“Now it’s my turn”: Comparing individual and collaborative writing practices in primary education

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Abstract: This study aimed to analyse the effectiveness of different types of explicit writing instruction (EWI) activities involving individual and collaborative narrative writing in a sample of 93 sixth grade students (ages 11-12). Specifically, the processes and outcomes of three EWI conditions were compared: explicit instruction with individual writing (EWI+IW), with spontaneous collaborative writing (EWI+SCW), and with reciprocal collaborative writing (EWI+RCW). In the SCW condition, the dyads wrote and revised the texts without any guidelines to structure the collaboration. In the RCW condition, the students were asked to alternate the role of writing and revising each text segment with their partner. The quality of 336 texts written individually by the students before and after the training were assessed. In addition, 20 writing events (with a total of 2303 verbal turns) were transcribed and analysed. RCW produced a greater improvement in writing performance than students who engaged in IW practices. Discourse analysis showed that RCW facilitated more symmetrical and balanced collaboration than SCW. The results help to explain discrepancies in the literature. Finally, educational implications are discussed in order to understand how synchronous writing can be effective in upper primary education.

Keywords: explicit writing instruction, collaborative writing, chain writing, discourse analysis, primary education

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1. Introduction

The rapid development of digital tools that facilitate cooperation during the planning, production, and revision of texts has changed the traditional approach to writing as an essentially individual reflective activity, raising the need for 21st century learners to develop new collaborative skills that have up to now received little attention (Svenlin & Sørhaug, 2022). Learning to write well is not enough; it is important to learn to do so in collaboration with others, in the context of writing projects that promote diverse learning (*learning by writing*) (Meneses et al., 2023). Getting students to write in a collaborative way has a high practical relevance, because in academic and professional contexts, written documents are very often the end product of a collaborative process involving multiple actors (Van Steendam, 2016).

Collaborative writing (Lowry et al., 2004) is therefore a worthwhile educational goal in itself; however, it can also be a useful teaching strategy for improving writing performance. Novice writers may have difficulties in developing their ability to consider the perspectives of readers, resulting in texts lacking in clarity and coherence (Bereiter & Scardamalia, 1987; Kellogg, 1994). Collaborative writing and peer assessment heighten audience awareness, making it explicit during the writing process itself where constructive and non-directive feedback is provided and explanations and justifications are given (Cho & MacArthur, 2010; Gielen et al., 2010). Not only does peer review benefit the writer, providing feedback can also lead to improvements in writing skills, at least at the beginner level (Lundstrom & Baker, 2009).

Nevertheless, for peer collaboration to have a positive impact on either writing or learning outcomes, a number of conditions need to be met, such as an appropriate form of instruction for collaborators, task complexity, group composition and interaction patterns (Van Steendam, 2016). This study focuses on an instructional writing approach that has proven particularly effective in supporting beginner writers in developing writing skills: explicit writing instruction combined with peer-assisted writing (De Smedt et al., 2020; Falardeau et al., 2024; Harris et al., 2006; Hoogeveen & van Gelderen, 2016; McKeown et al., 2019; Montanero & Madeira, 2019; Yarrow & Topping, 2001). We explore interaction patterns that make collaborative writing more effective than individual writing in enhancing the narrative writing performance of primary school students.

1.1 Synchronous collaborative writing vs. individual writing practice in primary education

The literature on collaborative writing over the last 30 years has given rise to a wealth of research, mainly focusing on asynchronous writing in higher education (Castelló et al., 2023). This research mainly focuses on the revision processes that take place in asynchronous communication settings. Much of this literature on peer writing focuses on *written corrective*

feedback (WCF) and its quantitative and qualitative impact on the improvement of subsequent versions of texts, as well as the participants' perceptions (Van Zundert et al., 2010).

Collaborative writing activities in primary education are often synchronous. In other words, two or three students write simultaneously on the same document proposing, inviting, accepting or rejecting changes to each other's writing in real time (Ede & Lunsford, 1990). However, there is still little research on the processes and outcomes of *joint writing* strategies displayed by primary grade students (De Smedt et al., 2020; Salo et al., 2023).

This paper considers the line of research on the combined impact of explicit writing instruction (EWI) and collaborative practice in primary education. EWI relies on direct and systematic instruction of knowledge and writing strategies through modelling, scaffolding and self-regulation (Falardeau et al., 2024; Graham & Perin, 2007), with its core components being teacher modelling and the individual or collaborative guidance of students' practice (Fidalgo et al., 2011).

The meta-analyses of nearly 150 (quasi)experimental studies conducted by Graham (Graham & Perin, 2007; Graham et al., 2012) and Koster et al. (2015) concluded that explicit instruction regarding knowledge (relating to text types and rhetorical structure) and strategies (planning, textualization and revision) is the most beneficial for improving young learners' writing competence. Other didactic approaches that have proven to be effective include *peer-assisted writing* practices (with effect sizes between .59 and .89, depending on the study). The results of peer-assisted text production are superior to those derived solely from *feedback*, whether from teachers or peers, which supports the utility of synchronous collaborative writing at this stage of education. More recent meta-analyses by Graham et al. (2023, 2025) in grades 6 to 12 have confirmed that the process approach to writing (0.75), strategy instruction (0.59) and peer assistance (0.59) are the most effective writing interventions for improving students' performance.

The comparison between the results of individual and collaborative writing practices in primary education has, however, generated some discrepancies in the literature. Several studies have concluded that the combination of explicit strategy instruction and peer-assisted writing is the most effective intervention (Falardeau et al., 2024; Harris et al., 2006; Hoogeveen & van Gelderen, 2016; McKeown et al., 2019; Montanero & Madeira, 2019; Yarrow & Topping, 2001). In contrast, De Smedt and Van Keer (2018a) found greater benefits combining explicit instruction with individual practice, regardless of student gender and level of competence. In a later work, De Smedt et al. (2020) concluded that collaborative writing can be more effective than individual writing in EWI, as long as collaboration is a real object of training. In spite of this, Falardeau et al. (2024) recently found that there were no statistical differences between individual and collaborative writing practice systematically integrated into a 22-hour instructional writing programme where students were trained on how to explicitly provide feedback to their peers, noting that "these inconsistent results highlight the need for more research comparing groups with and without peer assistance (including feedback) at the end of primary school" (p. 25).

The apparent contradiction in the literature could be related to the degree of structuring of peer assistance and, in particular, to the roles spontaneously assumed by young writers. In order to confirm this, it would be necessary to analyse students' interaction when writing collaboratively in structured and unstructured conditions.

1.2 Structured vs. non-structured collaborative writing in primary education

Over the past few decades, large-scale writing assessments have revealed poor writing skills among upper primary students (De Smedt et al., 2020). It is therefore unrealistic to expect students to be able to write a text collaboratively without providing them with any explicit instructional support by the end of primary education (Salo et al., 2023). At this age, students often lack sufficient communication skills for co-assessment and negotiation of task responses (Svenlin & Sørhaug, 2022). They find it difficult to identify flaws in their peers' texts (Topping, 2005) and their comments are superficial, not very integrative, or too digressive (Rojas-Drummond et al., 2010). Hence, there is more of a risk when pairs are heterogeneous in writing skills, given that in these cases, they tend to exhibit less task-oriented talk (Basterrechea & Gallardo, 2023). These difficulties seem to be provoked by the lack of structured and supported peer collaboration, which may explain why EWI programmes with peer-assisted writing activities do not always outperform EWI combined with individual writing practice in primary education (De Smedt & Van Keer, 2018a). When authors write and provide feedback freely and spontaneously, their contributions may not be sufficiently symmetrical and dialogical. In contrast, students who receive support (via a collaborative script or conversation chart that holds information to guide turn-taking or how they may contribute to the writing of the text) engage in more *dialogic* peer conversations (Bouwer et al., 2024; Montanero et al., 2025).

The dialogic quality of the verbal interaction could be the key component for explaining the benefits of collaborative writing compared to traditional individual writing practices. This quality is reflected in *exploratory talk* (Barnes, 1976; Mercer, 1995), that is, communicative strategies that facilitate sharing of ideas and reflecting on others' points of view. In contrast to copying-imposition or juxtaposition (CIJ) transactions, which respectively reflect either *disputational* or purely *cumulative* talk, exploratory talk episodes are characterised by RNI transactions. They are interactions that facilitate the revision (R) of one's own mistakes (instead of correcting them directly) by negotiating (N) the best response to the tasks, as well as synergically integrating (I) the contributions of the members in higher-quality responses (Montanero & Tabares, 2020). In collaborative writing, exploratory talk is characterised by discussion and negotiation among group members, i.e. by a large number of open-ended questions, messages in which the co-authors of a text share information, argue alternatives and reach agreements (Bouwer et al., 2024; Herder et al., 2018, 2020; Rojas-Drummond et al., 2017, 2020).

