

Scaffolding the development of writing to learn across languages and across the curriculum

Working with Reading to Learn in a bilingual primary school: Genres, literacy, inclusion

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Abstract: This article presents the implementation of Reading to Learn pedagogy (Rose, 2018a) in a 5th grade class of pupils learning subjects in English, a foreign language for the children, at a school with a very varied intake. It describes the design of lessons in two subjects (science and history), focusing on key genres for success in these areas: descriptive report and biographical recount. Data were collected at three times: T1 pre-intervention, T2 and T3 after lesson sequences on reading and writing the chosen genres. Ten pupils were selected among those who had completed all the final independent writing tasks, representing four types of learners in the class: three fast, three average, three slow with learning difficulties, and one with special educational needs. Their texts were assessed for the 14 features of the genres as in Rose's protocol, producing a total of 82 observations. The assessment showed considerable progression from T1 to T3 in both genres. The Wilcoxon test for related samples in this quasi-experimental design indicated significant improvement in many features of the genres from T1 to T3. To conclude, all the pupils benefited greatly from the R2L scaffolding cycles for writing in this school from a disadvantaged district.

Keywords: literacy pedagogy; genre; bilingual education; inclusion; planned scaffolding.



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LLEGIR PER APRENDRE EN UNA ESCOLA BILINGÜE DE PRIMÀRIA: GÈNERES DISCURSIUS, ALFABETITZACIÓ, INCLUSIÓ

Resum: Presentem els resultats de la implementació de la pedagogia basada en gèneres discursius Llegir per Aprendre (Rose, 2018a) en una classe de 5è d'educació primària d'un districte desfavorit on l'estudiantat aprèn assignatures no lingüístiques en anglès. L'experiència es desenvolupà en dues àrees curriculars i amb dos dels seus gèneres: la narració biogràfica a ciències socials, i l'exposició descriptiva a ciències naturals. Les dades es van recollir en tres moments: abans de la intervenció, i després de dues seqüències didàctiques de Llegir per Aprendre, per a cada gènere. El corpus es compon dels textos de deu estudiants que van realitzar totes les tasques d'escriptura i que representen la diversitat de l'aula: tres estudiants amb facilitat, tres que representen la mitjana, tres amb dificultats d'aprenentatge, i un amb necessitats educatives especials. Es van analitzar 14 característiques dels gèneres seguint el protocol de Rose, amb un total de 82 observacions. Els resultats del test de Wilcoxon per a mostres relacionades en aquest estudi quasi-experimental mostren una progressió significativa a través del temps en ambdós gèneres. Per tant, tots els alumnes es van beneficiar del cicle planificat de bastides proporcionades pel model Llegir per Aprendre.

Paraules clau: pedagogia dels gèneres acadèmics; educació bilingüe; inclusió; bastida planificada.

LEER PARA APRENDER EN UN COLEGIO BILINGÜE DE PRIMARIA: GÉNEROS DIS-CURSIVOS, ALFABETIZACIÓN, INCLUSIÓN

Resumen: Presentamos los resultados de la implementación de la pedagogía basada en géneros discursivos Leer para Aprender (Rose, 2018a) en una clase de 5º de educación primaria de un distrito desaventajado donde el estudiantado aprende asignaturas no lingüísticas en inglés. La experiencia se condujo en dos áreas curriculares y en dos de sus géneros: la narración biográfica en ciencias sociales y la exposición descriptiva en ciencias naturales. Para analizar los cambios en la escritura del estudiantado se recogieron textos en tres momentos: antes de la intervención, y tras dos secuencias didácticas de Leer para Aprender, para cada género. El corpus se compone de los textos de diez estudiantes que habían completado todas las tareas de escritura, y que representaban los tipos de aprendices del aula: tres que aprendían fácilmente, tres que representaban la media del grupo, tres con dificultades y uno con necesidades educativas especiales. Los textos se analizaron utilizando las categorías propuestas en el modelo Leer para Aprender, con un total de 82 observaciones. Los resultados del test de Wilcoxon para muestras relacionadas indican una mejora significativa en el desempeño del alumnado tras la experiencia y, por tanto, los beneficios del andamiaje planificado de Leer para Aprender.

Palabras clave: pedagogía de los géneros escolares; educación bilingüe; inclusión; andamiaje planificado.



Introduction

It is a commonplace that primary education plays a vital role in the educational and professional future of the citizens of a country. This is is when literacy builds its foundations and also the time where these may fail children, since falling behind at school tends to have its roots in literacy problems (Chall et al., 1990; Guio Jaimes & Choi de Mendizábal, 2014). We clearly have a challenge in this area, since studies of literacy levels in Spain show a large percentage of low-achievers at mid-primary (PIRLS, Mullis et al., 2017) and mid-secondary school (PISA, OECD, 2019). Problems with reading are, of course, closely related to risk of school failure and have consequences for a young person's future access to training and the labour market (OECD, 2013). Underachievement in both the primary and secondary years of schooling is closely related to pupils abandoning school early. This is a key area of concern for the European Council (2020) and their data show it is considerably higher in some regions of Spain than the EU average (Council of Europe, 2020b; Guio-Jaimes & Choi de Mendizábal, 2014). While there has recently been improvement, still a fifth of male pupils left school in 2020 without obtaining the certificate for completion of obligatory secondary education (Ministerio de Educación y Formación Profesional, 2021). It would seem obvious, then, that literacy is an area which should be invested in and supported.

