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ARTICLE

Hybrid Scaffolded Reading to Foster Engagement and Comprehension in ESL Learners

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ABSTRACT

This study examines the pedagogical potential of combining traditional paper-based texts with enriched, scaffolded digital reading to support school-aged second language learners. Implemented within the AGORA project, it involved 77 ESL students and six teachers from rural schools in Bajo Aragón, La Loma, and El Bierzo—areas facing infrastructural and socio-economic challenges. Undertaken within rural Spanish schools, the research compared student engagement levels and comprehension when they read collectively using paper, collectively using digital tools, or individually using digital tools. The digital component was based on Interactive Calleja, an enriched version of A Plague of Dragons, which integrates audio narration, glossaries, images, and gamified activities to support linguistic and cultural learning. Results indicate that individual digital reading led to the highest engagement and comprehension gains, while paper-based reading retained value in promoting focus and depth. Students appreciated scaffolding tools like audio, glossaries, and interactive elements, though usage patterns varied. Approximately 65% of participants rated these scaffolds as useful, with some using them during reading and others after a first pass for reinforcement. While acknowledging practical challenges such as training gaps and infrastructure issues, teachers ultimately supported a hybrid reading model for its motivational value. These results underscore the pedagogical strength of integrating paper and digital methods. With adequate backing, scaffolded digital

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reading proves itself capable not only of boosting understanding and engagement but also of fostering student autonomy and levelling the literacy playing field, particularly within resource-limited educational environments.

Keywords: Second Language Learning; Scaffolded Reading; Enriched Digital Books; Reading Engagement; Reading Comprehension

1. Introduction

It is universally accepted that reading is valuable for second language learning (2LL henceforth) because it provides students with a rich and varied input, which not only extends their linguistic knowledge but also deepens their cognitive, cultural, and emotional understanding [1,2]. Unlike other activities, traditional paper-based reading offers them personalized moments of enjoyment and growth, tailored to individual interests, needs, and cognitive pace [3,4]. In the middle of the digital era, the physical characteristics and structure of a printed book help process the information for easier recall, and without screen distractions, focus improves [4,5]. Print is gentler on the eyes, does not interfere with sleep, and invites easy annotation, all of which help consolidate learning and memory [6].

However, paper-based texts do have restrictions, including limited portability, difficulty in searching, a static format (e.g., font size), limited searchability, no embedded multimedia, and no metadata [7,8]. The partial shift from paper to digital that we are witnessing is driven by affordances like digital's superior accessibility, cost-efficiency, and sustainability. Technological advances facilitate this move all the time, and the digital continuously adapts to users' growing demands for faster, more searchable, and more shareable information [9]. Digital reading is almost ubiquitous in our modern society, where the majority of people, including most children, have mobile phones and/or tablets, devices that have now become a fundamental part of everyone's lives [10]. This reflects the Bring Your Own Device (BYOD) culture, where people generally prefer to access and share information without relying on external technology [11]. In the context of reading for 2LL, such mobile devices arguably offer a range of resources and tools, both locally on the device and online, that can readily support this process [12,13]. Specifically, mobile devices offer instant access to large numbers of digital texts, related resources, learning tools, and provide support for people with specific needs [8,14]. Furthermore, such devices can foster learning engagement through multimedia augmentations, cater to different learning styles, and motivate students through interaction and personalization [8,15,16]. However, while reading digital(ised) materials on mobile devices seems to offer a range of benefits, the process has been found to entail associated disadvantages for quality (critical/learning-oriented) reading, such as skimming or superficial reading and increased passivisation, distraction, and easy cheating, not to mention the inconvenience of small screens [17–19]. Consequently, reading on mobile devices often involves short and simple stories, news, social feeds, or chat messages, rather than literature or any other type of long, complex, and deep textual genre.

Therefore, although both types of reading have received attention and support in the expert literature, there is a lack of research exploring their combination in a 2LL context, which this article attempts to address. An analysis is undertaken here of the student/teacher perceptions of specific reading formats: paper-based vs. enhanced digital, including scaffolding. This work is partly motivated by the authors' experience of teaching English as a Second Language (ESL henceforth), and their participation in the development of the *Interactive Calleja* (https://www.fondodigital.uned.es/callejainteractivo/index.html) digital book [20]. This book presents a collection of sixteen digitally enhanced children's stories, taken from the book *A Plague of Dragons*, written by Saturnino Calleja in 1923. It offers a range of scaffolding tools, including translations, enriched audio, and multimodal annotations for various purposes: learning new words and expressions, acquiring sociocultural and real-world knowledge related to the readings, and developing the four main 21st-century skills—collaboration, communication, critical thinking, and creativity. There is abundant general information on the whole collection of stories, including a video on early twentieth-century Spanish children's lives based on the characters of the book. Furthermore, since stories do not follow a chronological or logical order, each one is preceded by a pedagogical guide for teachers to help them select the

next one, such as a plot summary, and highlights the didactic potential of each story: where the main difficulties lay, what types of useful vocabulary it covers, which other academic subjects it can be connected to for cross-curricular learning, and so on. In sum, *Interactive Calleja* is an enriched digital book with scaffolding that supports 2LL students' linguistic, cultural, and cognitive development. The format of this enriched digital book offers a high level of interactivity for the reader, particularly through its gamified learning activities. Another key didactic strength is the full autonomy it grants, allowing the reader to choose at any given time which functionalities to engage with, according to their needs or preferences. This digital book has been carefully created to keep an aesthetic coherence with the early 20th century and conventional print (e.g., the translation has been located on the original sepia-coloured pages with the same images, page turning is animated and resembles a real book). (e.g., the translation appears on slightly cracked sepia-toned pages with the original images, and page turning is animated to simulate the turning of paper pages while reading).