Conversely, pairs with asymmetrical interactions, where one of the authors often imposes what to write or directly corrects their partner's mistakes, and with conversations that do not reflect agreement or are riddled with digressions, would have no advantage over individual

writing practices. What is particularly striking is that to date relatively little research has been carried out on strategies to enhance peer interaction in synchronous writing activities in upper primary grades i.e. roles and procedures for controlling the writing process, task distribution, and strategies that ensure a symmetrical and dialogical contribution (Salo et al., 2023).

Some writing programmes at primary school level have successfully integrated collaborative writing activities in relatively complex scripts, such as the flow chart of *peer-to-peer writing* by Topping et al. (2000), the *self-regulation strategy development* (SRSD) approach by Harris, Graham and Mason (2006), and the *Learning Together* project (Rojas-Drummond et al., 2010, 2017). These programmes incorporate multiple components (epistemic and social), making it difficult to determine to what extent coaching, support resources, task structuring or a combination of all these variables is responsible for better results compared to individual writing practices (Topping, 2010; van Zundert et al., 2010). It is therefore necessary to research the influence of specific, relatively simple *scripts* that structure effective collaboration in synchronous writing activities at this educational level (Svenlin & Sørhaug, 2022).

In this vein, Bouwer et al. (2024) found that a simple *conversation chart* fostered dialogic peer feedback and improved students' argumentative writing skills. The collaboration script consisted of four steps. First, everyone reads the text of the writer and writes down some constructive peer feedback. Second, the writer starts the conversation by asking readers whether they found the text compelling and why. Third, the readers try to deepen the conversation by asking questions and challenging the writer by sharing their own insights. In these conversations, the readers use *conversation cards* with prompts to give peer feedback to the writer. Fourth, the writer summarises all the feedback they want to use in revising the text to make it more compelling for the reader.

These conversation cards scaffold synchronous dialogic talk among writers. However, students tend to use peer comments after completing their drafts, during the peer editing phase. In contrast, other studies have focused on designing instructional cards with talk moves to promote reciprocal and integrated peer-assisted writing during the text planning and composition phases. In reciprocal coordination, all partners work together, composing and revising a shared document, watching and mutually adjusting their activities to take account of each other's contributions (Castelló et al., 2023). In this sense, De Smedt et al. (2020) trained primary education students by introducing three peer roles. The first role, 'the thinker', had to think of good ideas to write about; the second role, 'the strategy card reader', was required to read the strategy card and explain the different steps involved; and the third role, 'the reporter', was to take notes of the ideas, fill in the planning scheme, and write down the text. Although the dyads switched roles, the exchange took place in each lesson and not during synchronous writing.

Madeira (2015; Montanero & Madeira, 2019) explored a reciprocal collaboration script, known as *chain writing*. Basically, this consists of alternating participants' contributions so that each one is responsible for revising the sentence or paragraph their partner has just written before writing the next fragment. The script focuses not only on text production, but also on

revision processes intercalated during this phase. In this sense, chain writing, with alternating control, is synchronous, continuous and reciprocal in nature. The fair *division of labour* in reciprocal collaboration aims to force symmetrical contribution by the participants (Carr, 2023), while at the same time articulating an iterative drafting and revision process. In addition, this procedure can help to reduce problems arising from lack of discussion and consensus, which derived from asynchronous modes of peer feedback.

However, as far as we know, reciprocal collaboration has not been compared with a spontaneous mode during synchronous writing in primary education. As mentioned above, spontaneous or non-structured collaboration poses the risk of the more competent partner assuming the lead role and control of the task. On the contrary, it may be assumed that the reciprocal collaboration script would generate a more dialogic collaboration to the benefit of both. This study aimed to examine this hypothesis by contrasting each type of talk pattern and how peer interaction is elicited and handled in both collaborative writing contexts.

Finally, it is important to stress that much of the existing research on writing instruction has focused on comparing collaborative and individual writing practices using expository tasks (Rojas-Drummond et al., 2017, 2020), descriptive tasks (De Smedt et al., 2020; De Smedt & Van Keer, 2018a, 2018b), or argumentative and persuasive writing tasks (Bouwer et al., 2024; Falardeau et al., 2024). Despite this, studies examining the impact of these writing approaches in primary education using narrative writing tasks remain relatively scarce.

2. Research questions

As already mentioned, dialogic writing training and conversation charts that guide the students to interactively write and revise their texts have a positive effect on shaping meaningful dialogic peer conversations (Bouwer et al., 2024; Rojas-Drummond et al., 2020). Moreover, considerable research exists on how these peer-assisted writing practices have an effect on primary students' writing skills (Bouwer & van der Veen, 2024; De Smedt et al., 2020). However, none of these studies appear to have simultaneously compared two methods of coordinating collaborative synchronous writing: structured and unstructured (with writing practice performed individually). The design of our intervention may allow us to verify whether sufficiently structured and supported collaboration during synchronous writing practice produces better narrative writing skills than individual writing practice in primary education, which is the unresolved issue in the research literature, and therefore warrants attention in this work.

In order to confirm the possible influence of our instructional script for conducting dialogic talk about writing, this study aimes to compare the influence of different types of writing practice (individual, spontaneous collaborative and reciprocal collaborative writing) on performance in the upper grades of primary education. Spontaneous collaboration was defined as an unprescribed form of collaboration, implying that students were not provided with specific guidelines to coordinate their interaction while planning, composing, and revising together. On the contrary, reciprocal collaboration involved a script that structured

interaction by alternating the role of writing and revising each text segment with their partner. With this in mind, we intend to address the following research questions:

1. Does collaborative writing produce higher quality narrative texts than individual writing practice in primary education? (RQ1)
2. What kinds of differences can be identified in the conversational patterns among student dyads in the reciprocal and spontaneous collaborative writing conditions? (RQ2)

To this end, research is needed that not only sheds light on the relationship between the variables of EWI under study but also provides detailed explanations of how students engage in different collaborative writing practices (De Smedt & Van Keer, 2018a; Falardeau et al., 2024).

Based on our literature review, we hypothesize that structured collaboration (the reciprocal writing condition) will encourage more exploratory talk than spontaneous collaboration. Consequently, we expect students in the reciprocal writing condition to engage in more meaningful collaborative learning and produce higher-quality narrative texts than those in the non-structured (spontaneous) collaboration and individual writing conditions. However, we expect the spontaneous collaborative writing and individual writing conditions to be equally beneficial.

3. Method

The study was based on a mixed quantitative and qualitative research design, focusing on comparing individual and collaborative writing practices. Firstly, an experimental pre- and posttest design was implemented to compare the results of the individual and collaborative writing practices on the quality of the texts written by the students. Secondly, the verbal interactions generated in the two modes of collaboration —non-structured (spontaneous) and structured (reciprocal)— were observed and compared following a discourse analysis procedure. This second analysis focused only on the writing events during synchronous text production.

3.1 Context and participants

The participants were 93 sixth grade students (34 male and 59 female) enrolled in four classes of between 20 and 26 students at an urban primary school (11-12 years old), with a medium socio-economic background, in Extremadura (Spain). The school was selected from among the pool of educational institutions participating in a collaboration agreement with the University of Extremadura for the development of educational research and innovation experiences. All participants were native Spanish speakers.

To avoid cross-condition influence, the classes were randomly assigned to three experimental conditions. The two smaller classes were assigned to the explicit writing instruction with individual writing condition (EWI+IW). The third class was assigned to the explicit writing instruction with spontaneous collaborative writing condition (EWI+SCW), and

the remaining class to the explicit writing instruction with reciprocal collaborative writing condition (EWI+RCW) (Table 1). As a result, the individual writing condition included more participants than the other two writing conditions. Nevertheless, the equivalence of the groups was confirmed in the pretest. All students completed two narrative writing tasks as a pretest, and two others as a posttest. Not all students were present at each stage due to illness or other reasons.

Table 1. Sample distribution

Condition	Gender	N
Explicit writing instruction with individual writing (EWI+IW)	Male	14
	Female	27
Explicit writing instruction with spontaneous collaborative writing (EWI+SCW)	Male	11
	Female	15
Explicit writing instruction with reciprocal collaborative writing (EWI+RCW)	Male	9
	Female	17

The ethical and legal requirements established by the Bioethics Committee at the University of Extremadura and by the school were considered. These requirements were ratified by a collaboration agreement between institutions (06/ITP/106/23). All researchers who interacted with the participating children provided official certificates confirming the absence of any criminal record related to sexual offences. Parents, teachers, and school leaders were informed about the purpose and procedure of the study. They were asked to give their consent for the students to participate and for data to be collected in the classrooms. Families were clearly informed that declining consent would not affect their children negatively.