At the same time, education systems in many parts of the world are trying to offer citizens improved opportunities by introducing additional languages early in schooling, many times as vehicles for curricular contents (European Commission, 2017). This brings additional challenges to teachers as they work to integrate the teaching of content and language. Studies find teachers in bilingual schools struggling to identify specific areas of the language of their subjects on which to work (e.g., Cammarata, 2010), and admitting to having to take "a stab in the dark" (Cammarata & Tedick, 2012, p. 261). Like all professionals, teachers of non-linguistic and linguistic subjects have a very developed, though implicit, awareness of the texts which have roles in creating knowledge in their disciplines and the language which makes those meanings. Once this knowledge is seen through the lens of a linguistic model, teachers become aware of the sets of genres in their subjects, and of the role their linguistic features play in each genre, and are able to solve the problem of where and how to work with their pupils, integrating language and content. A model which has been applied successfully to language in education in many different countries and contexts is that of Systemic Functional Linguistics (SFL) (Halliday & Matthiessen, 2014). This article presents results of a research study in which an application of the SFL model, developed into a pedagogy of reading and writing, that of Reading to Learn (Rose, 2018a; Rose & Martin, 2012), was carried out in a primary classroom in social science and natural science.

In the paper we present the linguistic and pedagogical model which underpins the study, *Reading to Learn* (R2L), and refer to previous research on the outcomes of its application in different contexts. We then turn to the participants and context, the design of the intervention and the data collection. We present and discuss the results and finally consider the implications of this intervention for teachers in bilingual classes.



1. Theoretical background 1.1 *Reading to Learn:* linguistic model

The model of language underpinning the analyses of texts on which the scaffolding of reading and writing is designed is a functional grammar, developed from the 1960's by Michael Halliday, a linguist with experience in teaching language (Chinese, in fact). Halliday saw language as having three functions: to express experience, the experiential function, to interact with others, the interpersonal, and to create text, oral or written, the textual. He identified clusters of systems in the English language which work together to carry out these functions, building a grammar which shows how meanings are made in language, and thus the resources from which speakers may choose. The grammar relates context with texts produced in that context, and can show why texts are more or less successful in their contexts. It is, thus, a valuable tool for teachers, exactly what Halliday's students from the University of Edinburgh who became teachers demanded from him once they met the reality of the classroom (Halliday et al., 1964; Halliday, 2007).

Studying language top-down, from a social context to a text and its linguistic features, allows us to see the functions of texts being carried out via their structure, in which there are obligatory and optional stages (Martin & Rose, 2008). For example, when we tell an acquaintance about some everyday event that happened to us, creating a personal recount, our story goes through the stages of Orientation, and Events, with the Orientation probably including the setting, and the Events possibly some description. This spoken genre has been learnt by participating in a culture, in a society, and its function usually includes not only informing our interlocutor about what happened, but creating or strengthening a relationship by sharing our experience. As we expand the groups we participate in, we learn more genres which permit us to carry out activities related to them.

A social context in which knowledge of its genres have a vital role is that of schooling. Here, ability to understand and produce especially the written genres of the disciplines becomes more and more important as we move higher up the system into scientific or academic knowledge, where we read and write about topics which are not part of our experience (Bernstein, 1999). Children are often expected to learn these genres simply by participating in the school context. Some are successful, but certainly not all.

Researchers collaborating with Jim Martin, a colleague of Halliday's in Sydney University, analysed thousands of texts written at different points in primary and secondary schooling to identify the genres necessary for educational success, producing a map of these genres classified by function (Martin & Rose, 2008; Rose & Martin, 2012) as well as developmental features of writing over the school years (e.g., Christie & Derewianka, 2008; Schleppegrell & Colombi, 2002). The map, which continues to develop with the changing needs of society, and the different cultures in which educational linguists work, formed the basis of a teaching-learning cycle for writing in different school subjects. However, an extreme situation, working in a non-literate Aboriginal society, extended the pedagogical cycle to the beginning of the process, to reading (Rose, 2010). Starting from that experience, this linguist, David Rose, with other colleagues from the teacher education world, developed the linguistic, pedagogical and teacher development model known as Reading to Learn (Rose & Martin, 2012, Rose, 2018a), which has been taken to many different contexts and languages around the world (see García-Parejo & Whittaker, 2017, for work in Spanish-speaking countries, see Acevedo et al., 2023, for a view from around the world).



1.2 Reading to Learn: pedagogical model

The design of R2L pedagogy -what the teacher and pupils actually do in the classroom- is based on the SFL model of language, which includes a systematic study of the difference between the academic code and the everyday spoken code of pupils' experience (Bernstein, 1964, 1999). The academic abstract language of schooling is referred to by Rose (e.g. 2004) as the 'hidden curriculum', since it is not taught explicitly in class. Once children can decode, and so read stories and their early textbooks, they are expected to develop reading and writing of academic texts independently. Those who come to school with the benefit of hours of shared book reading (Williams, 1994) usually have little difficulty, while those from more 'oral' homes often gradually get left behind (Chall et al., 1990). The R2L pedagogic cycle makes literacy explicit for pupils at any level, by modelling the processes of reading and writing. This is carried out orally, after the teacher has carefully planned the scaffolding interaction to make sure the students are successful at every point. Besides, in the cycle, the complexity of reading and writing is simplified by carrying out these activities in small steps.