This article presents a contrastive analysis to explore which reading modality is more effective in terms of learner engagement and comprehension, or whether the optimal reading approach may be a hybrid one—integrating both print and digital, individual and collaborative, unsupported and digitally scaffolded. The research hypothesis is that a mixed or hybrid reading model may be most effective. Text-only, paper-based reading is generally preferred by second language learning (2LL) adult teachers, who belong to a generation accustomed to conventional reading practices. At the same time, these teachers are likely to leverage young people's natural attraction to accessing information dynamically and interactively via their most suitable mobile device for the task. These are expected to be inclined towards individual digital reading and value the autonomy of deciding when and where to divert from the linear text on the screen to explore specific annotations or functionalities, replicating their everyday use of such devices. Their presence in the everyday life of most people, including older children, is something that will not go away anytime soon. It would, therefore, appear logical to assume that if enhanced reading on mobile devices could be seamlessly integrated into the school curriculum, complementing the well-established daily learning routine with printed books from the library, it may significantly enhance students' reading engagement and comprehension.

2. Paper-Based vs Enriched Digital Reading on Mobile Devices

Traditional paper-based reading has been widely documented to be beneficial for 2LL, facilitating a plethora of cognitive gains related to literacy: vocabulary, grammar, discursive strategies, fluency[1,21], orthography, and punctuation[22]; pragmatic competencies; and cultural understanding[23,24]. Guided reading with teachers/parents can increase its effectiveness depending on the age and profile of the young learner[25]. Furthermore, a number of challenges have been found to arise when reading for 2LL. Firstly, a child's ability to benefit from this activity depends on their oral proficiency in that language, which is not fully developed in a 2L context[23]. Secondly, not all skills are easily transferred from one language to another. As Genesee[26] argues, phonological skills do not facilitate second-language reading if the two languages have different orthographic systems. Thirdly, the limited vocabulary characteristic of the early stages of 2LL can constrain comprehension, making reading little effective as an acquisition tool[21]. Fourthly, modest socioeconomic and educational backgrounds can be problematic when attempting to undertake reading for 2LL purposes due to a potential lack of reading materials and the unavailability of parents to support their children. Fifthly, the reader's own knowledge and culture can hinder 2LL. When the cultural background of a story differs significantly from that of the young reader, it may lead to difficulties in comprehension and reduce the overall impact of the reading for 2LL[27].

Over the last few decades, mobile devices have become so pervasive that most young people cannot imagine their daily lives without them. It is not surprising that such devices have been adopted as their preferred way of social interaction, access to information and entertainment, and learning. A large part of such activity is audiovisual, while interpersonal communication and formal learning are still mostly written. The expert literature identifies both positive and negative effects for mobile-based reading for 2LL, as follows. Firstly, leaving aside the risks of online navigation for underage users, access to (authentic) digital texts like online articles and e-books is easy and can lead to valuable

incidental learning. If/when they find material that interests them, language acquisition becomes more immersive and engaging[8,14,28]. Secondly, both digitized textual annotations and multimedia integration (audio and video) can lead to personalized, dynamic, and interactive experiences—all of which can boost learners' motivation and engagement[8,29,30]. Thirdly, modern speech recognition and text-to-speech applications support second language learning by providing multimodal input through multiple sensory channels—an approach not only engaging for the young but also beneficial for developing oral skills in the target language. Fourthly, the availability of a range of different mobile reading apps provides children with a flexible, adaptive, and scaffolded learning experience, thereby improving comprehension and retention[15,31]. Moreover, some of these apps include social features, like forums and language exchanges, fostering online communities that can simulate real-world immersion in the target language[16]. Gamified tools and instant feedback further heighten motivation to read and learn from 2LL apps[30], and they also facilitate autonomous learning and lifelong study habits[13]. All these aspects give mobile devices the potential to transform second-language reading and enhance comprehension, thanks to their inherent information and communication capabilities, as well as the development of critical constructivist thinking and cognitive skills they promote[13].

However, the use of these devices has also been argued to have detrimental effects on reading for 2LL. Firstly, the comprehension of knowledge gained from digital texts and mobile apps can be lower than from paper-based equivalents due to the F-shaped pattern of superficial screen skimming[7]. Secondly, screen reading can reinforce passive behaviour, limiting conversational practice with peers, teachers, and caregivers. The effects of such restrictions (such as natural fluency), even if they occur in the mother tongue, extend into the development of speech skills in the target language[17,18,32]. Thirdly, the large number of apps on a typical mobile device can bombard children with distractions (in the form of pop-ups), making it harder for them to concentrate on probably less stimulating reading activities[19]. As a result of this criticism, which has been widely accepted in the education community, many countries have forbidden or severely limited the use of mobile devices in their schools[33], despite ongoing studies such as the one by Goodyeara et al.[34], which show little or no conclusive evidence that increased use of mobile devices negatively affects students' mental health or educational outcomes. Clearly, further research is required here to identify which factors enable reading on mobile devices to contribute to better 2LL, while trying to overcome the associated limitations[35]. Is it simply a matter that digital apps encourage students to spend more time reading (than that available with only paper-based books alone)? Do they read faster with their digital devices? Do they tend to multitask? What additional factors are there that affect the quality of the comprehension in digital reading[3] such as the proliferation of uncontrolled distractions that can prompt skimming[5,9]? Would this be sufficiently offset by the aforementioned scaffolding enrichment? There is significant scope for further research on these and related issues. Nevertheless, the fact remains that, despite mixed evidence regarding the appropriateness of using mobile digital materials to support reading for both general linguistic competence and 2LL[35], we are clearly living in a digital age. Modern reading habits—both among adults and children—are shifting toward digital platforms and content. This shift is not merely a matter of 'reading on a screen,' but rather a question of how technology can be made to engage second language learners qualitatively and scaffold their reading process through a specific set of digital tools that actively support critical reading comprehension[36].