The privacy and confidentiality of the data collected were respected, as well as the responsibility for their safekeeping and use. Fictitious names were used to identify the participants in the verbal interaction transcripts. Throughout the process of accessing, storing, safeguarding, and using the data, full compliance with data protection legislation was ensured, specifically the Organic Law 3/2018 of December 5, on the protection of personal data and the guarantee of digital rights. Additionally, it was emphasised that any findings from the study may be published in scientific journals, with strict measures in place to ensure data confidentiality.

3.2 Procedure and instructional materials

The instruction took place during regular school lessons in separate classrooms for each experimental condition. The general procedure for instruction and practice was very similar to the one successfully employed in primary education by Harris et al. (2006) for narrative writing, and by De Smedt & Van Keer (2018b) with descriptive texts. As in these two studies, the procedure was based on two instructional phases: firstly, explicit writing instruction (EWI) of narrative writing knowledge and strategies; and secondly, practical exercises consisting of

planning, producing and editing texts performed individually or collaboratively according to the assigned condition.

The intervention took place in six 55-60 minutes sessions over approximately one month. The sessions were divided into two cycles of three sessions each: the first three hours focused on explanatory dialogue, modelling, and fable writing practice; and the other three, with the same sequence, but focusing on a mythological story writing.

Session 1. In the first activity of each cycle, basic knowledge and strategies for narrative writing were addressed. One of the researchers gave a brief explanation of the concept and rhetorical organisation of the type of story (fable or myth, respectively), identifying its parts with a model and explaining some basic writing strategies of planning, drafting and revising. In other words, how to effectively plan a narrative text following a structured planning scheme, write the story in accordance with that plan, and ensure that the content aligns with the plan while maintaining grammatical and conventional spelling accuracy (Graham et al., 2013).

The second part of the session focused on the choice of the theme of the story, as well as the creative generation and planning of the content. The activity was carried out individually or in pairs depending on the assigned condition. In order to facilitate the choice of subject matter, the students were offered several proverbs that reflected possible morals in the case of fables, and a brief list of values or counter-values (such as strength or beauty) in the case of the myth.

Session 2. In the second session, one researcher modelled the use of a *genre-specific planning script* for the rhetorical structure of a story (Table 2), very similar to that used in previous studies (Harris et al., 2006; Montanero et al., 2014).

Table 2. Planning scheme for a narrative text.

Organization		*Prompts*
Setting	Space	Where?
	Time	When?
	Characters and characterization	Who are the main characters? What do main characters look like?
Topic	Rising action	What happened at the beginning?
	Purpose	How did the main character feel? What motivates them?
Plot	Episode 1	What did the main character try to do first and what was the result?
	Episode 2 (and following)	What did the main character try to do next and what was the result?
Resolution	Final event	What happens at the end?
	Conclusion	How did the characters change? (What does the story teach us?)

Source: Adapted from Harris et al. (2006)

Afterwards, the students wrote down their ideas schematically within the planning scheme. In the case those in the reciprocal collaborative condition (RCW), after discussing each question they took turns writing the annotations shown in Table 2, while those in the spontaneous collaborative condition (SCW) were not given any indication in this respect.

The dyads in the RCW condition were given a collaboration script, supported by a collaboration chart placed in front of them on the table to remind them of the following steps (Figure 1):

- *Writing*. Student 1 wrote down an idea (that is, a sentence or a paragraph ending with a full stop or a new paragraph) in pencil.
- *Revision*. The non-writing student, that is, student 2, read the sentence or paragraph that had just been written, reflecting on its correctness and expressing agreement or rejection, bringing forward additional ideas, or signaling errors. This was conducted verbally by the non-writing student, accompanied by the reading aloud of the written text. After verbal acceptance of a proposal by student 1, student 2 rewrote the sentence or paragraph just completed.
- *Switching*. Students switched roles, and student 2 wrote the next paragraph. This cyclical and iterative sequence of writing and revising was repeated until the end of the story was reached.

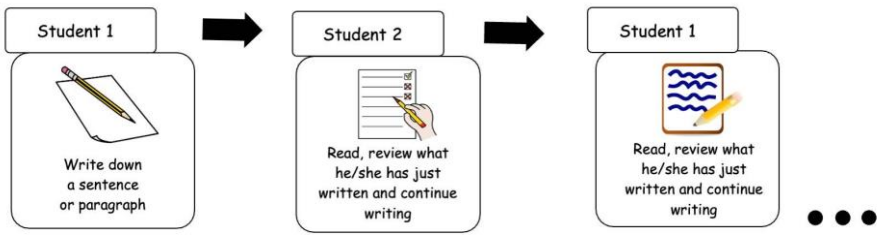

Figure 1. Reciprocal collaboration chart.

Subsequently, each individual or dyad, depending on the assigned condition, wrote their first draft of the story. Once again, students in RCW conditions were encouraged to follow the collaborative script shown in Figure 1. Those in the spontaneous mode (SCW) were not given the reciprocal collaboration chart.

After finishing writing each paragraph-series, students received the explicit instruction to carefully read the written paragraph, checking their text by revising the content and other surface-level aspects. These indications were identical for both the individual and spontaneous collaborative writing conditions, with the only difference being the fact that SCW students practiced reading and revising collaboratively, while IW students practiced individually.

In addition, they were asked to check (by underlining) that the text incorporated the linguistic devices (orthographic, grammatical, pragmatic, etc.) that the teacher wanted them to practise (e.g., writing at least one passive sentence, introducing a metaphor, etc.).

Session 3. The third session focused on editing the final text. Firstly, one of the researchers gave a brief example of the content and use of a *story quality checklist* analogous to the planning script. Rather than the open-ended questions in Table 2, the checklist included equivalent closed questions, such as: 'Does the fable describe animals with human characteristics?' and 'Does the fable convey a moral?'. In addition, there was a 'modifications' space in which students had the option of specifying the improvement they would make to the body of the text.

Finally, each individual or pair assessed their own draft and wrote specific improvements (in red) in the final text version. Again, the pairs in the reciprocal condition were encouraged to take turns checking each criterion listed in the narrative quality checklist, as well as editing the draft.

As mentioned above, these three sessions were repeated in two cycles, making six sessions in total. The first cycle focused on writing a fable, while the second focused on writing a myth. The students had the opportunity to receive brief assistance from the researchers during all activities to clarify tasks, but they did not receive feedback on the texts they wrote.

3.3 Fidelity of the script implementation

Students in the reciprocal collaborative writing conditions (RCW) received a script to promote feedback. To determine the extent to which participants adhered to the script, according to the researchers' original design, two researchers independently assessed the degree of script implementation through the transcriptions as well as the texts each dyad wrote during the revision phase. By analyzing the verbal interaction between students, along with variations in handwriting, it was possible to determine whether role alternation had indeed occurred during the writing process. We considered that participants exhibited a high level of implementation fidelity when switching the roles of writing and revising texts in more than 80% of the paragraphs. Moderate fidelity levels of implementation ranged between 50-80% of the paragraphs. Low-fidelity implementation level reached less than half of the transcripts.

According to these criteria, two researchers independently evaluated all the transcriptions and the texts written by the dyads in the reciprocal collaboration condition. The only disagreement was resolved after a brief discussion. RCW3 and RCW5 achieved a moderate level of fidelity in the reciprocal collaboration script implementation (despite having visual support), while the rest of the dyads reached a high level of fidelity.

3.4 Procedure and materials to assess the quality of texts

To address the first (RQ1) the quality of the students' writing in the pre- and post-tests was assessed. This assessment was based on triple triangulation of texts, instruments and evaluators.

In terms of the texts, according to the recommendations by De Smedt et al. (2020), multiple writing tests per genre were conducted. The students were asked to write texts about different topics before and after the intervention. In the pretest they were required to write a fable (about the negative consequences of envy or the value of friendship), and a myth (about greed or bravery). The students were given 30 minutes for each manuscript, with the topics counterbalanced in the posttest, so that no student wrote about the same theme in the pretest and the posttest.

In order to measure the analytic quality of the texts, two standardised story assessment instruments were triangulated: the Story Assessment Rubric (SAR) and the Assessment Test of Writing Processes (WRIPRO).

The SAR is a descriptive ordinal scale with a total of seven criteria: four referring to the dimension *Content and organisation* (Frame, Topic, Plot and Creativity), and three to *Linguistic aspects* (Sentences, Vocabulary and Spelling). A detailed description of the four levels of performance for each criterion can be found in Fernández et al. (2019). The following scores were associated with each level: 0 points (level 1), 0.5 points (level 2), 1 point (level 3) and 1.5 points (level 4). Each student received the score to a level only after their text met all the requirements set forth for that level. If a required feature was missing from a level, the score given was that of the level immediately below.

The WRIPRO (Cuetos et al., 2002) is an assessment battery of writing processes based on 10 assessment criteria grouped into two main dimensions: content and coherence and linguistic aspects. The 'content' dimension is made up of the following criteria: Where and When, Characters, Events and Consequences, Coherent Ending and Creativity, with 'Coherence and linguistic aspects' based on Logical Continuity, Sense of Unity, Figures of speech, Complex Sentences and Vocabulary. Students receive one point for achieving the requirement specified by each criterion. In accordance with the assessment battery manual, the instrument has a high internal consistency of .82 (Cronbach's alpha coefficient), in addition to good criterion validity and adequate factorial validity.

