accents, v and b, check the spelling of your text

If you follow all the steps

You will achieve your goal

Check for a cartoon character on the left and a checkered flag on the right.

### Appendix E: Model script for the instructor

#### WRITER-FOCUSED INSTRUCTION MODELLING

Well, I just finished the first draft of my text after planning it. Now it is time to one of the most important actions, revise it! If I do it well, I will get a perfect text! I will pay a lot of attention and try to use the revision strategy my teacher taught me some years ago. Let's see...the revision strategy was...was...oh yes! PIENSO (in English "I think"), just what I should do to revise my text! I will read my text and implement each of the steps of the strategy. Then I could write the final text!

The first letter was...P about "Planes iniciales" (in English initial goals). Of course, the first think I should do is to revise if I have achieved my initial goals. I used the strategy INCA to set my goals. I will read my goals again and try to check if I have achieved them during the reading. Let's continue!

The next step is the I, so I should revise the ideas of my text. I will read what I have written. I should consider if the ideas are attractive for my parents as I set on my goals. Also, I need to avoid repeat information. In the introduction, I have written about childhood obesity and its main cause, which is fast-food. I think this idea is a good one to introduce the topic! I really like it and I think it is interesting. I think it will catch up my parents' attention. Let's see the ideas of the development. First, I wrote that fast-food is bad because it is unhealthy. Well...I think I need more information to explain it and make the reason clear. I need to convince my parents! So, definitely I am going to add more information. Oh yes! I can add what we learnt in science last week, oh...I hate science! Hey, I should focus on the text! Come on! What I was thinking about...? Oh yes, I should add information. I can write that fast-food is dangerous because eating too much fast-food can raise your cholesterol and it make cause a lot of illnesses. Yeah! Now it looks like a great reason! I am going to write it. But there is something missing...oh yes! I need to add some example! It was on my initial goals. I can add some of the illnesses as heart attacks or lung diseases. I am going to write it and this reason will be perfect! [Write the examples and repeat the information aloud]. I will read the next idea [Read the idea "This kind of food is addictive because of the amount of sugars it contains"]. I think this idea is good! Fast-food is addictive! Also I have added some examples, so my reason is clear! I will go on with the revision! It is worth the effort. I will read the last reason [Read the reason "Moreover, the poor quality of the products and the amount of sugars that it contains make fast-food very unhealthy."]. Ups, I have repeated information! It is the same reason as the introduction and the first two reasons. Definitely, I should think another different idea. [Take a few second to think]. I cannot find more reasons, I do not have more ideas. Well, given that I do not have more ideas, I am going to write just two. It is better to have two good reasons than have three and one wrong. I'm going to cross this reason out. [Cross out the reason]. Finally, let's see the ideas of the conclusion. [Read the conclusion "In conclusion, fast-food is bad because it is dangerous for the health, moreover it is addictive and has a

low quality. For all these reasons, I am against fast-food and I think it should be banned at least for children.”]. I think it is good! I think the ideas of my text are really good! Also because they are interested also for my parents, who will read the text! Without any doubt, the changes I have introduced have improved a lot the quality of the text. Go on with the next step!

Now I should revise the E which means Estructura (in English “structure”). First, I am going to check the general structure of my text. That is, my text should have an attractive introduction in which I should present the topic. I am going to check it. [Reads through and alludes to each part of the introduction as he reads it aloud]. Well done! The introduction is perfect! Now let’s see the development, in which I should talk about my reasons and add some examples to clarify them. [Read through the development]. Great! I have done it! Also, I have written each reason in a single paragraph. And finally, I have a conclusion. Well, the structure of my text is good!

Come on, I am very motivated with this! The next step is the N, so I should revise the Nudo (in English “development”). Oh no, I am wrong! The meaning of N is Nexos (in English “links”). I should check if I have used links between ideas and paragraphs. I should be careful with the links, I always forget use them! First, I am going to check if I have written links between paragraphs. Ups, I only have written one in the conclusion. I am going to add a link at the end of each reason. In the first reason, I am going to write...for example...“First of all”. Yes! It definitely looks better! For the second reason I will follow with “To continue”. Mmm, I do not like so much. Let’s think another one...Maybe “second”. Yes, it is better! [Write the link]. I already have a link for the conclusion, so that’s all! Now, I will check the links between ideas. [Read over the text]. Ups, I have repeated two times the link “for example”, I need to change one of them. For the second reason, I am going to write “in instance” instead of “for example”. Same meaning but different words! Good! I should avoid being boring.