If the development of reading comprehension competence partly depends on the learner's engagement, and engagement itself hinges on personal preference, the next logical question is: what do the learners themselves—the protagonists of the learning process—think? As noted earlier, younger generations are strongly drawn to digital technologies. It was also mentioned that scaffolding on digital devices is already more sophisticated than what is likely ever to be achieved with linear, paper-based texts. Numerous examples illustrate this: vocabulary expansion through embedded defining notes within the text[14,28,31,37]; audio support that aids oral comprehension and the development of pronunciation and prosodic features[29,38]; images and videos that facilitate understanding and retention[8,39]; and interactive comprehension tasks and additional learning activities—some gamified, others offering feedback[8,15,30,40]. In contrast, paper-based texts can offer

only a limited set of standard support tools, such as footnotes or end-of-chapter notes, which lack the interactivity and personalization that digital devices afford. However, despite these digital advantages, student preferences do not always clearly favor digital reading over traditional formats. Some prefer paper for its ease of focus and reduced distraction, while others value the flexible tools available on their devices[6,41]. Moreover, there is evidence that young people in general are reading less anyway[42]. A recent study conducted in Spain by Conecta[43], on behalf of the Federación de Gremios de Editores de España [trans. Spanish Federation of Book Publishers] found that 64.1% of young people aged 14–24 read books on paper during their free time—an increase of more than 5% over the past decade. Over half of these books were not textbooks, reflecting a 12.9% increase in leisure reading. Within this age group, 52% reported reading daily or weekly, while 29.7% reported reading books on digital devices. This suggests a paradox: although digital tools offer more advanced learning support, official data indicates that preferences are divided, and the continued popularity of print reflects additional factors influencing reading choices[33,44–46]. Studies on teachers' perspectives also yield inconclusive results, as their attitudes toward digital reading appear to depend on multiple factors. These include their own digital pedagogical culture, competence, and preferences, as well as curricular demands, educational policies, and practical access to resources such as devices and internet connectivity.

The study presented in this article on paper-based and enhanced digital reading is driven by the research hypothesis outlined above and is regarded by the authors as a necessary step toward defining an effective hybrid reading model. It focuses on three main aspects: how learners perceive the different reading formats, how their comprehension develops, and how teachers evaluate these approaches from an expert perspective. Accordingly, the study is guided by the following three research questions:

1. How does the reading modality in an ESL context affect students' reading engagement?
2. How do ESL students perceive and utilize scaffolded digital reading to support their comprehension?
3. What are ESL teachers' views on the affordances and limitations of scaffolded digital reading compared to traditional paper-based reading?

3. Methodology

This study was undertaken within the AGORA research project (see the Funding section for more information about the project), whose primary aim was to address the main challenges faced by language teachers in rural and disadvantaged areas of Spain, namely: Bajo Aragón (in the northeast), La Loma (in the southeast), and El Bierzo (in the northwest). To explore a range of possible interventions in these regions, a series of subprojects was defined within this project, one of which was LIDER (https://www.agora-atlas.es/microproyecto-lider-lecturas-infanto juveniles-digitales-y-enriquecidas), where the present study was undertaken. This subproject generally explored how the enriched digital book *Interactive Calleja* can promote reading in school children as a means for developing language communication skills. Before the study reported here was undertaken, a needs analysis was carried out to understand the everyday realities of second language teachers working in these rural areas, and the general characteristics of their students and educational centres.

The study described here was undertaken using a mixed methodology within an action-research framework, allowing the combination of both qualitative and quantitative methods[47,48] in real ESL classrooms. Following this approach, the study combined theoretical pedagogical aspects (on paper-based reading) with those of the teaching practice undertaken daily in real classrooms. In terms of the data collection tools, there were three. Firstly, pre-questionnaires were used to gather information regarding the students' profiles, including nationality, socio-cultural level, and socio-economic background, and their general reading habits and interests. Secondly, for each of the three reading activities that formed the quasi-experiment (which correspond to phases 2, 3, and 4), there was an activity questionnaire, where the students had to summarise the story they had just read, answer two comprehension questions about it to provide evidence of the quality of their extensive and intensive reading, and give their opinion of the reading material. Thirdly, there were post-questionnaires used to gather the students' perceptions of their overall reading experience. Finally, interviews were undertaken with the participating teachers. They were semi-structured and aimed at gathering information about their views on the differences between the three reading activities and their impact on students' reading motivation and cog-

nitive gain. The study involved a total of 77 ESL students from various schools in rural areas of Spain and 6 teachers collaborating in the AGORA project.