The instruments (SAR and WRIPRO) were applied by two of the researchers to 336 narrative texts (160 fables and 176 myths) produced by the students in two days in the pretest and in two days in the posttest. In addition, 76 argumentative texts (about the harms of videogames) were also *holistically* assessed (i.e. a global evaluation, from 0 to 10 points, without using a standardised instrument or a rubric) a week after the posttest. This final evaluation was global in nature, taking into account the content, organisation and linguistic aspects. It aimed to determine how effectively students were able to generalise their writing strategies across other text genres (De Smedt et al., 2020).

The assessment was *blind*, in the sense that the researchers assessed the texts separately and without knowing the moment or instructional condition in which the authors participated. The reliability index obtained according to Cohen's kappa coefficient was higher than .72 ($p<.01$) for all the WRIPRO and SAR criteria for narrative texts. The discrepancies were discussed and agreed upon.

From a statistical perspective, the raw data consisted of 336 narrative scores. The participants were divided into three experimental conditions (IW, SCW, and RCW). When comparing these conditions, all recorded measures were integrated into a single composite writing quality index (WrQ) by adding the WINPRO and SAR scores. Previously, the WINPRO and SAR values were obtained by averaging the scores for the fables and myths narratives. Participants who missed some assessment were excluded from this analysis. Therefore, the remaining participants provided writing quality scores on both the pretest and posttest (WrQpre, WrQpost). Next, to verify the initial homogeneity of the groups, the differences between the three conditions for WrQpre were analysed using a one-way ANOVA and Bonferroni's post hoc method. Then, the change in writing quality after the intervention was calculated by subtracting WrQpost-WrQpre, and the difference between the groups was analysed in the same way. A nonparametric ANOVA (Kruskal-Wallis) and a paired t-test were also applied.

3.5 Procedure for discourse analysis

To deepen our understanding of the collaborative writing process, we need to examine how students discuss their texts and how these peer interactions can be characterised (RQ2). Our research approach is strongly rooted in the *ethnography of communication*, as the study of naturally occurring talk in educational and social settings. Discourse analysis techniques are particularly useful for examining students' verbal interactions during synchronous writing.

To this end, we recorded and transcribed verbatim peer conversation during synchronous writing of the 25 narratives drafts (myths) in both spontaneous and reciprocal writing conditions (see activity 2.2 in Table 3). We used high-resolution recorders placed on the tables of each dyad. However, the audio recordings of five writing events were eventually excluded from the analysis due to poor sound quality. The transcription was based on the classical conventions proposed by Jefferson (1984) (see Appendix).

Speech events were qualitatively analysed using the discourse analysis method to collect data on the language patterns and speech styles within a collaborative writing activity, as a situated-social practice (Routarinne et al., 2023). Discourse analysis is appropriate for analysing co-regulation processes that take place throughout collaborative writing in terms of roles assumed by participants, knowledge sharing and discussing processes when students defend proposals, collective negotiation processes and discursive interaction patterns that occur when planning, writing and revising together (Castelló et al., 2010).

According to Hymes' classic model (1974), a speech event has eight components, which can be represented by the acronym SPEAKING: Setting and Scene (in this case a synchronous classroom writing activity); Participants (a pair of students); Ends (the writing of a story about an original myth); Act sequence (the content and form of the sequence of communicative exchanges during the writing of the text); Key (the communicative intention of the speaker); Instrumentalities (the channel used in communication, in this case mainly oral); Norms of interaction (the rules that, explicitly or implicitly, govern the communicative exchange); Genre (the narrative).

In the context of this study, all these communicative components can be considered invariant, with the exception of act sequence, key and norms of interaction. Each collaborative writing event can be analysed as a sequence of interrelated communicative exchanges ("act sequence"). These acts are primarily messages uttered (often more than one per turn) that convey a "key" dialogic purpose (Maine & Cermáková, 2021). The communicative intention of the participants can be inferred not only from the verbal content, but also from tone and gestures. More specifically, we analysed how sequences of these acts propel the discussion forward within collaborative writing, that is, how students negotiate each other's proposals during synchronous writing events. Some implicit rules organize the discussion, and specific roles can be assumed ("norms"). We consider these student roles to be enacted spontaneously and dynamically by students rather than being static or pre-assigned (Heinimäki et al., 2021). Based on the taxonomy proposed by Salo et al. (2023) in the context of learning-by-writing activities, we can define the following roles, which may occur in a synchronous writing setting. The *evaluator* supports or challenges content-related suggestions. The *proofreader* catches or seeks out linguistic mistakes, such as spelling, grammar, and punctuation errors. The *text producer* speaks out loud while writing or suggesting what to write. In some cases, this role may be performed in a directive way, with the writer acting as a *dictator* and the other writer acting as a *scribe*, translating what is dictated into the manuscript. The *material manager* thinks aloud about how to use the collaboration and planning scripts. The *attention focuser* draws pairs' attention to task-related matters. The *off-tasker* discusses issues that seem irrelevant to the writing task.

The qualitative discourse analysis therefore focused on these three components: communicative act sequence, dialogic purposes, and participatory roles. To this end, the analysis of the transcripts followed the procedure detailed below. Each of the 20 collaborative writing events was first segmented into communicative episodes. In this context, an episode was defined as a chunk of goal-oriented communicative acts, involving more than two conversational turns, during which the writers collaboratively discussed the development of an idea or a segment of the text, such as the story's frame, theme, plot, or resolution. Excerpts unrelated to the writing task (*off-task*) were also identified.

From a sociocultural approach, the communicative episodes were then classified into the following coding scheme: disputational talk, cumulative talk, or exploratory talk (Mercer, 1995), categories defined by different typical sequences of messages, as well as different communicative intentions and participatory roles. To identify them, it was sometimes necessary to analyse both the transcriptions of the communicative exchanges and texts written by the children during collaborative writing tasks.

1. An episode was categorised as disputational (an asymmetrical collaboration pattern) if one of the writers unilaterally assumed the roles of directive evaluator or text producer (*dictator*) in more than two turns. This meant that he/she corrected or decided what to write in a sentence or clause without offering any justification.

2. An episode was classified as cumulative (symmetrical-superficial collaboration pattern) when the majority of turns involved reflected a merely additive juxtaposition of the students'

contributions, without any argument or negotiation, i.e., without either of them justifying their response, or questioning or correcting their partner's proposal (even if expressly accepted).

3. An episode was categorised as exploratory (symmetrical collaboration pattern) when the writers involved a process of discussion and negotiation of some idea, reaching explicit agreement. The students performed one or more of the following communicative actions: (a) ask questions or invite opinions; (b) discuss a proposal; (c) make more precise or correct the contribution of their partner, with justification.

Each writing event talk was classified as predominantly disputational, cumulative, or exploratory if more than 50% of its episodes fell within a single category. Events were classified as mixed when no single category accounted for the majority of episodes.

Two researchers separately analysed all of the transcripts. Cohen's Kappa coefficient was calculated to estimate the inter-rater reliability (.76 $p<.001$). Discrepancies were resolved by consensus.

To summarise, Table 3 illustrates the whole procedure from pretest, through the intervention, up to posttest. Discourse analysis is located in Activity 2.2.

Table 3. Intervention and data collection procedure depending on the instructional condition.

Activities	Individual writing (IW)	Spontaneous collaborative writing (SCW)	Reciprocal collaborative writing (RCW)
Pretest (30 min in two days).	Students individually wrote a fable exploring either the negative consequences of envy or the value of friendship, and a myth centred on themes of greed or bravery.		
1.1. Introduction (45 min).	The researcher explained and exemplified the characteristics, typical structure and strategies for writing stories (fable/myth).		
1.2. Story selection (15 min).	Each student selected the theme and content.	Each dyad selected the theme and content.	Each dyad selected the theme and content.
2.1. Planning script (15 min).	The researcher modelled how to use a planning script. Each student then completed it.	The researcher modelled how to use a planning script. Each dyad then completed it spontaneously.	The researcher modelled how to use a planning script. Each dyad then completed it reciprocally.
2.2. Draft (45 min).	Each student wrote a draft of the story.	Each dyad jointly wrote a draft of the story spontaneously (verbatim peer conversations were recorded).	Each dyad jointly wrote a draft of the story reciprocally (verbatim peer conversations were recorded).
3.1. Revision (30 min).	The researcher modelled the use of a story quality checklist to assess the draft. Each student then completed it.	The researcher modelled the use of a story quality checklist to assess the draft. Each dyad then completed it in a spontaneous mode.	Each dyad wrote down the draft of the story together in a reciprocal mode.
3.2. Editing (30 min).	Each student edited the final version of the story.	Each dyad edited the final version of the story in a spontaneous mode.	Each dyad edited the final version of the story in a reciprocal mode.
Posttest (30 min in two days)	Students who wrote individually a fable about the negative consequences of envy in the pretest wrote a new one about the value of friendship (and vice versa). Students who wrote individually a myth about greed in the pretest wrote a new one about bravery (and vice versa).		