First, guided reading of a challenging model text is prepared by presenting it in language the students understand, so that they come to the comprehension task looking for how those already-known meanings are presented in written form, rather than struggling with the reading process, to understand the words, put together chunks of meaning and integrate them with their previous knowledge. Then, work with the text is broken into short segments. Students are very active, guided to match meanings with wordings in the text, physically marking the text, which allows the teacher to check that all have successfully identified the segment. The process takes place through oral participation, in which the prompts are designed to make sure all the pupils in the class can successfully identify the wordings and all can receive praise from the teacher. The pedagogy is made up of planned scaffolding so as to be inclusive at all times. At the same time, higher achievers are challenged by questions requiring application of the information or interpretation in the elaboration and expansion of the content of the text.

The interaction in class is constructed, as is usual, through questioning, but rather than focusing on what the pupils know, as in the usual Initiation - Response - Feedback pattern, talk is explicitly around the text itself. It is presented as one of the main participants, and is represented as speaking to the students: "the text says..., "explains to us...". The students are constructed as able to interrogate the text, and find its meanings: "Can you see what...?", or "which word tells us that...?". In this way, the text is an object that is shared, and to which all have access. This means that reading is no longer a hidden process during which students have an individual responsibility to make sense of the words, but a social, shared activity, which is possible for all members of the class, and in which all can succeed (Rose, 2018a).

After guided participation in reading and discussing language and content as the need comes up, in the writing stage, based on the same or similar content brainstormed on the board or screen, students take over control little by little. First, the class gives the key words which were identified during reading, and a pupil writes them up, forming a skeleton for the sentences the class will construct. The names of the stages of the genre are also on the board, showing the structure the class will complete. Sharing the meta-language of the genres is a part of making visible the hidden curriculum (Martin, 2006; Rose, 2018b) Seeing the generic structure, the function each stage, or the topic that each phase should cover is another type of



scaffolding. Pupils are not faced with a blank space, screen or page, not knowing how to begin or where to go next. After this guided writing of a text, students may write a new, a similar or the same text, in groups or individually, as the teacher adapts the pedagogical strategies to the class and course objectives. This moment is an opportunity to provide more support to students who require it.

1.3 Reading to Learn: assessment and feedback

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Assessment of independent writing is carried out using a template based on the functional model which underpins the pedagogy. The categories evaluated give teachers information as to areas of success and of difficulties for the pupils in the class in relation to the genre and topic area they are learning. The R2L assessment sheet (Rose & Martin, 2012, pp. 323-324) covers 14 criteria, asking teachers to evaluate the appropriacy of the text in relation to its purpose. Six criteria focus on how successful the text is for the context, four on discourse features, and four on formal features. The teacher makes rapid judgements in a range of 3 to 0, based on the extent to which the criteria are fulfilled for the level expected for the class. First, in the section on context, three criteria ask about the purpose and structure ie. stages and phases, while three focus on the development of the field, -that is, how well the writer controls the content-, tenor -how appropriately the relation between writer and reader is represented-, and mode -how 'written' the language is for the context-. At the discourse level, lexical choices, appraisal (evaluation), conjunction and reference are assessed. Finally formal features: grammatical correction, orthography, punctuation, and the presentation of the text are covered. Teachers keep a record of writing development for the class and the individual pupils, which guides feedback and future teaching.

1.4 Previous studies on genre pedagogy and Reading to Learn

The systemic-functional approach to language in education has given rise to innumerable publications, many in edited volumes with chapters on SFL language descriptions and use in primary and secondary school (e.g. Acevedo et al., 2023; Byrnes, 2006; Christie & Martin, 1997; Coffin, 2010, Foley, 2004; Hasan & Williams, 1996; McCabe et al. 2007; Whittaker et al., 2006, to mention just a few), as well as books and articles on the language of schooling and experiences in introducing teachers to the functional analysis of school texts in different parts of the world (e.g. Acevedo, 2020; Brisk, 2023; Lin, 2016; Llinares et al., 2012; Schleppegrell et al., 2004, and many more). In relation to all this work, in many cases, the language of instruction is an additional language for many of the pupils in the room, be it English, Chinese, Spanish, Swedish or any other.