Throughout the study, three different readings were proposed from the book *Plaga de Dragones* and its enriched digital version, *Interactive Calleja*, via the mobile app. The study was organised into five phases, which involved three reading activities using different modalities:

1. Data collection and preparation of the research
   In the first phase, the teaching staff were provided with all the necessary information about the quasi-experiment, including the materials and tasks. As shown on AGORA's website, which hosted all documentation related to the subproject, an introductory video was uploaded to serve as a summary for participating teachers. This was accompanied by a work plan outlining the weekly schedule of activities, links to the questionnaires, and a digital repository of the stories and related exercises. The features and functionality of the enriched digital book (*Interactive Calleja*) were also presented, with special attention to the icons that provide access to various types of annotations and learning activities, as well as the didactic guides for each story. Following this, data on the profiles of the students participating in the study were collected through a pre-questionnaire.
2. Activity 1. Paper-based collective reading
   Following the preparatory phase, the second phase consisted of a reading activity conducted collectively in the classroom using a printed story from *Plague of Dragons*. Each student received a photocopy of the text, and they took turns reading different sections aloud. Upon completion of the reading, data on student engagement and comprehension were gathered through the first activity questionnaire.
3. Activity 2. Enriched digital collective reading
   In the third phase of the study, *Interactive Calleja* was introduced to the students, and they were proposed a second story to read. For this activity, depending on the school, students were either provided with tablets (it was reported that there were never enough for each student, so they were typically shared among three or four students), or teachers projected their computer screens onto the wall. Following this digital reading experience, the second activity questionnaire was used to gather data on the students' engagement with the activity and comprehension of the story. It is to be noted that students were free to use any scaffolding within the enriched book to support their second reading activity.
4. Activity 3: Enriched digital individual reading of free choice
   In the fourth phase, a third digital reading activity was undertaken using *Interactive Calleja* again, but in this case, participants could choose a story from the digital book and were left to read it individually on their own mobile devices outside the classroom. Following this reading activity, students were presented with the third and final activity questionnaire, and subsequently, the post-questionnaire was used to collect data on students' perceptions of the overall experience. Moreover, data regarding the motivation for choosing the specific story were gathered to understand their cognitive gain and its impact on their reading interests and preferences.
5. Teacher interviews
   Finally, participating teachers provided feedback on the overall experience through semi-structured interviews. These interviews explored their perspectives on student engagement across the activities, the usability of the digital tool, its advantages and disadvantages, and its potential application and scalability within their respective teaching contexts.

4. An Analysis of the Results

Data were gathered on students' general reading profiles. The students had a highly diverse multicultural profile, coming from family backgrounds of different nationalities and cultures (in descending order: Morocco, Romania, Ukraine, Moldova, Ecuador, Peru, Bangladesh, and China), and typically possessed a lower-middle socioeconomic status, associated with the professions of their parents, who generally had low or no academic qualifications. All the students participating in the research had a linguistic competence level of A2-B1 in English, according to the CEFR (Common European Framework of Reference for Languages: Learning, Teaching, Assessment), which was necessary to understand the stories used in this study. Although no evaluation test was undertaken by the students before taking part in the study, they were expected to

have reached this level according to the regular curriculum of the ESL subject followed at their schools.

The answers to the question on the students' attitude towards reading in general were classified into four categories, as presented in **Figure 1**. It shows that a total of 56% of the participants were positively disposed towards reading (12% of whom had a very favourable opinion, and 44% a favourable one). Furthermore, 30% of the participating students did not express a clear opinion, showing a neutral position towards reading, and approximately 14% indicated that they did not gain any enjoyment from reading, having an unfavourable opinion of this activity.

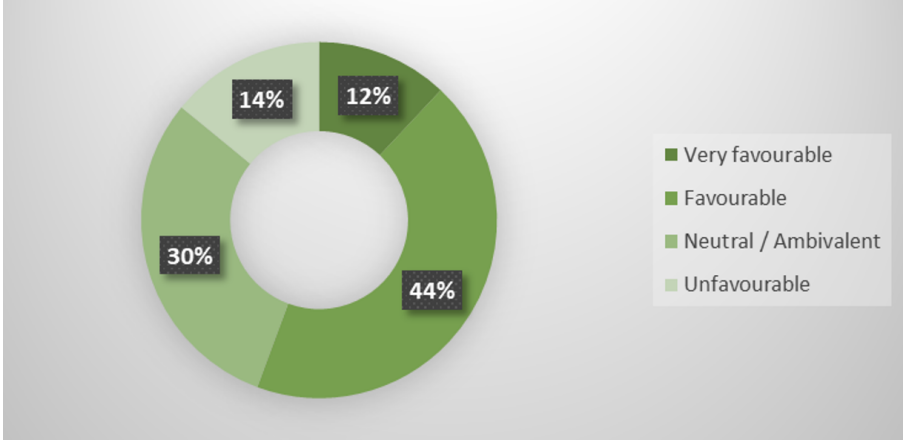

Figure 1. Student predisposition to reading.

The pre-questionnaire included various questions that provided complementary data. In each case, a combination of open and closed questions was provided to enable the students to express themselves freely, while ensuring focused answers. Regarding motivation for reading in general, as shown in **Figure 2**, 50% of the participants referred to reading as a means of escapism from their daily lives, while over 33% indicated that reading was often motivated by their social environment, friends, and social networks. Additionally, 22.5% stated that their choice of reading material was related to their audiovisual interests, meaning they selected books based on films or series they had already watched or might watch subsequently. Finally, 21.8% indicated that they read only out of obligation, such as for school literature assignments, while only 17.6% read for pleasure as part of their daily routine. The granularity of this data facilitated the conclusion that students were precisely aware of reading for reasons related to different aspects of their lives and contexts, and that reading was not undertaken just because they 'liked to read'. As noted above, throughout the different phases of the study, data were collected on the students' perceptions of each of the reading activities undertaken as part of the quasi-experiment.