4. Results

4.1 Quality of the texts

The raw data consisted of 336 narrative scores. Eighteen students were excluded from the analysis because they did not complete some assessments, resulting in a final sample of N = 75 participants, who wrote 300 texts (31 subjects with the IW condition, 24 with the SCW condition, and 20 with the RCW condition). For these participants, a single writing quality index (WrQ) was calculated, as indicated above, so that each subject provided two scores (WrQpre and WrQpost), which are summarized in Table 4. The variation in WrQ was calculated as the difference between post and pretest.

Table 4. Pretest and posttest and change scores (mean and standard deviation) according to the writing quality index (WrQ) in each of the conditions: explicit writing instruction with individual writing (IW), with spontaneous collaborative writing (SCW), and with reciprocal collaborative writing (RCW).

Condition	N	WrQ pre		WrQ post		Differences post-pre	
		M	SD	M	SD	M	SD
IW	31	4.61	1.71	6.79	2.42	2.18	2.01
SCW	24	4.38	1.75	7.50	2.07	3.12	1.45
RCW	20	4.39	1.33	7.95	1.21	3.56	1.43

According to the one-way ANOVA, there were no significant differences between the three groups in the pretest level ($F(2,72)=.298$, $p=.743$, $\eta^2=.008$). As shown in Table 4, the WrQ exhibits a positive change across all conditions, indicating overall improvement. Moreover, it is significant with the IW condition ($t=6.017$, $p<.001$, $d=1.018$), with the SCW condition ($t=10.584$, $p<.001$, $d=2.160$) and with the RCW condition ($t=11.122$, $p< .001$, $d=2.487$). The effects observed are especially large for SCW and RCW, suggesting more favorable outcomes under these two conditions. To confirm this hypothesis, a one-way ANOVA was conducted again for the variable Differences post-pre in WrQ ($F(2,72)=4.839$, $p=.011$, $\eta^2=.118$). The Kruskal-Wallis test provides a similar result ($\chi^2(2)= 7.152$, $p=.028$). Finally, post hoc comparisons with Bonferroni correction indicated a significant difference in improvement between RCW and IW ($t=2.815$, $p =.019$, $d =.807$) in the direction shown in Table 4. No significant differences were found between SCW and IW, or between SCW and RCW.

4.2 Discourse analysis of collaborative writing events

The verbal interactions of the pairs during the mythological story draft (activity 2.2) were recorded and transcribed verbatim, that is, 10 writing events in the SCW condition (1,243 turns in 8 h 21 min) and 10 in the RCW condition (1,062 turns, in 8 h 10 min). The writing events (one performed by each pair) varied from 42 minutes to 49 minutes, with an average of 45:20 minutes for SCW and 46:15 for RCW.

As Table 5 shows, we identified 121 communicative episodes (62 for SWC and 59 for RCW). There were almost the same number of off-task interventions in both conditions (with 183

and 182 turns respectively). Overall, in the SCW condition we found 35.5% of disputational talk episodes, 33.9% of cumulative episodes, and 30.6% of exploratory episodes. In the RCW condition we classified 10.2% of the episodes as disputational talk, 47.5% as cumulative talk, and 42.4% as exploratory talk. The difference between the two conditions in the proportions of disputational episodes was statistically significant ($\chi^2 = 10.9$, $p = .004$).

Table 5. Categorization of collaborative writing episodes and events (E: exploratory; C: cumulative; D: disputational).

Pairs	*Duration*	*E-episodes*	*C-episodes*	*D-episodes*	*Events*
SCW1	43:45	5 (55.6%)	1 (11.1%)	3 (33.3%)	E
SCW2	46:08	1 (20%)	2 (40%)	2 (40%)	Mixed CD
SCW3	46:56	1 (14.3%)	2 (28.6%)	4 (57.1%)	D
SCW4	46:44	1 (20%)	2 (40%)	2 (40%)	Mixed CD
SCW5	42:56	0	3 (60%)	2 (40%)	C
SCW6	46:50	1 (20%)	1 (20%)	3 (60%)	D
SCW7	43:49	2 (40%)	2 (40%)	1 (20%)	Mixed (EC)
SCW8	43:00	4 (50%)	3 (37.5%)	1 (12.5%)	E
SCW9	42:55	2 (22.2%)	3 (33.3%)	4 (44.4%)	Mixed (CD)
SCW10	47:11	2 (50%)	2 (50%)	0	Mixed (EC)
Total	8h 21m	19 (30.6%)	21(33.9%)	22 (35.5%)	62 (100%)
RCW1	46:06	4 (80%)	1 (20%)	0	E
RCW2	44:46	3 (60%)	2 (40%)	0	E
RCW3	49:28	4 (66.7%)	1 (16.7%)	1 (16.7%)	E
RCW4	49:59	1 (11.1%)	8 (88.9%)	0	C
RCW5	45:27	2 (40%)	3 (60%)	0	C
RCW6	45:20	5 (83.3%)	0	1 (16.7%)	E
RCW7	48:50	0	4 (66.7%)	2 (33.3%)	C
RCW8	44:42	3 (42.9%)	4 (57.1%)	0	C
RCW9	43:11	1 (16.7%)	5 (83.3%)	0	C
RCW10	45:20	2 (50%)	0	2 (50%)	Mixed (ED)
Total	8h 10m	25 (42.4%)	28 (47.5%)	6 (10.2%)	59 (100%)

Writing events analysis in the context of spontaneous collaborative writing

In the SCW condition, non-dialogical talk was present in 69.4% of episodes (Table 6). Only 19 out of 62 writing episodes were found in which the text was written with an exploratory talk and no one participant dominated the interaction. In these episodes both students exhibited turn-taking patterns proposing information consisting of translating and revising ideas into the written text.

Excerpt 1, taken from writing events 1, shows two students (Daniela and Teresa) who are working on their text. This is an exploratory episode in which they contributed equally to the writing process. Constructions using verbal tenses in present (not imperative sentences) and the first-personal plural pronoun accompanied by 'have to' such as 'But we have to write that' (turn 26), suggest a certain degree of mutual engagement between writers. Some proposals are accepted without generating too much discussion or rephrasing the proposed content in order to move on with the writing episode, while other proposals are clarified and extended although these ideas do not generate any further discussion. Some disagreement or rejection is displayed by responding in a superficial way such 'it looks strange' (turn 43). Moreover, students were predominantly focused on the creativity of the writing. It is also noted that metatextual revisions related to clarity (turn 26) or coherence (turn 28) were addressed without much consideration in this writing episode. In addition, there are quite a few digressions or off-task discussions (turns 34 to 40).

25. Teresa	[Pues ahora, (("ella poseía el poder de manipular el agua")). (.) **[Now you might write that ((she owned the power to control water)). (.)**
26. Daniela	- Pero tenemos que poner que ese poder venía de una piedra; si no, no se entiende. **- But we would need to write that her power came from a stone. Otherwise, it doesn't make sense.**
27. Teresa	>↑SÍ.< - (("Ella poseía un poder mágico de una piedra: manipular el agua")). **>↑ INDEED.< – ((She owned a magical power coming from a stone: water Controlling')).**
28. Daniela	Pongo: (("Ella poseía un poder mágico de una piedra. El poder de la piedra era manipular el agua")). Pero (.) también pusimos que la piedra tenía otro poder ¿no? (?) **Should I write: ((She owned a magical power from a stone. A stone whose magical power was water controlling')). But (.)we also wrote that the stone owned another magical power, didn't we? (?)**
29. Teresa	- Sí, creo que el del fuego. **- Yes, the power of fire, I believe.**
30. Daniela	Pues… (.) a ver… (.) Ponemos: "Ella poseía un poder mágico de una piedra. El poder de la piedra era manipular el agua. Pero…" (.) **So… (.) let's see… (.) We might write: 'She owned a magical power from a stone. The power of the stone was to control water, but...' (.)**
31. Teresa	- "Si otra persona tenía la piedra…" **- "If another person owned the [same] stone..."**
32. Daniela	>↑¡Espera!< (("Ella tenía ese poder y lo utilizaba para hacer el bien")). **>↑Wait!< ((She owned that power and used it to do good deeds')).**
33. Teresa	- Sin embargo… **- Still and all...**
34-40. […]	£ ((digression)) (62). £
41. Daniela	>↑¡Genial!< Pues pongo: (("Sin embargo, si otra persona cogía la piedra, esta le concedía…")) (.) **>↑Great!< Then I write: ((Still and all, if someone else took the stone, they would be granted...')) (.)**
42. Teresa	- Un poder diferente que se utilizaba para el mar **- A different power to be used by the sea**
43. Daniela	- Eh… (.) Queda raro… (.) (("Le concedía otro poder diferente")). Y ya está. (.) **- Uh? (.) It sounds odd... (.) ((It would grant them a different power')). And that's it'. (.)**
44. Teresa	-Vale, mejor. **- Sure things, it sounds better.**

Excerpt 1 (SCW1, Episode 3)

Nevertheless, in the majority of writing episodes, participants' contributions were shared in an uncritical manner, without providing or requesting information or justifying the correctness of a previous turn. The interaction often took the form of asymmetrical conversations

imposing actions on their co-participant during each step of the writing process. A pattern of *dictator-scribe* is displayed in 22 episodes (35.5%). In this typical *act sequence* one student acted as a dictator (easily identifiable as the dictating student and skillful student) and the other acted as a scribe (identified as the student who takes the pen and writes down as instructed by the non-writing student). These are generally more heterogeneous pairs than the previous ones in terms of their level of writing performance.