Recently, collections focusing on R2L are appearing (e.g., Acevedo et al., 2023; García-Parejo & Whittaker, 2017). Many of the studies included in them, as well as other reports, describe the implementation of the pedagogy and include samples of pre- and post-texts, showing writing development in structure and language features, and data on development across types of learners over time (Acevedo et al., 2013; Rose, 2011). Here, we highlight especially those R2L studies which include numerical data based on writing and/or reading assessment, particularly relevant to our study. DIDACTICAE | ISSN 2462-2737 | DOI: 10.1344/did.2023.14.10-29

Starting with Australia, where R2L has been most widely taken up in different states, with both small and large-scale teacher development programs, data on student performance in writing consistently shows considerable gains for all and especially the most disadvantaged pupils. The largest collection to date (around 100 classes taken randomly from 400) appears in a report commissioned to Rose (2011), based on data collected from participants during teacher development programs over a school year. It shows R2L pupils' growth rate to be over twice the normal increase (Rose, 2011). Especially important is the closing of the gap between

Moving to Europe, a pilot study in Sweden (Acevedo, 2010) was commissioned to discover if R2L would accelerate literacy learning for disadvantaged students, frequently first year migrants in Sweden. The innovation took place over a school year with R2L workshops, tutoring and data collection. 22 teachers in seven schools from different socio-economic areas completed the programme and collected samples of representative pupils' independent writing. Results show that for narrative writing the high and average pupils improved over 30%, and lower achievers, averaged 128% improvement, catching up with the average group (Acevedo, 2010, p. 29). Reading comprehension results from a sample of the schools showed that lower achievers improved 31%, average 28%, and high 11% (p. 36). The general finding reported by teachers of the pupils involved was that R2L "extends the learning of high achieving students as well as those underachieving in literacy" (p. 6). After this pilot study, many more initiatives in teacher development with R2L have been carried out in Sweden, mainly in disadvantaged municipal areas with high levels of immigration and pupils well below literacy levels in secondary school. Improved reading and writing has been recognized by Swedish education authorities, as well as other successes like an inclusive, cooperative classroom atmosphere (Andersson Varga et al., 2023), which is relevant to the research presented here.

The demonstration of the positive effects of R2L pedagogy in Sweden led to a project in five European countries, Teacher Learning for European Literacy Education, TeL4ELE (Whittaker & García-Parejo, 2018). The external evaluation of the project found that even applying R2L strategies of genre analysis and the pedagogical cycle for a very short period of time, by teachers who were starting to learn the model, had positive effects on students' reading and writing (Acevedo et al., 2013).

A small-scale study from our context (Podadera, 2012), in a sheltered class of pupils recently arrived in Spain with a variety of language backgrounds, and ages, analysed texts at the level of generic structure and language features after working with R2L strategies. The study focussed on the children in the primary age range, a total of eight, and two genres: descriptive report in English, a foreign language for all the pupils, and a narrative in Spanish, which was becoming their second language. Podadera used R2L over two months in the third term, alternating weeks working on each genre and language. She collected data at different moments and analysed it using the R2L assessment protocol. The pupils improved considerably and at the end of the period, of the eight primary children only two failed to reach a pass mark in relation to their reference classes.

In other parts of the world, the change to explicit teaching of reading and writing with carefully planned scaffolding gives us a similar story. For example, a student-teacher in Colombia working for a short time with very low-level EFL readers found a significant improvement in the



low- and high-achieving pupils.



pupils' reading comprehension (Becerra et al., 2020). Studies in many other contexts can be found in a recent collection of studies on R2L around the world (Acevedo et al., 2023). A number of the chapters report teachers' or researchers' data, again showing overall development and the 'closing of the gap', bringing lower-achieving pupils closer to their higher-achieving peers.

While many studies covering different contexts, subjects, languages and scripts (eg Chinese L2 by Shum et al., 2018), as well as the sign language of the deaf (Lövstedt, 2023) are available, few have offered statistical tests for aspects of writing development associated to learning styles. This study set out to fill this gap, measuring the effect of R2L strategies in a grade 5 class of mixed-ability pupils who were learning content-subjects in English, a foreign language for all the participants. The teacher-researcher used material from textbooks for two subjects to design lesson sequences based on R2L, thus integrating the teaching of content with that of language. Given the rapid spread of bilingual teaching in many countries, this smallscale study aimed to offer a possible pedagogy for content specialists using a foreign language to teach their courses.

1.5 Research questions

For the intervention, two curriculum areas were selected: Social Science and Natural Science, and key genres developing knowledge in each identified: Biographical Recount, for history topics and Descriptive Report for biology. To measure the effect of using R2L to teach these subjects in this bilingual context, samples of pupils' writing were collected at three moments: Time 1: pre-intervention, Time 2 after a first R2L reading and writing cycle, Time 3 after a second R2L cycle. In each case, the research questions followed the same pattern:

In an analysis of development in writing a Biographical Recount/ a Descriptive Report, will there be significant differences between:

- RQ1: pretest (T1) and posttest 2 (T3)?
- RQ2: pretest (T1) and posttest 1 (T2)?
- RQ3: posttest 1 (T2) and posttest 2 (T3)?

Thus, RQ1 studies the overall effect of the pupils' introduction to R2L scaffolded reading and writing in content subjects taught in English, RQ2, the immediate effect of this explicit teaching of the genres, and RQ3 asks to what extent the pedagogy continues to have a significant effect after a second cycle of lessons based on R2L.

2. Method 2.1 Context

This study took place over a five-month period in a fifth-grade class in a city primary school which had belonged to the region's bilingual program for ten years. In this school, pupils receive a number of subjects in English: Arts and Crafts, Social Science, Natural Science and EFL, and the rest in Spanish. The school is situated in a fairly low socio-economic area, and receives a high proportion of children from migrant backgrounds. The class included pupils with serious educational difficulties, and one of the main motivations for the research was to find

out whether R2L pedagogy could reduce the gap between such pupils. The study included three subject areas -social science and natural science taught in English, and English as a Foreign Language. This article focuses on the content subjects and two genres: biographical recount and descriptive report.