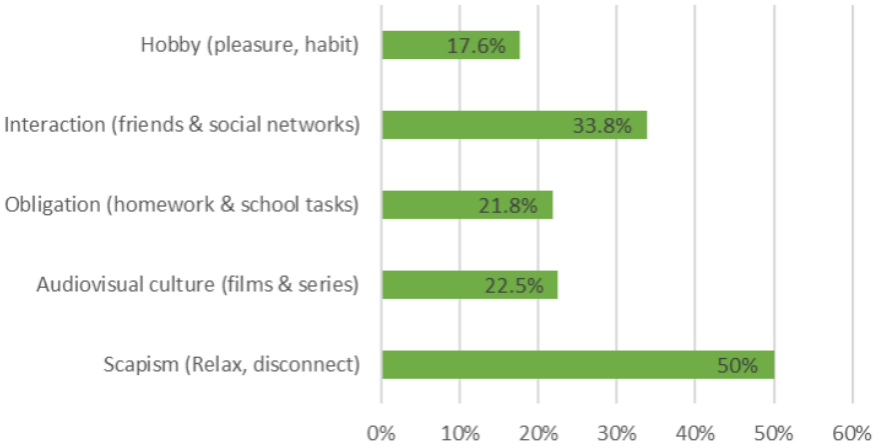

Figure 2. Student motivations for reading.

Figure 3 presents the students' reactions to the different reading modalities. For activity 1, the paper-based collective reading activity, 60.5% expressed a strongly positive or positive reaction, while 39.5% had a neutral or negative one. For activity 2, the collective digital reading received a slightly more favourable result, with a total of 68.8% positive answers and 31.2% neutral or negative ones. Finally, for activity 3, the individual digital reading undertaken by students on their own mobile devices, 77% provided positive feedback, with a significant 62.1% being very favourable. The negative response ('unfavourable') and the ambivalent one diminished to almost 23%. Two observations can be made about these results. Firstly, reading digitally and autonomously using their own device was most popular. Secondly, a progression in student engagement was observed between the first activity (carried out with paper-based text) and the second and third activities (where the readings were undertaken using the enriched digital book).

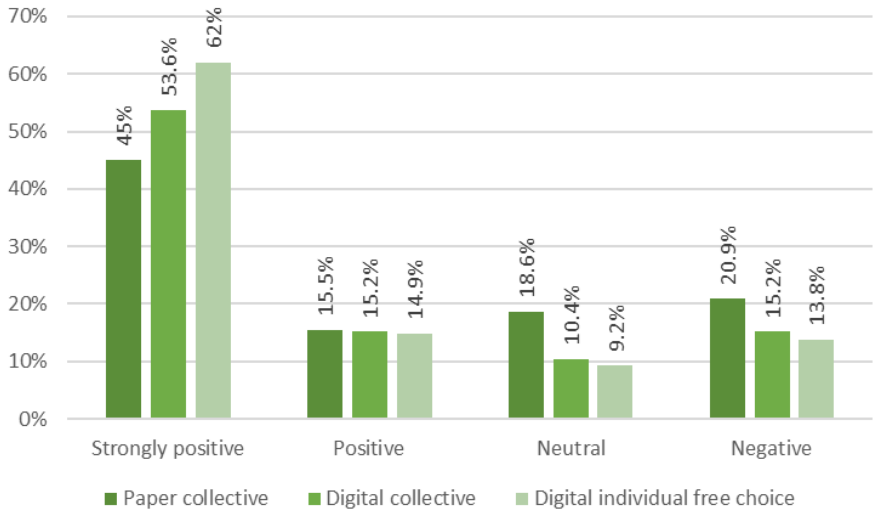

Figure 3. Student reactions to the three different reading activities.

As noted in the experimental design, following each reading activity, an activity questionnaire was used for the students to provide a summary of the story they had read and answer two comprehension questions about it. **Table 1** shows the questions and sample answers provided by the students for each activity. The answers were analysed and classified in terms of their accuracy, ranging from "very high", "high", "medium", "low", and "very low".

In the first reading activity, the paper-based collective reading, the story used was 'The Cabin Boy and the Enchanted Island'. For the first question, in general, the answers were very consistent and accurate. The students correctly identified the trigger of the story: the king wanted a son/heir, and the queen gave birth to a daughter. In general, the answers demonstrated a clear understanding of the central conflict driving the story. For the second question, the answers were largely consistent and accurate. Most students correctly identified the cabin boy (often referring to him by his first name, Nicasio) as the key figure in the rescue. Many answers also included how he helped (e.g., 'his cleverness', 'his calculations', 'using tools from the witch', and 'understanding the island's timings'). The overall correctness of the answers was medium to high. They showed recall of the main helper and often the mechanism or strategy used for the escape, indicating both intensive and extensive comprehension beyond simple fact recall.

In the second reading activity, the collective scaffolded digital reading the story used was 'A Plague of Dragons' (the name of the story coincides with that of the whole book). For the first question, the answers showed significant variation and were less consistent. While some mentioned plausible methods for solving the problem in the story ('burning', 'using drains/holes', 'washing away'), others were vague, incorrect, or mentioned tools not typically used for disposal (like 'soap'). The overall level of accuracy of the answers was medium. Some answers were correct, but the vagueness of some of them and some odd responses suggested that comprehension of this specific detail was less uniform or clear

across the group. For the second question, the answers were very consistent and accurate, although arguably the question was simpler. Almost all student responses correctly identified 'St. George' or 'Saint George' as the potential saviour, which demonstrates a very good recall of this specific factual detail.

Table 1. Sample answers from the three reading activities showing comprehension.