An illustration of the pattern of dictator-scribe can be found in excerpt 2. Two girls (Marta and Paula) are working on their draft. Paula takes control of the interaction and Marta writes down what is dictated by Paula. Paula uses imperative sentences (turn 46), raises the pitch of the voice (turn 50 and 52). When Paula fails to specify something in the dictation (concerning punctuation marks, for instance), Marta asks her directly (turns 45, 47, 53 and 55), reinforcing her partner's authority. In total, in six of her seven turns, Paula dictates what Marta must transcribe verbatim (as confirmed by analysis of the written text). On rare occasions, Paula offers a justification for her dictation (e.g., turn 52), but it seems to be merely a verbalised thought rather than an attempt to persuade her partner or seek her input. Such monologues are a recurring feature in this and other instances of spontaneous collaborative writing.

44. Paula	[- "Los mortales eran más fuertes que él. Por eso él decidió buscar a Enjoy". (DICTADO) **[(DICTATION): - 'Mortals were stronger than him. That's why he decided to look for Enjoy'.**
45. Marta	¿Pongo coma? (?) **Should I write a comma? (?)**
46. Paula	- Pon punto y seguido. **- Add a semicolon [followed by another sentence]**
47. Marta	¿Cómo se escribe? (?) **How's it 'Enjoy' written? (?)**
48. Paula	(("E-n-j-o-y" con "j". "Una bestia con cuerpo de anguila (DICTADO))) **(('E-n-j-o-y', the third one's a 'j'. A beast with an eel-like body (DICTATION)))**
49. Marta	- "Una bestia…" (0.3) **- A..., a beast... (0.3)**
50. Paula	>↑"Y con cuatro cabezas. Él era capaz de conceder deseos" (DICTADO)< **>↑'And four heads. It was [even] able to grant wishes...' (DICTATION)<**
51. Marta	Con-ce-der (.) de-seos (.) **T..., to grant... (.), grant wishes... (.)**
52. Paula	- "Pero a un gran precio". (DICTADO) [((Porque así esto queda más dramático. "Tinks fue en busca de…" (0.4) (DICTADO))) **'But at a high price' (DICTATION). [((This way sounds more dramatic. 'Tinks went in search of...' (0.4) (DICTATION CONTINUES)))**
53. Marta	>↑No, espera< ↓¿Dónde está Enjoy? (?) **>↑Wait!< ↓Where's Enjoy? (?)**
54. Paula	- En una cueva del arrecife de coral. **- He's in a cave next to the coral reef.**
55. Marta	Vale, ¿y qué pongo? (?) **Ok. What do I write? (?)**
56. Paula	- (("Tinks fue en busca de Enjoy, este se encontraba en una cueva en un arrecife de coral" (DICTADO))). **- ((3Tinks went in search of Enjoy, who was in a cave by the coral reef' (DICTATION))).**

Excerpt 2 (SCW6, Episode 2)

In other writing episodes, the scribe's proposals are not taken into account or even discussed. An example of this implicit *norm of interaction* is provided in the following excerpt 3. The girl

who acts as *dictator* (Alba) does not consider the only proposal suggested by Laura (turn 41), who takes on a role as *scribe*, although she justifies correcting a previous turn (turn 42).

38. Alba	- "En un sitio muy peligroso". (DICTADO) **- 'In a very dangerous place'. (DICTATION)**
39. Laura	- "Muy pe-li-gro-so". **- 'Ve-ry dan-ge-rous'. (writing it down in a dictating manner)**
40. Alba	- "Y el que lo encontrase…" (DICTADO) (0.3) **- 'And whoever found it...' (DICTATION) (0.3)**
41. Laura	- Se casaría… (?) (.) **- Would she get married? (?) (.)**
42. Alba	- No, "sería el marido de su hermosa hija". (DICTADO) Por ponerlo más elegante. **- No, 'he would be the husband of her beautiful daughter' (DICTATION). It sounds more fancy.**

Excerpt 3 (SCW2, Episode 4)

Some deleted sentences with little or no discussion were also found in this writing event. In other words, one of the writers exercised the authority not only to dictate (the directive "text producer" role), but also to remove ideas from the draft ("proofreader" and directive "evaluator" roles).

Finally, in some episodes, students exhibited acts associated with different roles. For instance, some students tended to initiate off-task conversations (*off-taskers*), while others interrupted the digression and drew attention to a task-related issue (*attention focusers*). Occasionally, some students focused the conversation on *managing materials,* such as the planning script.

Writing events analysis in the context of reciprocal collaborative writing

In the RCW condition, non-dialogical talk was found in 57.7% of episodes (Table 6). However, only six episodes (10.2%) were classified as disputational. In contrast, in five of the writing events we identified a dialogical conversational manifestation of exploratory talk (RCW1, 2, 3, 6, and 10). The rest of the writing events can be characterised as symmetrical-superficial collaboration, with a cumulative talk (RCW4, 5, 7, 8 and 9).

Excerpt 4 illustrates a dialogical and exploratory *act sequence*. The pair is quite heterogeneous in terms of their writing skills. However, Daniel and Carolina are writing and talking simultaneously in a balanced way without overlapping speech during the textualising and revising phases. Revision of the written draft focused on coherence errors (turns 36, 37 and 41), although there are also comments on grammatical (turn 32) and orthographic (turn 38) issues. The discussion contains several explicit invitations to share new content by formulating open-ended questions (turns 36, 39 and 41). In contrast to previous excerpts, this example shows how students use the first-person pronoun 'we' (turns 35, 36 and 39). The hesitantly proposed comments by Carolina (the highest writing skills student in the dyad) suggest a thinking-aloud activity (turns 32 and 36), rather than an imposition on her co-writer. Another notable difference compared to the spontaneous collaborative writing condition is

the higher frequency of instances in which one student revises their partner's contributions. She displays non-directive corrections (turns 36 and 38), justification (turn 36) and agreement (turns 37 and 39). In contrast to the excerpt discussed earlier (SCW6, turn 52), the justification here is presented in a more dialogical approach: she uses a *mitigation device* ("I think that…") and she is seeking confirmation ("What do you think?").

32. Carolina	- Pues estaba pensando en poner lo de la voz pasiva en… (0.3) por ejemplo, "la barca del padre fue volcada…" (0.3) **- Well, I was thinking of writing it in passive voice tense... (0.3) For example, 'the father's boat was overturned...'. (0.3)**
33. Daniel	- Vale, me parece genial. **- OK, that's great.**
34. Carolina	O también: (.) "había sido volcada". **Or also: (.) 'it had been overturned'.**
35. Daniel	Vale, pues a ver, esto sigue así: "Cuando Mina despertó aquel día…" (0.5) **OK, let's see, it's my turn. We might go on like this: 'When Mina woke up that day...'. (0.5)**
36. Carolina	Pero… (.) A ver… (.) lo de "aquel día" no me convence. Tenemos que poner qué día despertó ¿no? (?) ((Porque aquí pusimos que despertó aquel día, pero yo creo que tenemos que especificar qué día fue)). **But... (.) Let's see... (.) I'm not convinced about 'that day'. Let's write what day she woke up, what do you think? (?) ((Because here we wrote that she woke up that day, but I think we might specify what day it was)).**
37. Daniel	Vale, sí, a ver qué te parece: - (("Cuando Mina despertó un día, su padre había desaparecido de su trono de coral, y solo quedaba de él su corona de algas. Mina se sintió muy mal ya que era la única familia que le quedaba. ¡Debo encontrarlo! Dijo Mina")). **OK, yes. Let's see if you like this other alternative: - (('One day, when Mina woke up, her father had disappeared from his coral throne, and all that was left of him was his crown of seaweed. Mina felt terrible because he was the only family she had left. I must find him! Said Mina')).**
38. Carolina	↑¡Cuidado con las faltas de ortografía¡ **↑Watch out for spelling mistakes!**
39. Daniel	Sí, jolín. La cosa es que luego en los exámenes no cometo ninguna. £ (Digresión) £ Bueno… ¿Qué más podemos poner en esta parte? (?) **Yeah, jeez, that's right. £ (digression) £ Well, what else can we put in this part? (?)**
40. Carolina	Eh… por ejemplo… (("Debo encontrarlo, tengo que utilizar mis poderes")). **OK, it's my turn... For example: (('I must find him, I have to use my powers')).**
41. Daniel.	¿Y cuáles son sus poderes? (?) **And what are her powers? (?)**

Excerpt 4 (RCW1, Episode 4)

However, in many episodes (47.5%), the conversation chart seems to trigger a cumulative talk. An example of this pattern can be seen in excerpt 5. This fragment displays two participants (Patricia and Pilar) who jointly and alternately verbalise ideas without dictating, which may enhance creativity in the storyline construction. However, these suggestions are hardly justified without any further counterproposal or reformulation. Occasionally one of the participants invites expansion or clarification of her proposals by formulating open questions (turns 40 and 48), but few revisions are suggested and are mostly superficial.