2.2 Method and participants

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After presenting the study to the school and to the parents of the children in the chosen class, and obtaining the necessary permissions, the two-term intervention was designed. Given that the study took place in the natural setting of a classroom during the school year, it is quasi-experimental, with a single-group pre-test-post-test design (León & Montero, 2002). There was no control group as this small primary school has one class per grade. In any case, in most studies in educational contexts, it is difficult to randomly assign participants to groups. Thus we have a repetition in time of observations before and after the intervention, testing the absolute effect of the intervention with the same subjects.

The study started with a first data collection period to establish a base-line, in which the class wrote short texts with the support of images to remind them of topics studied in the previous year- that is about six months previous to the task. This was followed by sequential two-week cycles of daily work on one of the chosen genres, using a carefully-designed R2L lesson-plan sequence of reading and writing scaffolding strategies, based on texts from the syllabus. Each cycle closed with an independent writing task in the same genre on a new topic (T2, T3).

Given the interest in including all the pupils in a successful experience of reading and writing, additional scaffolding was prepared by the teacher-researcher. More language support took the form of blank-filling exercises to help pupils to understand and memorize wordings. Extra pedagogical scaffolding took the shape of cooperative learning in varied ability groups. This was the normal procedure for classroom organization for this teacher, with higher-achievers taking a leading role when pupils with difficulties in the group required suport (Pujalas, 2008).

The class consisted of 24 pupils, some of whose attendance was very irregular. Attendance was also affected by the breakdown of the school heating system for a period in the winter months. 18 pupils completed all the written tasks and from these the sample of 10 pupils studied here was chosen to represent the four types of learners in the group: three fast learners, three average learners, three slow learners, and one slow learner diagnosed as have special learning difficulties.

All the texts by these pupils were graded by the teacher following the R2L assessment protocol. This process began with independent grading of a sample of texts by the two researchers, followed by discussion of the linguistic criteria and agreement on application of the descriptors in relation to the expectations for the class in the school. After this, the teacher-researcher completed the grading of all the texts. A key tenet of R2L is teacher knowledge of the expected achievement of the class and evaluation of each text in relation to this standard.



3. Results

In this section we first give an overview of grades for the group of ten pupils for the two genres (Table 1) at the three data collection times after applying the R2L assessment sheet. Table 2 gives the individual scores for each learner by type, and Table 3 presents the development of each participant in the genres over the period of the intervention in order to answer the research questions. Finally, Figure 1 shows the development of each type of learners in the two genres and the extent to which the gap between them closed after the R2L lesson sequences in each subject.

N=10	Mean	Median	Range
BIOGRAPHICAL RECOUNT			
T1 Caesar	14.4	9	(33-1)
T2 Averroes	23.8	24	(39-1)
T3 Sta Teresa de Jesus	24.7	25,5	(40-1)
DESCRIPTIVE REPORT			
T1 Vertebrates	25.4	27,5	(35-15)
T2 Mammals	31.1	33	(41-11)
T3 Birds	32.7	36	(40-17)

Table 1. Descriptive statistics of results of the 10-pupil sample at the three data-collection times.

Table 1 gives the mean, median and range for the sample as a whole. The maximum score for any text is 42 (Rose & Martin, 2012). The mean score for each genre at T1 already indicates that, at the start of the school year the biographical recount was unfamiliar, while the descriptive report in science was more successful. For both genres the effect of the teacher's use of R2L was clear already at the second data collection T2, and a small improvement was noticeable in the production of the same genre on a new topic at T3. The range column shows how varied this mixed-ability group was.

N=10	Fast achievers		Average achievers		Slow with difficulties in maths and Spanish		Pupil with special educational needs			
	F1	F2	F3	A1	A2	A3	S1	S2	S3	SP1
BIOGRAPHICAL RECOUNT										
T1 Caesar	33	27	19	01	08	09	27	08	09	03
T2 Averroes	39	32	38	18	01	28	38	20	16	08
T3 Sta Teresa de Jesus	40	39	38	01	23	28	37	19	10	12
DESCRIPTIVE REPORT										
T1 Vertebrates	35	33	28	27	23	28	28	15	16	21
T2 Mammals	41	37	36	25	32	34	36	30	11	29
T3 Birds	41	35	39	37	32	37	38	20	17	32

Table 2. Individual totals for genres, data collection times and learner types.



Now, looking at the totals for each pupil, the descriptive statistics in Table 2 show steady development in the scores of the fast-achieving group in both genres, rather erratic results for average achievers in the biographical recount genre, but steady improvement in the descriptive report. Slow achievers improved considerably at T2, with regression in one case at T3 in each genre. S1's scores clearly place her in the fast-achieving group in both subjects studied in this research. The pupil with special needs made considerable improvement in both genres.

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Finally, Table 3 offers a picture of the individual pupils' performance as improving, equaling or underachieving their previous mark in the different comparisons for the two genres: T1 with T3, T1 with T2, and T2 with T 3. Shading helps to show increase in scores.