Activity 1. Collective paper-based reading	
Question 1.	**Why was the king angry with the queen?**
Student examples	"Because he wanted a son but she brought a daughter", "Because he wanted a boy", "Because the king wanted a son to be his heir"
Question 2.	**How did the princess escape the island?**
Student examples	"Thanks to the cabin boy, he was very clever", "With the help of the cabin boy", "A boy called Nicaso rescued the girl"
Activity 2. Collective digital reading	
Question 1.	**How did they get rid of the corpses of the dragons?**
Student examples	"They burn they body", "With a big hole in the ceiling", "By a big hole that absorb"
Question 2.	**What saint did the children believe could help them with the dragons?**
Student examples	"St. George", "Saint George"
Activity 3. Individual digital reading	
Question 1.	**What curse did the evil fairy cast upon the prince?**
Student examples	"Malevola told the child that he would marry a mouse", "Malevola put a spell on the baby so that he could only marry a mouse", "She predicted the prince's terrible fate: he would marry a creature with four legs and no hands"
Question 2.	**What magical object causes the transformation into a mouse?**
Student examples	"The bewitched cats eye it was a stone that transformed a person into a mouse", "The bewitched Cat's eye is a magical stone able to turn people into mice", "It was a magical object with the power of turning someone into a mouse"

In the third reading activity, the collective scaffolded digital reading the story used was 'The Mouse Wedding'. For the first question, the answers consistently identified that a slighted evil fairy (often referred to by her name Malevola) cast a curse on the prince's wedding: that he would marry an undesirable creature (like a mouse, a cat, a peasant, or a maid with specific deformities). The overall correctness of the answers was high. They were very consistent and accurately captured the core element of the fairy's curse related to the prince's marriage prospects. For the second question, the answers showed a very high consistency in identifying a magical stone as the cause of the transformation of the princess. Many students specifically mentioned the 'bewitched cat's eye' or described it as a stone that turned people into mice upon contact, ingestion, or approach. The overall correctness of the answers was very high: the students consistently and accurately identified the magical stone and its specific transformative power within the story.

As can be noted, the comprehension results were best for the third activity, individual digital reading, followed by the first activity, the collaborative paper-based reading activity, and finally the second activity, the collective digital reading. At first sight, this result might seem contradictory: why should the collective paper-based reading activity throw better results than the collective digital equivalent? Three factors need to be taken into account as a plausible explanation of this result. Firstly, students are used to undertaking paper-based reading comprehension activities in class and, therefore, were familiar with the type of activity. Secondly, the teacher noted (as can be seen below) that students felt unfamiliar with the digital reading book and did not make use of most/any of the scaffolding features as they read. Therefore, the digital reading experience was generally reduced to focusing on a text on a small screen (either a shared tablet or a presentation on the wall), without making the most of the features designed to aid comprehension. Thirdly and finally, in both reading activities 1 and 3, the students held the 'text' in their hands (the photocopy or their mobile device), where it was easier to pay attention than looking at a distant tablet or presentation.

Figure 4 shows the data collected on the students' perceptions of the usefulness of the scaffolding provided by the digital reading tools. As can be seen, the majority of students recognized the value of these elements, as 65% found the

scaffolding to be very or quite useful. The remaining 35% were unsure of their value or found them not to be useful. This latter group may well have formed this negative opinion because of the training it required—something that teachers acknowledged as unpopular.

This possible confusion about the use of the scaffolding can be highlighted by considering the data presented in **Figure 5**. As can be seen, not all the participants used it during the digital reading activities, and among those who did, not all used it in the same way. Three patterns of use were identified. Firstly, 52% used the scaffolding support after a first reading, deepening their understanding of the story and practicing the activities proposed. Secondly, 36% of the students read the story and used the annotations at the same time, with an integrated approach where support features were accessed dynamically during the reading process. Finally, 12% of the participants stated that they had undertaken a first reading without using the scaffolding.

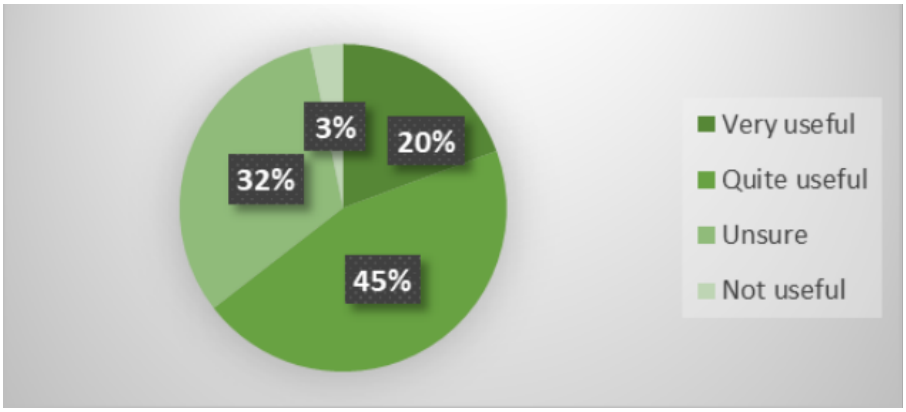

Figure 4. Student perception of the usefulness of digital scaffolding.

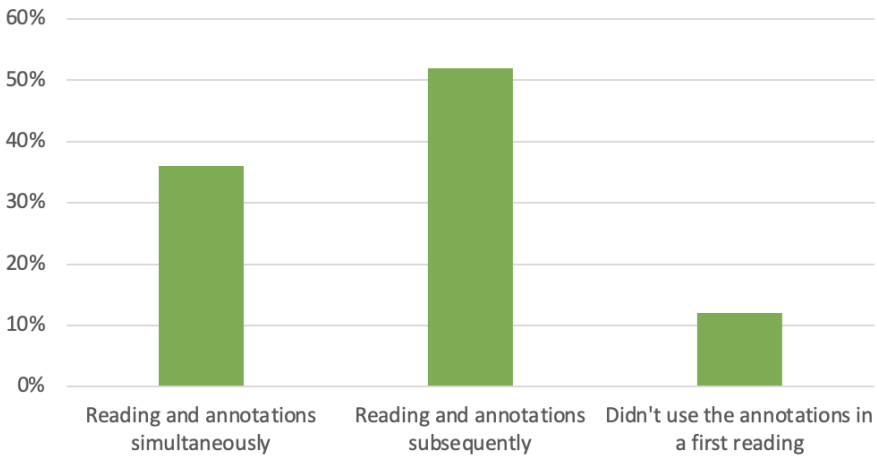

Figure 5. The role of scaffolding in the reading process.