37. Patricia	[Me toca escribir el siguiente párrafo. El tema… (.) Uf… (.) Esto sí que… (.) **[It's my turn to write the next paragraph. The subject... (.) Phew! (.) That's really... (.)**
38. Pilar	"Al principio Elisa…" (.) ↑>¡Pero si esto ya lo hemos puesto!< **'In the beginning Elisa...' ↑ >But we've already written this!<**
39. Patricia	↑¡Es verdad! Ehhh… (.) Elisa, un día que estaba con sus tres hermanos… (.) Un día Elisa, que estaba cuidando a sus hermanos… (.) Porque sus hermanos eran más pequeños. **↑That's true! Ehhh... (.) 'Elisa, one day she was with her three brothers'... (.) 'One day Elisa, who was taking care of her brothers'... (.) Because her brothers were younger.**
40. Pilar	¿Estaba cuidando a sus hermanos, su padre? (?) **Did her father look after her siblings? (?)**
41. Patricia	↑¡No! El padre de Elisa, el rey… (15) ((El rey, el padre Elisa, fue a dar un paseo y dejó a Elisa al mando. Era muy tarde y el rey no había regresado, así que pensaron que el rey había desaparecido)). **↑No! Elisa's father, the king... (15) ((The king, Elisa's father, went for a stroll and he left Elisa in charge. It was very late, and the king had not returned, so they thought the king had disappeared)).**
42. Pilar	((Elisa y su hermano supusieron que había desaparecido… ¿Nos queda tiempo? (?))) Nos queda la mitad. **((Elisa and her brother supposed that he had disappeared... Do we have time left? (?))) We have about half of it left.**
43. Patricia	[Yo es que no pego tanto la línea, pero hago la letra más pequeña. £ (DIGRESIÓN) £ **[I don't stick with the line so much, so I can write in smaller letters (the sentence doesn't fit on one line).** £ (DIGRESSION) £
44. Pilar	-Había desaparecido. **-He had disappeared.**
45. Patricia	-Así que… (.) **- 'So...' (.)**
46. Pilar	[- Así que puso en la herencia… (.) **[- 'So he left written in his will...' (.)**
47. Patricia	-No. Así que supusieron que había desaparecido, y al día siguiente miraron su testamento y ponía que la herencia pertenecía al hijo más fuerte, y eso se descubría en unas pruebas, así que Elisa estaba muy emocionada porque pensaba que ella era la más fuerte de los tres, pero sus hermanos se burlaron de ella y entonces se pusieron a entrenar, entrenar, entrenar hasta que consiguió ser superfuerte, y el día de la competición ganó Elisa y sus hermanos se quedaron… (10) **- No. So they assumed that he had disappeared. The next day they checked his will, where it was said that his inheritance would pass on to the strongest son. Elisa was very excited because she thought she was the strongest. Her brothers made fun of her. Elisa trained tirelessly until she succeeded in becoming super-strong. She won the competition and her siblings... (10) (She doesn't complete the sentence)**
48. Pilar	¿Y ganó Elisa? (?) **Did Elisa win? (?)**
49. Patricia	↑Sí, ganó Elisa. **↑Yes, she did.**
50. Pilar	>↑¡Qué va! < No ganó Elisa. Pues… (.) y demostró a sus hermanos que no era la más fuerte, que su padre le dio la herencia a ella porque... (0.3) **>↑No way!< Elisa didn't win. (.) She wasn't the strongest. Her father passed on his inheritance to her because... (0.3)**
51. Patricia	Es que… (.) Vamos a ver… (.) Les demostró a sus hermanos que era la más fuerte… (.) O mira, mejor: que no hicieron las pruebas, pero apareció su padre directamente… (.) O bueno, otra opción: no hicieron las pruebas porque, justo en el momento que iban hacerlas, apareció su padre ¿Cuál escribo? (?) **Let's see... (.) She demonstrated to be the strongest... (.) Or rather: they didn't take the tests, but her father... (.) Or well, another option: they didn't take the tests because, just when they were going to take the test, her father suddenly appeared... Which one should I write? (?)**

Excerpt 5 (RCW3, Episode 4)

In other episodes we observed several acts related to different participatory roles, such as the evaluator, proofreader, text producer, material manager, attention focuser, and off-tasker. However, unlike in the SCW condition, nearly all students performed these roles, especially the roles of text producer and evaluator.

5. Discussion

There is a substantial body of evidence to suggest that explicit writing instruction (EWI) is an effective method for improving students' writing. However, comparing the results of individual and collaborative writing practice in primary education has led to some discrepancies in the literature. The collaboration quality during synchronous writing practice could explain this discrepancy. The findings of the current study are consistent with previous research showing that only a structured and supported collaboration offers an advantage over individual practice. Moreover, literature on the teaching of writing has tended to focus on improving the quality of the texts produced by students, often without also considering the dialogue that takes place between writers. As a result, research on collaborative writing is incomplete (Thompson & Wittek, 2016). Our findings contribute to a better understanding of the characteristics of this type of practice in primary education, as well as some of the obstacles and challenges that need to be addressed for its effective implementation.

5.1 Does collaborative writing produce higher quality narrative texts than individual writing practice in primary education?

As for the first research question (RQ1), the comparison between the results of different writing practices may shed some light on the apparently contradictory findings of previous studies. Several meta-analyses have already shown there is sufficient evidence of the benefits of explicit instruction in rhetorical knowledge and self-regulation strategies and peer assistance for writing in primary education when compared to individual writing. Some studies have gone further, arguing that a combination of both methods, explicit writing instruction (EWI) and peer-assisted writing, is also the most effective intervention. However, the study by De Smedt & Van Keer (2018) challenged this conclusion, finding greater benefits for the combination of EWI and individual practice. This discrepancy could be explained by the low degree of structure in the collaborative writing practices that took place.

The results of the present study are consistent with this latter hypothesis. On the one hand, as in the aforementioned studies, we found an improvement in the writing performance of all groups, both collaborative and individual writing, after a brief intervention involving explicit instruction of knowledge and strategies for writing stories. On the other hand, the difference in the improvements achieved by the RCW and IW conditions was statistically significant, with a large effect size ($d > .8$). This suggests that students learned to write a better narrative text through structured collaboration than through individual practice.

In line with other studies (e.g., De Smedt et al. 2020), collaborative writing practices only generated greater benefits than individual writing in the reciprocal collaborative writing condition (RCW), i.e. when structured through turn-taking scripts. However, contrary to our hypothesis, the advantage of this condition (RCW) over the spontaneous collaborative writing (SCW) mode was relatively modest. A recent study showed significant differences in favour of students who co-evaluated argumentative texts by following a conversation script to scaffold their talk compared to students who did not receive any additional support to make their conversations more dialogic (Bouwer & van der Veen, 2024). This pattern was not clearly

replicated in our research. The greater complexity of writing argumentative texts for year 6 primary education students compared to narrative texts (Falardeau et al., 2024) might have played a crucial role for this outcome in this study. This result leads us to think that the greater complexity of argumentative texts may exert a positive and significant effect on writing performance when a conversation script is used. In other words, the bigger the gap between writing skills and demanding writing tasks, the greater the need may then be to support peer collaboration in writing. Another possible explanation for these findings may be related to the type of collaboration script provided in both studies. Our reciprocal collaborative writing condition used a simple three-step conversation script (Figure 1). In contrast, Bouwer and van der Veen provided a more complex support containing not only a collaborative script (consisting of four steps), but also an epistemic script (containing several guide questions).

5.2 What differences can be identified in the conversational patterns among student dyads in the reciprocal and spontaneous collaborative writing conditions?