Genres	Biographical recount			Descriptive report					
	T1 Caesar	T2 Averroes	T3 Sta Teresa	T1 Vertebrates	T2 Mammals	T3 Birds			
	T1-T3	T1-T2	Т2-Т3	T1-T3	T1-T2	Т2-Т3			
Fast achievers									
F1	+7	+6	+1	+6	+6	=			
F2	+12	+5	+1	+2	+4	-2			
F3	+19	+19	+1	+9	+8	+3			
Average achievers									
A1	=	+17	-17	+10	-2	+12			
A2	+15	-7	+22	+9	+9	=			
A3	+19	+19	=	+9	+6	+3			
Slow achievers with difficulties in maths and Spanish									
S1	+10	+11	-1	+10	+8	+2			
S2	+11	+12	-1	+5	+15	-10			
S3	+1	+7	-6	+1	-5	+6			
Pupil with special educational needs									
SP1	+5	+5	+4	+11	+8	+3			

Table 3. Degree of improvement of individual students. Increase or decrease of own score for each genre in the different comparisons: T1-T3, T1-T2, T2-T3.

Table 3 shows spectacular improvement in most cases from the pre-test data collection (T1) to the individual writing produced after the second round of R2L strategies (T3), and a similar picture from T1 to T2, except in the case of one average pupil. However, performance from T2 to T3 was more varied. For the fast learners, the scores varied little for both genres. The pupil with special needs continued improving steadily in the two genres. In the other two groups, different pictures appear for each genre. The biographical recount from T2 to T3 was less successful for the slower learners, and for the average group the scores were erratic here. As for the descriptive report, from T2 to T3, the average achievers continued improving or equaled their scores, and two of the slower group also improved, while the third pupil in that category dropped almost 25% of the marks gained at T2 for this genre.

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Having seen the overall development from T1 to T3 in the two key genres for social science and life sciences, we turn to the marks for each feature of each genre. These reveal the degree to which these primary pupils were able to create texts which fulfil the required purpose via their structure and linguistic features, in a foreign language. Non-parametric tests on all the features indicate where pupils made significant improvements in each genre and times. These are reported here without including the table, of statistics for reasons of space, given the large number of non-significant results.

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The biographical recount at T1 (pretest) produced low scores in general. Significant changes occurred in purpose from T1-T2 and T1-T3, as well as in stages and in phases. In addition, the representation of the topic developed after work on different biographies, with significant changes in field, tenor, mode and lexis at these times. No significant change was found in the use of conjunctions. No improvement was registered in marks for grammar. Spelling and punctuation did show significant improvement from T1-T3 and T1-T2, though this was not extended to the presentation of texts.

The descriptive report gave a different picture. This pretest was more successful for all the pupils in the sample. Starting with purpose, pupils achieved the purpose at all times, but improved significantly from T1-T2 and T1-T3 in stages and phases, that is, in the structure and organization of the content of the text. There were no significant changes in field, in tenor, in mode or in lexis, though control of reference improved significantly from T1-3 and T2-T3. As to the formal aspects of the text, presentation showed significant improvement after the R2L cycles at T1-T2 and T1-T3.

Finally, Figure 1 shows the development of the groups in the sample in the two genres, at the three data collection times, to visualize the extent to which the gap between higher and lower achievers was reduced, maintained or increased in our small sample.

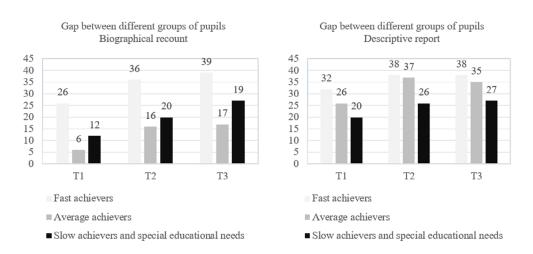


Figure 1. Mean marks for biographical recount and descriptive report at T1, T2 and T3.



Just a glance at the two bar charts shows the challenge that the biographical recount presented to average and lower achievers, while the descriptive report was part of the written competence of the group, with differences depending on learning style. Also, over the months, the average group reacted erratically to writing a biography, whereas all types of learners approached the scientific text successfully. As regards the gap between the higher achievers and the other groups, in the biographical recount, at T1, 12 marks separated the fast group from the learners with difficulties. After the first session of R2L on this genre, the fast learners improved 10 points, the slow pupils doubled their marks, but the average learner's mean was affected by two of the three pupils obtaining 1 out of 42 points (Table 2). Thus, the gap widened between the fastest and the rest of the group. At T3, the fast learners increased another 3 marks, again widening the distance from the other two types of learners. In the descriptive report, at T1 a gap of 12 points separated the highest from the lowest learners. As all groups improved steadily, at T3 this was only reduced by half a point: the average learners moved up close to the high set, and the slow learner group achieved a good pass.

4. Discussion

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Our study aimed to discover whether the implementation of R2L in a mixed ability bilingual junior class would improve the performance in writing in English on topics from the social science and natural science syllabus. The answer to RQ1 will tell us the overall effect of two cycles of R2L on two different topics in the two disciplines, that to RQ2 whether there is an immediate effect after only one R2L cycle, and RQ3 asks whether there is improvement from the first to the second series of sessions based on R2L. We wanted to know if the R2L pedagogy can help all pupils improve their achievement when studying subjects in a foreign language.