Finally, teachers were interviewed in free semi-structured, open-ended interviews in which they were given the opportunity to comment upon their experience of using the enriched digital book with their students in the different modalities proposed, and what possibilities they saw for how such digital reading could be integrated into their classes. When asked about the difficulties of undertaking paper-based reading activities in their schools, most of the teachers stated that the most noticeable obstacle was the lack of interest on the part of many students. Motivation was primarily directed toward digital devices, mostly tablets and smartphones, and, if left to their own devices, students would read on screens rather than printed books. Most of the teachers interviewed showed great concern about the density of the curriculum they had to follow and the lack of time available to implement alternative, non-traditional learning approaches. In the case

of literary reading, teachers expressed great difficulty in integrating digital materials in the classroom, given that schools do not always have the appropriate devices, internet access, technical support team, and authorisations. Furthermore, in most cases, they showed more concern about helping students with their language skills (reading, writing, listening, talking) than their associated competences (linguistic, sociolinguistic, and pragmatic), especially in the literary reading plans proposed in the curricula. The teachers showed interest in digital reading and knew the importance of using authentic materials and a competence-based approach in literary reading, which is generally accepted to benefit language development through content. Regarding the usability of the digital reading book, they noted the initial difficulty they had manipulating it due to a lack of familiarity with the many scaffolding features. However, they believed that with time, their skill would improve.

Some teachers pointed out both the value of the antique aesthetics in the stories reproduced in the enriched digital book used for this quasi-experiment and the variety of content covered in the different stories. They concluded that such material could be integrated into different school subjects; for example:

Participant 2: 'The texts are quite interesting for the pupils, and they enjoyed reading them. It is worth noting that the application has definitions that help understand the meaning of the words, although sometimes the definitions are a bit complex. Luckily, there are examples of usage and images to help.'

Participant 3: 'I think the most useful part of the digital reading are the learning activities in which the students reflect on the content and internalise the learning.'

Participant 5: 'The digital book can be used to work on all language skills. In addition, it can serve as a thread across didactic units in which the themes of each of the stories are systematically studied, with connections between transversal aspects (e.g., gender equality) and multidisciplinary ones.'

Focusing on the digital aspects of the reading experience, teachers highlighted the multimodality embedded in each story, with the audio narration being the most valued of all the elements since, in their view, it had been very helpful for the students. Furthermore, teachers added that the use of this tool had improved students' motivation for reading the story, particularly in those cases where they knew that the students' level of the target language would not be sufficiently high to read the written text of the stories comfortably, e.g.:

Participant 2: 'I think [audio] keeps them interested and focused. In some cases, it wouldn't hurt if the icons could be hidden so that they didn't get distracted.'

Participant 3: 'The activities combining multimodality, reading, sound and images have been very interesting for the pupils.'

Finally, when asked about the possibility of integrating the enriched digital book in a classroom context, the teachers acknowledged that they had liked the material, in general terms, mainly because it allowed them to work simultaneously on language and content in a controlled way, which they identified as a limitation in other digital material. Nevertheless, they accepted the convenience of using printed reading materials together with standard academic activities aimed at eliciting comprehension. Therefore, they generally advocated for a hybrid approach to the reading process, combining the benefits of both paper-based and digital reading, while implicitly avoiding the limitations of both:

Participant 1: 'The tool is very easy and would complement traditional reading. I wouldn't go without books.'

Participant 3: 'It is very user-friendly and intuitive.'

Participant 4: 'In terms of student engagement, I think [scaffolded digital reading] is adequate and could be used in different stages of the reading process together with printed texts.'

Participant 6: 'The tool is quite simple and of good quality. It is very easy to use. On smaller devices, perhaps visibility could be difficult for some students. It is fortunate the font size can be changed. I can see advantages in both modalities.'

5. Discussion

The results presented in the previous section provide data to answer the three research questions (RQ1, RQ2, RQ3) regarding the underlying aspects of a hybrid model for combining paper-based and enhanced digital reading. In general terms, the study highlighted a progression in the students' engagement and preferences, moving from traditional paper-based reading towards an enriched digital format, where the higher learning autonomy present in the individual digital

reading was preferred. This preference matched the comprehension results, which were best for the third activity (the individual digital reading). While most learners valued the impact of the digital scaffolding features in their learning, the usage pattern across the group varied. This suggests that providing such tools in and of itself is not sufficient for optimal application; extra support and tuition are required. The increase in student motivation present when using the enriched digital book *Interactive Calleja* was noted by the teachers, who suggested its potential for pedagogical innovation. They did, however, note the practical problems and limitations with its use, such as compliance with the official curricula, persistent resource and infrastructure restrictions, and the need for teacher training and support.

Regarding RQ1, how does the reading modality in an ESL context impact the student's engagement? The individual digital reading modality was shown to be the most influential and produce the best comprehension results. This is likely to connect to the factors identified in the literature review (e.g., alignment with digital habits; autonomy and interactivity of the experience; the multisensory engagement, improved comprehension, and support for individual learning styles enabled by multimodality) and the underlying motivations identified here (e.g., sense of agency, access to instant support, personalization, gamified learning). However, the lack of consensus should not go unnoticed, as over a fifth of learners expressed ambivalence or negativity toward the preferred format: individual digital reading. This may be attributed to the heterogeneity of student profiles (e.g., domestic reading habits) and personal preferences, about which their self-awareness was notably refined. As highlighted in the literature and confirmed here, many young people today *do* read, but often for reasons beyond mere pleasure, as they engage in a more globally interconnected lifestyle. Therefore, drawing on the results above, it seems reasonable to anticipate a future shift from individual to collective digital reading, driven by the growing presence of the 'digital others' in our traditionally solitary routines.