Regarding RQ2, the most relevant difference between SCW and RCW pairs is the proportion of disputational talk (35.5% of the episodes vs. 10.2%). This is related to a particular type of very directive "text producer" and "evaluator" roles (Salo et al., 2023), which have been called dictator (Montanero et al., 2025). The dictator-scribe interaction pattern is much less frequent in RCW, probably due to the fact that the roles were systematically alternated even when the pair was quite heterogeneous, that is, when their initial writing skills were very different. Only two of the pairs showed a predominance of exploratory talk in SCW events, whereas four out of ten pairs did so in the RCW condition. Discussion was mostly resolved through argumentation and agreement, rather than imposition. In 42.4% of the episodes, this kind of negotiation during writing production was observed, which helped students to become aware of their mistakes, review their misconceptions, and constructively integrate new meanings (Hennessy et al., 2016).

However, 47.5% of the episodes (particularly prevalent in half of the RCW pairs) showed a high percentage of symmetrical-superficial interaction patterns (*cumulative talk*), where students did not engage in meaningful discussion. This seems to be one of the main risks of RCW and may also explain why the benefits of reciprocal collaboration were not as great as expected.

6. Educational implications

In conclusion, our findings converge with recent studies that have shown the effectiveness of combining explicit writing instruction (EWI) with collaborative practices among young students across text genres, languages, and educational systems. However, collaboration needs to be carefully structured and supported, as spontaneous collaboration without this support is unlikely to provide an advantage over individual practice in primary education. Moreover, providing a reciprocal collaboration script does not seem to be a sufficient support for many students at this level of education to foster authentic dialogical interaction in

synchronous writing activities. These findings have relevant implications for writing practice in primary classrooms.

On the one hand, the results point to the utility of explicit teaching of writing skills and strategies, supported by resources that facilitate self-regulation (such as scripts or conversational charts). This instructional approach generates effective learning with relatively modest time investment.

Most of the research on collaborative writing practices described in the literature are essentially asynchronous. The results of this study support the importance of students providing feedback synchronously, not necessarily at the end of a text, but also during the entire writing process of the first draft. Although writing is essentially an individual and reflective act, a good writer always has the potential audience in mind. By giving these readers an active role in the revision process, they can provide their perspectives, including the difficulties they find in understanding the text. In this way, writers learn how to correct their grammatical and spelling mistakes, but also how to improve the clarity and coherence of their texts.

Teachers need to provide young students with a *collaboration script* that structures interaction during each phase of collaborative writing. One example of such a script, which we have called *reciprocal chain writing*, requires students to link their contributions by ensuring that each participant reviews the sentence or paragraph just written by their peer before writing the next part. This reciprocal approach not only facilitates symmetrical participation but also fosters an iterative process of writing and revision.

On the other hand, the fact that we found no differences between individual and spontaneous collaborative writing is in line with previous studies concluding that collaborative practices are not necessarily beneficial unless the collaboration is sufficiently supported and structured (Bouwer et al., 2024; De Smedt & Van Keer, 2018; Montanero & Madeira, 2019). Notwithstanding this, it is very important to consider the degree of heterogeneity of synchronous writing groups. The discourse analysis in this study has highlighted the importance of grouping students into dyads according to their writing proficiency level. An excessive difference between writing performance may lead to asymmetrical interactions, limiting availability of learning opportunities for less proficient students.

Finally, discourse analysis of synchronous text production has highlighted the difficulty of generating dialogic interactions between novice writers, even when the collaboration is relatively scripted (Ferguson-Patrick, 2007). Over half of the reciprocal collaborative writing events exhibited a high percentage of asymmetric and superficial interaction patterns, where students did not engage in a productive discussion along the writing task. Together with a lack of individual reflection, superficial interaction is probably the main risk of reciprocal collaborative writing. This is in line with previous studies, which showed that students at this age need, in addition to a collaboration script, more extensive and systematic training in strategies for providing oral feedback during dyadic interaction (Bui & Kong, 2019; De Smedt et al., 2020). Therefore, it seems necessary not only to provide structure and support with resources, but also to specifically train these types of interactions in order to achieve true

'dialogic literacy' in the classroom (Rojas-Drummond, et al., 2017). Our results suggest the importance of training students, especially in text systematic revision and in justifying the corrections they suggest to their peers.

7. Limitations and future studies

The findings in this study are subject to at least the following limitations.

First, the sample size was relatively small and the students were also quite homogeneous. Many primary school classrooms have students with diverse linguistic and cultural backgrounds, which might require further consideration, such as whether and how these practices should be adapted.

In addition, when comparing the results of the spontaneous (SCW) and reciprocal collaborative writing (RCW) conditions, we found better outcomes among students with low initial writing proficiency. If we filter out students who showed a lower initial proficiency in story writing (that is, students with a score below 5 in the pretest), it can be seen that their total WRIPRO score in the RCW group was 7.4% higher than their counterparts with low initial proficiency in the SCW mode. This difference, based on limited data, was not significant, but it is possible that the structuring of the collaboration was only beneficial for the less proficient students. While the behaviour of high-proficiency students was hardly affected by the collaborative mode, low-proficiency students could have more opportunities to participate effectively in the text construction processes in the RCW condition. This new hypothesis, which requires verification in futures studies, is supported by the discourse analysis of the collaborative writing events and may explain the small advantage gained in the reciprocal collaborative writing condition.

Second, two limitations can be highlighted regarding the duration and fidelity of instruction. McKeown et al. (2019) noted that differences in writing quality are difficult to observe over short periods, particularly if the intervention does not achieve high levels of fidelity. These circumstances could have influenced to the small differences observed between the experimental conditions in this study.

On the one hand, the explicit writing instruction (EWI) lasted only six hours and was led by researchers. According to Palermo and Thomson (2018), EWI can generate positive effects after eight 45-minute lessons (that is, six hours).

On the other hand, the reciprocal collaboration writing condition (RCW) students showed a certain tendency to skip the script designed by researchers to guide students in writing paragraphs alternatively (i.e. to collaborate in a semi-spontaneous way). The writing modality may make it difficult for students to follow the script. Although shifts between students during synchronous text production could be easier, typical limitations of handwritten text, such as the lack of an "undo" function and the cumbersome erasing and rewriting, can disrupt collaborative flow and hinder students' ability to efficiently make real-time revisions. Thus, handwritten text may be less “user-friendly” than computer editing tools with features like track changes, options, and comment functions (Mayo et al., 2022). Another possible reason has to do with the fact that students in the RCW condition did not receive targeted training

on how to implement the script effectively. Future research should focus on providing all students with the necessary strategies to engage equally, especially in challenging situations. These strategies should also address socio-emotional aspects. For instance, students could learn to overcome initial writing difficulties, persevere despite struggles, and view mistakes as learning opportunities.

Third, the discourse analysis focused only on the synchronous production phase of the text. Verbal exchanges during the pre-writing phase, which focused on planning (supported by a script), and the post-writing phase, which focused on editing and improving the final version, were not analysed. Isolating the effect of collaboration in each of the writing phases would be convenient in future studies.

Fourth, this study focuses on process and outcome measures but does not address other relevant variables such as self-efficacy and motivation.

In summary, it would be necessary for future studies to replicate this type of intervention with a larger and more diverse sample, a greater number of sessions, and more extensive training, while also incorporating socio-emotional aspects, as well as self-efficacy and motivation measures. The training should prioritise reinforcing turn-taking dynamics between writer and reviewer during synchronous writing tasks, involving computer tools, and ensuring that feedback is not only well justified but also embedded within authentic, dialogic interactions. To confirm the effectiveness of these collaborative writing strategies in classroom practice, future research should also involve real teachers, rather than researchers, in developing and supervising the instruction.

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APPENDIX. Transcript notation, based on Jefferson (1984).

[word	Overlapping speech; point at which an ongoing utterance is joined by
[word	another utterance
Word=Word	Break subsequent continuation of contiguous utterances
(0.3)	Pause (in seconds)
(.)	Micro pause (les tan 0.2 seconds)
.	Stopping fall in tone (not necessarily at the end of a sentence)
,	Continuing intonation (not necessarily between clauses of sentences)
?	Rising inflection (not necessarily a question)
!	Animated tone (not necessarily an exclamation)
-	Flat intonation
↓	Marked falling shift in intonation
↑	Marked rising shift in intonation
£word£	Smiley voice or suppressed laughter
˚word˚	Talk that is quieter than surrounding talk
WORD	Talk that is louder than surrounding talk
word	Emphasis
:	Extension of the sound that follows (0,2 seconds for every colon)
>word<	Speech is delivered at a quicker pace than surrounding talk
<word>	Speech is delivered at a slower pace than surrounding talk
wo-	Cut-off (often audibly abrupt)
(word)	Transcriber is in doubt about the accuracy of the transcribed stretch of talk
()	Transcriber could not achieve a hearing for the stretch of talk
((word))	Description of a phenomenon, of details of the conversational scene or other characterizations of talk