The results showed very different behaviour of the sample in relation to the two genres, and some individual pupils. We discuss these two aspects before considering our results in the light of other similar studies.

4.1. In relation to genres

Starting with the biographical recount, Tables 1 and 2 show clearly the very positive effect of the teacher's use of R2L scaffolding strategies overall, answering RQ 1, and even after only one sequence of intensive reading and modelling writing, answering RQ 2. As the improvement was very noticeable at T2, this left less space for an effect of the second cycle of R2L at T3, thus answering RQ 3. The generally low scores at T1 indicate the difficulty the pupils experienced in organizing their knowledge about the life of a historical figure. Though they had been given visual support for the pre-test on the life of Caesar, this was not enough to help them organize the events in a chronological sequence, except in the case of two fast learners.

The cycles of sessions applying the different levels of R2L strategies produced significant improvement in all features at the level of genre and register. The exception found in the feature 'use of conjunctions', shows how the role of this text-structuring device was taken over by the use of dates to structure time in the life spans. As regards grammar, where marks failed to go up, pupils did not manage to produce the past tense, an important feature of history texts, correctly in their biographies. Past tense markers in spoken English are not very salient, and



it seems that, though pupils were working with the written texts during the oral interaction around the texts in class, the two cycles of R2L sessions were not enough for them to internalise the past tense forms. Writing about history topics, specifically the lives of individual historical agents, then, despite all the visual material teachers use to bring them to life for classes, seem to require more support for learners than writing on topics in biology, which can be brought into the children's experience. Research into this area, interesting as it is, remains outside the scope of this study based on analysis of pupils' texts. What our study shows, however, is that explicit teaching of this genre had an immediate effect, with marks increasing by 25%, and even 50% (F3) for most of the learners in this mixed-ability group. As to the increase in the gap between the fast learners and the other two groups, it seems that the stronger pupils were able to apply what they learned from the R2L sessions effectively from the start, making spectacular improvements, while for those with more difficulties, the cognitive effort at the different levels of language which writing -especially in a foreign language- involves meant they needed more time and more cycles as the pedagogy recommends.

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Turning to the descriptive report, in general, the answers to the three RQs follow the pattern of the biography, with the overall and immediate effect of the pedagogy showing strong improvement, but varied results from the first to the second implementation of R2L, i.e., T2 to T3. The report genre was, surprisingly for us, much more successful than the biographical recount in the pre-test, as Tables 1 and 2 and Figure 1 show. In contrast to the biography, where writers can base their texts on the chronological structure of the content to be represented, a description has to be organized by the writers themselves. That is, they have to decide which are the relevant features, and how to present them to the audience. The assessment protocol indicates where R2L helped these grade five pupils. While at the level of purpose there were no significant changes across the group, marks for the stages and phases of the genre improved significantly from T1 to T2 and from T1 to T3 after the R2L cycles, showing how the intensive work on content, through modelling and rewriting, helped all the pupils to organize information when writing on a new topic. Related to this area of information management, a significant improvement was also found in reference. It seems that pupils were learning, in a meaningful way, the use of pro-forms to show topic continuity in English, important for the construction of stages and phases. No significant development was found in field, tenor or mode, to realize the purpose of the text, indicating that these pupils came from 4th year able to show the function of a scientific informative text, how to address the reader, and to build the field or topic. With respect to the formal aspects of the text, presentation showed significant improvement after the R2L cycles, possibly due to the increased confidence of the pupils when faced with a new writing task, after the intensive scaffolding activities. Overall, then, as the pre-test for the descriptive report was quite successful, this left less room for development; statistics show that marks improved, but some did not reach significance level. However, as in the biographical recount, most pupils improved by 25% after the implementation of R2L.

4.2. In relation to pupils in the sample

As to the development of pupils as types of learners, and as individual learners, we see how the fast learners in this small primary school in a disadvantaged area began with a considerable advantage in the biographical recount, which is increased at T3 while the other two groups also improved. For this genre, rather than the usual step-like bar graph showing a difference of about 5 points between each of the three groups of learners, as, for example, in Rose's 2011 study, the lowest achievers advanced and moved close to the average group, whose erratic results brought down their mean. In the case of the descriptive report, the picture is much more typical, with about a five-point increase in each group after the first round of R2L, which was maintained by the average pupils while the other two groups' increase stopped at T2.

The behaviour of individual pupils in such a small sample obviously affects the averages considerably. On the one hand, the surprising results of S1 indicate that, while this pupil, whose first language is Chinese, has difficulties in other subjects, she, in fact, achieved good results in these two content subjects taught through English, important information for the staff of the school. On the other hand, pupils in the average group had very varied performances in the different data collections. Students A1 and A2 who scored 1 out of 42 on two and on one of the independent writing tasks respectively were affected by personal situations or simply occasional low academic performance. These outlying grades of two of the three average learners affect the overall picture of the development of the groups in the sample. The irregular results of S3 reflect his usual academic performance, sometimes motivated, sometimes indifferent to the task. Table 3 shows clearly that, in general, once pupils were introduced to the explicit work on reading and writing the improvement in their production was remarkable, and that this learning is maintained at T3, though with little further development. In some cases, it seems that by the end of the second term, when the second data collection took place, pupils were getting tired, and some produced less successful writing on the new topic in each genre. What must be emphasised is the overall learning of all the class after the scaffolding of their literacy learning.