Considering RQ2, how do the ESL students perceive and use scaffolded digital reading to support their comprehension? It was shown that more than half of the students found scaffolding useful. However, a significant third of the students did not perceive these scaffolding features as being beneficial ('unsure' or 'not useful'), indicating that the culture of scaffolding in digital learning and reading environments is not as widespread as we might assume, particularly in the context of second languages, where such support has often been negatively associated with remedial assistance for disadvantaged learners [14,28,31]. Summarizing the results from the student questionnaires and teacher interviews, it can be expected that learners' inclination toward scaffolding is a dynamic state: one that evolves not only as their second language learning progresses but also as they mature as individuals, and their curiosity for knowledge and self-regulation in learning grow. A different use of scaffolding tools (e.g., before, during, or after reading) may also be anticipated as technology advances. Firstly, this concerns the increasing sophistication of interfaces, enabling teachers to exercise control over them and deactivate support features when deemed appropriate (e.g., during an activity taken under exam conditions or circumstantially, for a student who is easily distracted). Secondly, it relates to the growing potential for personalized learning, enabled by the rapid development of artificial intelligence.

The teachers' views on the affordances and limitations of using scaffolded digital reading compared with traditional paper-based reading, as highlighted in RQ3, reveal a tension. They note the motivational and related pedagogical benefits (in accordance with the student preferences) of the technology-based modality, while identifying the practical problems and limitations that need to be overcome for its successful introduction into everyday classroom work [44,45]. The teachers' stance appears to go beyond blanket support for the isolated use of digital tools or the replacement of paper-based reading; instead, it reflects an endorsement of a hybrid reading model that combines the strengths of both formats. Thus, in their expert opinion, this seemingly irreversible shift toward digital need not involve the sudden eradication of printed reading practices, thereby preserving the *status quo* of school libraries; the enduring pleasure of selecting and borrowing physical books, often as part of a weekly family outing to the local library where storytellers await and community is built; and the cognitive gain from the intense, mature reading process that places the reader in intimate connection with the text. For second language learners who claimed to lack intrinsic motivation for reading in any format, the positive outcomes of this experience suggest that such an activity-based hybrid scenario may offer

the structure and diversity needed to progressively engage them, especially as technology continues to evolve.

Albeit exploratory and limited by nature, the research presented here provides empirical evidence that annotated and scaffolded digital texts can complement standard reading approaches used in the classroom, since a significant part of the research population increased motivation thanks to this approach and demonstrated improved comprehension. The hybrid reading model presented in this study is innovative in how it practically combines traditional printed reading with its enriched, scaffolded digital equivalent. Although the availability of the same literary works in both printed and enhanced digital formats remains limited, this dual-format approach holds considerable didactic potential. The creation of learning activities around these readings is not perceived as an added burden by the interviewed teachers, who are already accustomed to developing such content. Moreover, this aspect of the proposal can be supported by AI technologies, which can automatically generate reading-based activities adapted to students' language proficiency, interests, and learning goals. A hybrid 2LL modality that integrates paper-based and enriched digital reading can be effectively implemented in rural schools facing limited budgets and infrastructure, as well as a need for context-sensitive learning approaches. A gradual and adaptable strategy can be adopted, starting with printed texts and progressively incorporating offline enriched digital books aligned with the official curricula. These can be preloaded with multimedia content to minimize dependence on internet access. Teachers may also benefit from basic digital pedagogy training and the use of generative AI to further develop learning activities tailored to their students' local realities. This strategy promotes curricular flexibility and equitable access to multimodal literacy, enhancing student engagement and comprehension in resource-constrained environments.

6. Conclusion

This study makes a strong case for a hybrid reading model combining paper-based reading with scaffolded digital reading to enhance second language learning. Comparing collective paper, collective digital, and individual digital reading in rural Spanish schools revealed that enriched digital formats, particularly when used individually, significantly boost student engagement and comprehension compared to paper alone. While paper retains value for deep focus, digital reading offers powerful advantages like personalization, multimedia, interaction, and scaffolding, which are crucial for diverse learners. The results here also show that students' use of scaffolding is not static; it changes with their development, meaning digital supports must be flexible and guided, not rigid. Teachers appreciated the motivational aspects of digital tools but rightly noted challenges like training needs and infrastructure limits. Their overall endorsement of blending methods, however, points towards effectively integrating tradition and technology. This hybrid approach fits modern reading preferences, serves varied learners, promotes equity in resource-limited schools, and aligns with the potential of generative AI for personalized learning. Ultimately, a hybrid model is pedagogically robust and culturally relevant. It leverages the best of both worlds, offering a flexible, inclusive path for L2 reading instruction, especially where adaptability matters most—in under-resourced schools. Future research should examine long-term effects, optimal scaffolding, and the supportive role AI might play.

Author Contributions

Conceptualization, T.R. and C.R.S.; methodology, T.R. and C.R.S.; formal analysis, T.R. and C.R.S.; writing—original draft preparation, T.R. and C.R.S.; writing—review and editing, T.R. and C.R.S. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement

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Informed Consent Statement

Informed consent was obtained from all subjects involved in the study, although all data logged was anonymous.

Data Availability Statement

Data will be provided upon request.

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Conflicts of Interest

The authors declare that there is no conflict of interest.

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