Come on! I have just two steps left. The next step is the S, which is related with the Syntax. I should try to make clear and well-structured sentences. It was also in my initial goals! [Read and analyze the sentences until you reach the long sentence of the second reason]. Uff, this is a too long sentence!! It is very difficult to understand it. I should split it up in two sentences at least. One sentence would be “in instance, it is addictive and that's why people can't stop eating fast-food” so I need to add a dot here. [Write the dot]. Now, I should add a comma. [Add a comma before McDonald’s]. I am going to read it again. [Read the sentence]. Yes, now it is ok! Well, let’s continue with the other sentences. [Check the sentences aloud].

Oh yes!! There is just one step more! I should revise the O, in which I should be careful and check the Ortografía (in English “Spelling”). I am going to check it to be sure that my text does not contain any spelling mistake! [Read the text carefully]. Ups, what a mistake! I have written contains with two t! Luckily, I am revising the text! [Correct the mistake and continue reading]. Oh no! It is not possible! Another mistake! I have written dangerous with two g! What a disaster! I am going to change it now! [Correct the mistake and finish reading the text].

Puff.... luckily I have revised my first draft of the text and made the necessary changes. There were some things completely wrong! Now the text looks almost perfect. Also I have achieved my initial goals! I am very proud!!

Appendix F: Take notes student worksheet

**REVISE** **PIENSO**

AFTER WRITING I HAVE TO... WITH THE STRATEGY...

**P**LAN INICIAL  
Initial goals

**I**DEAS

**E**STRUCTURA  
Structure

**N**EXOS  
Links

**S**INTEX

**O**RTOGRAFÍA  
Spelling

WHAT WERE YOUR INITIAL GOALS?

WHAT IDEAS HAVE YOU WRITTEN?

DID YOU STRUCTURE THE INFORMATION WELL?

HAVE YOU USED LINKS?

DID YOU WRITE YOUR SENTENCES CORRECTLY?

DID YOU SPELL THE WORDS RIGHT?

If you follow all the steps, you will achieve your goal.

Finish line illustration with a character celebrating.

### Appendix G: Model script for the instructor

#### READER-FOCUSED INSTRUCTION MODELLING

*Well, I'm going to read this text that Juan, a 6th grader who usually writes me things, has given to me. He told me that he was sure it would be interesting to me...I'm intrigued! Oh, it's an argumentative text about fast-food, that's a really interesting topic. The main goal of an argumentative text is to convince the reader of your opinion on a topic. So I hope Juan has made his opinion clear to convince me!*

*Let's see, I'm going to start reading [read the whole introduction quickly first]. Good! He has written such a good introduction, that's important! Moreover, if the introduction is attractive, I will read it more keenly. I'm going to focus a little more on the introduction.*

*[Read the first sentence: "Nowadays there is great concern about the diet of the youngest children due to the high rates of childhood obesity in the Spanish society."]. Undoubtedly it was a great way to start his text! He has captured my attention. I have a little brother and I'm worried about this. This is an important issue, especially for children. I will continue reading the text that seems very interesting!*

*[Read the second sentence: "One of the main issues is the increase in the consumption of so-called "fast-food". The name reflects its poor quality and negative effects on people's health."]. Really interesting, a good way to introduce the topic is to introduce briefly what is fast-food. I like it! But...he has not said whether he is for or against fast-food yet. That is a critical point in the argumentative texts' introduction. Oh, wait! There is another sentence.*

*[Read the last sentence in the introduction: "I am completely against fast-food and now I will explain some of the reasons which support my opinion."]. Well done, here is the writer's opinion! The topic is not easy. I agree that fast-food is unhealthy...but I love pizza, hotdogs...I need good reasons to be convinced by his opinion. For the moment, I really like the introduction. Clear and well organized, with all the necessary points! I don't think I found any spelling mistake, that's good! It is very pleasant! I'm really looking forward to reading the whole text. Let's see!*

*Well, I am going to read the first reason. [Read: "Fast-food is unhealthy"]. Uhm... and that's all? I am not sure about this reason. I think it could be better if he explained why he said that. Maybe he forgot to write it. I'm gonna write him a note to noticed it to him that here there is a mistake. [Write: "I do not understand why fast-food is dangerous; you should explain it in more detail. Also it would be good if you added an example. The argument would be clearer"].*

*Maybe the second reason is better... [Read: "This kind of food is addictive because of the amount of sugars it contains."]. He has written contains with two t! It is annoying! I'm going to surround it with red so he can be aware this terrible mistake. I have lost my focus a little with this spelling mistake. I will continue reading [Read: "This kind of food is addictive because of the amount of sugars it contains."]. This reason is better than the previous one. [Read: "For example, despite the negative reports about*