4.3. In comparison with other studies

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These results from a small sample can be compared with those in Rose's (2011) large-scale report on development in writing across the curriculum after a school year of R2L. His data for years 5-6 from about 2,000 pupils in different subject areas show nearly 60% of the pupils achieving 2- 3 times the expected growth in writing (Rose, 2011, p. 21). Interestingly, over the school years studied (K-7/8), the 5/6 grade range had the highest percentage of pupils with this growth. As is well known, these are key years for the role of literacy in school success, the point at which many pupils are beginning to fall behind (see, e.g., Adams, 1990; Chall et al., 1990; Gee, 2015), as it is the age when learning to read becomes reading, alone, to learn. From this period on, pupils will find little support in class for reading or writing, as there will rarely be a focus on the language of school subjects. This lack of literacy skills will affect many aspects of their lives in the future (see, e.g., OECD, 2013).

Returning to the results of studies of R2L, with their aim of improving the situation of those with poor literacy skills, by learner type in the classes, teacher data from Rose's study (2011, p.7) showed the lower achievers making 45% improvement, the average nearly 36%, and the high achievers 28% after a year with R2L. Our data, in which the pupils received two cycles of R2L strategies on each genre, and with only three pupils representing each of the learner types, in biographical recount, slow learners improved almost 24%, the average 27%, and the fast learners 30%. In the descriptive report, where marks started higher, the fast learners increased 13.5%, the average group 22%, and the group with most difficulties 17%. It seems that more time would be needed for the learners with most difficulties, especially since our pupils were all studying in a foreign language.

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Turning to the analysis of features of the genres studied here, it is difficult to find research giving this level of detail. Podadera (2012) worked on similar genres, report as in our study, and narrative, a genre structured chronologically, though with a different purpose -that of engaging readers- from the biographical report -that of informing readers-, analysed here. Data was collected at four moments for narrative in Spanish and five for reports in English. In both cases, the average for this very varied group improved by about 11 points on the R2L assessment scale by the end of the R2L sessions. Interestingly, in the report, the organizational stages and their phases improved especially after working with R2L (Podadera 2012, p. 50), as we found in this study. Also, in assessment of field and lexis expressing scientific content, Podadera found that her class of pupils moving into the Spanish education system improved dramatically (p. 62), whereas in our study, with pupils in the system, moving from fourth to fifth year, this area was already strong. In Podadera's, as in other similar studies, statistical tests were not applied to the grades.

The ability of systematic implementation of R2L strategies for reading and writing to 'rescue' pupils who arrive in secondary school having fallen behind in primary has been shown by Culican's (2023) report on a group of 13 pupils who started secondary school several years behind the expected literacy level in a culturally diverse, low socio-economic urban area in Australia. All but two who missed long periods of class advanced up to four years in literacy over a seven-month period attending an R2L session daily. Another Australian study at secondary school found low achievers doubling their score on the R2L writing assessment after a year (Carusi-Lees, 2023). Hart (2023) and Millin (2023) also describe impressive improvements in literacy in the South African context. Even understanding and using the specialized language of maths, opaque for so many of us, can be successfully taught with R2L strategies, as shown by Lövstedt & Rose (2015 in Rose, 2021, p. 263) and Westhoff and Olfos (2023). The large-scale projects, of course, are not able to offer detailed analyses to compare with the small group studied here, but serve to show the importance of scaffolding literacy in different subjects in the last years of primary school to support all pupils, and especially the less advantaged, as they move into the specialized languages of school disciplines they meet at secondary school.

Conclusion

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In this article we have followed the development of a class of Spanish fifth graders from a low socio-economic urban area learning content subjects in English at a small state primary school, as they were scaffolded in reading and writing using R2L strategies. Data from their independent writing on new topics from the curriculum show that the pedagogy was able to improve performance of all the very diverse learner types in the production of biographical recounts and descriptive reports, key genres in their disciplinary areas. The collaborative organization of the class and cooperative atmosphere always fomented by the teacher of these pupils also reinforced the inclusive pedagogical principles of the R2L model. While the small size of the sample represents a clear limitation of the study, the results of the statistical tests used are a strong support for widening the use of R2L in bilingual education.

The linguistic base and principled use of planned scaffolding for literacy offered by R2L represents real integration of content and language learning (CLIL), something that many who



teach in another language feel they are missing when they prepare their classes or assess their pupils' work. Though R2L is demanding on teachers, both in time to learn about text structure and language, and in the questioning of past practice, those who take it up find that the insights it gives into pupil's problems in learning from texts and producing texts allows them to support all types of learners and help them to succeed. We must remember, too, that the explicit, meaningful and scaffolded teaching of reading and writing provided by R2L is precisely what Hattie (2009) recommended in his meta-analysis of types of pedagogy.

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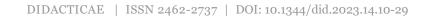
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