*this type of food, people can't stop eating it and that's why hamburger or pizza chains like McDonald's Burger King or Telepizza have been and continue to be very successful, especially among young people.”]. Puff...it is a really long sentence. I need to read it again to understand the meaning [Read the sentence again]. The sentence has four lines and no commas nor dots. It would be better if he tried to write his ideas in short sentences. The information is interesting, but it is really difficult to understand the main idea as he wrote it. I am going to write him a note here [Write: “The sentence is too long, I don't quite understand what you mean”].*

*Well, let's see what happens with the last reason. The introduction was really good, but until now the development...it is not good at all. I am getting a little bored. Come on, there is not much left. [Read: “Moreover, the poor quality of the products and the amount of sugars that it contains make fast-food very unhealthy.”]. But...it is really another reason? He repeats the information from the previous one. Moreover, he did not explain the reason nor add any example! Your reasons have definitely not convinced me of anything. [Write: “You are repeating information. Also you need to explain your reasons. It is more important have good reasons than write a lot of bad reasons.”]. I am disappointed with this development. He has not managed to convince me that fast-food is bad. The reasons are not good enough and also he did not explain it clearly. The text lacks information.*

*Puff, I do not want to read any more, but I am just going to finish it. [Rad: “In conclusion, fast-food is bad because it is dangerous”]. Oh no! Another spelling issue! I am sure that he did not revise the text. I'm going to surround it in red. [Read: “In conclusion, fast-food is bad because it is dangerous for the health, moreover it is addictive and has a low quality. For all these reasons, I am against fast-food and I think it should be banned at least for children.”]. Well, he introduces the conclusion with a link. That is good because I know that he is finishing the text! Maybe, it would be better if he used more links throughout the text. I am going to write a note in the development [Write: “you should use more links between ideas and paragraphs”]. Also, he has summarized his reasons, but...I miss more information in the development! The conclusion is not too bad, it is more or less clear! Anyway, he should be careful with spelling. I think he could improve a lot his text if he revised it and consider my notes!!*


**Appendix H: Take notes student worksheet**

	WRITE THOSE ASPECTS THAT THE READER HAS POINTED OUT WHEN READING THE TEXT	
	POSITIVE COMMENTS	NEGATIVE COMMENTS 

**Appendix I: Final student worksheet**

The worksheet is enclosed in a double-line border. At the top left, there is a cartoon character of a man with glasses and a tie, holding a pointer stick. To his right is a light green rectangular box containing the text "WRITE AN ARGUMENTATIVE TEXT". Below this box is a purple rectangular box with the text "TOPIC:". In the center of the page is a light blue rectangular box with the text "FINAL SHEET". Below these elements is a large rectangular area with horizontal lines for writing. The bottom right corner of this area is folded over, showing a grey underside.

**Appendix J: Research-created student text**



Argumentative text: A year abroad

DRAFT SHEET

I am completely in favour of children who do it, although it can also have negative effects.


First, moving away for a year will make it easier for you to learn or improve another language, which is usually English. This has many advantages, for example it will make you get better grades in English when you return to Spain. Also, for example, when you are older, it will be probably easier for you to find a job.

Third, if you go abroad for a year it will be also good because you will meet people from many parts of the world, learn about their cultures and languages.

If you move to another country one year, you'll learn to take responsibility for the things you have to do, and it will increase your autonomy, for example, you will have to be responsible for doing your homework on your own, as your parents won't stand over you reminding it all the time.

To sum up, I am all in favour of spending a year away from your country for all the reasons I have given above and many more. I sincerely believe that going abroad is a great experience and I would certainly go, wouldn't you?

## Appendix K: Student model text



### Argumentative text: Living a year abroad

**FINAL SHEET**

Nowadays, a lot of importance is given to travelling and living experiences from an early age. For this reason, in recent years the number of children who decide to spend a year of their lives studying abroad has increased greatly. I am completely in favour of children going abroad for a year and now I will explain some of the most important reasons which support my opinion.

First, moving away for a year will make it easier for you to learn or improve another language which is usually English. This has many advantages, for example it will make you get better grades in English when you return to Spain. Another good example is that when you are older it will probably be easier for you to find a job.

Second, going away for a year will make it easier for you to meet people from all over the world, as well as their culture. This is great, because for example, you will realize that things that we don't value here and that are forbidden in other countries (like dress as you like).

Thirdly, if you go to live in another country for a year you will learn to take responsibility for the things you have to do, and that will increase your autonomy. In fact, you'll have to do your homework and things on your own, since your parents won't stand over you to remind you about it.

In conclusion, I am completely in favour of spending a year away from your country for all the reasons I have given above and many more. I sincerely believe that going abroad is a great experience and I would certainly go, and you, are you going to miss it?