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Researcher–teacher collaboration: A contextual framework for creating scalable, social-justice-oriented literacy materials

Colaboración persona investigadora–docente: Un marco contextual para el desarrollo de materiales reproducibles de alfabetización orientados hacia la justicia social

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Abstract: *This design-based qualitative study examined researcher–teacher collaboration in creating digital storybooks for rural sixth-grade classrooms in Costa Rica. Specifically, it sought to explore how a pedagogical design framework can inform creating digital storybooks that supports bilingual (Spanish/English) literacy through digital storytelling. Three experienced rural English teachers joined four online workshops between March and May 2024 to co-establish a pedagogical framework integrating culturally responsive teaching, Fraser’s social-justice dilemmas (redistribution, recognition, representation), and national English curriculum objectives. The team then used ChatGPT within FUNREAD – a web-based digital storytelling platform supporting Spanish/English literacy instruction – to generate beginning-level (CEFR-A1) storybooks. Field notes, transcripts, and participant feedback were thematically analyzed to trace design decisions across three phases: selecting social-justice dilemmas, mapping curricular themes, and crafting artificial intelligence (AI) prompts. The prototype storybook, “Susana’s Dream” – centered on Costa Rican NASA scientist Sandra Cauffman – illustrates how context-sensitive narratives can advance vocabulary, grammar, and critical awareness simultaneously. Findings demonstrate that structured co-design empowers teachers to embed equity, identity, and community relevance in literacy materials, while generative AI scales production without displacing pedagogical expertise.*

Keywords: *literacy methods, digital storytelling, rural education, language instruction, artificial intelligence.*

Resumen: *Este estudio cualitativo basado en el diseño examinó la colaboración entre personas investigadoras y docentes en la creación de libros digitales de cuentos para aulas rurales de sexto grado en Costa Rica. Específicamente, se exploró cómo un marco de diseño pedagógico puede guiar la creación de libros de cuentos que promuevan la alfabetización bilingüe (español/inglés) mediante la narración digital. Entre marzo y mayo de 2024, tres personas docentes experimentadas de inglés en zonas rurales participaron en cuatro talleres en línea para coestablecer un marco pedagógico que integrara la enseñanza culturalmente receptiva, los dilemas de justicia social de Fraser (redistribución, reconocimiento, representación) y los objetivos del currículo nacional de inglés. El equipo utilizó luego ChatGPT dentro de FUNREAD, una plataforma en línea de narración digital que apoya la enseñanza de la alfabetización en español e inglés, para generar libros de cuentos de nivel inicial (CEFR-A1). Las notas de campo, las transcripciones y los comentarios de las personas participantes fueron analizados temáticamente para trazar las decisiones de diseño a lo largo de tres fases: selección de dilemas de justicia social, mapeo de temas curriculares y elaboración de indicaciones para la inteligencia artificial (IA). El prototipo de libro, “Susana’s Dream” – centrado en la científica costarricense de la NASA, Sandra Cauffman – ilustra cómo las narrativas sensibles al contexto pueden mejorar el vocabulario, la gramática y la conciencia crítica simultáneamente. Los hallazgos demostraron que un co-diseño estructurado empodera a las personas docentes para incorporar equidad, identidad y relevancia comunitaria en los materiales de alfabetización, mientras que la IA generativa optimiza la producción sin desplazar la experiencia pedagógica.*

Palabras clave: *método de alfabetización, narración digital de cuentos, educación rural, enseñanza de idiomas, inteligencia artificial.*

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1. Introduction

Developing home- and new-language literacies holds significant importance across educational levels (Bonilla Lynch and Rojas Alfaro, 2012; Solano, 2012), but it is especially critical in K-6 education, where attaining language proficiency can contribute to economic and socio-cultural development (Ngwaru and Oluga, 2015; UNESCO, 2017), as well as student success, cognitive abilities, and socio-emotional skills (Cordova Jr. et al., 2024; Cruz Rondón and Velasco Vera, 2016). To that end, primary education programs worldwide (e.g., García et al., 2012; García, 2020) have amended policies to promote bilingual and multilingual literacy instruction at the primary level. For example, Costa Rica's national efforts toward fostering bilingual literacy development are grounded in three main policy areas: (1) educational policy, which positions the individual as the core of the educational process and a transformative agent in society; (2) curriculum policy, which emphasizes educating for a new, civically engaged citizenship (Robles-Barrantes, 2021); and (3) English language learning policy, specifically the Language Promotion Education Policy (Consejo de Educación Superior [CSE], 2021). These policies are central to their primary education program, as they focus on creating inclusive, equitable, and diverse spaces for all students – conditions that are essential for promoting social justice and bilingual literacy instruction (Cruz and Velasco, 2016; Mendoza Cazarez, 2022; Viales Angulo and Carmona Miranda, 2014).

To operationalize such policy goals, research suggests engaging in collaborative work with stakeholders such as school administrators and teachers, with specific goals in mind: (1) designing solutions that prioritize teacher and student needs (Montenegro Sánchez and Rojas-Alfaro, 2025) and (2) encouraging buy-in for materials development and use (Rojas-Alfaro and Montenegro Sánchez, 2024), particularly when schools and communities stand to benefit directly from such solutions. Studies further recommend implementing methodologies aligned with pedagogical frameworks such as culturally responsive teaching (Alim et al., 2020; Rojas-Alfaro and Enriquez, 2025; Woodley et al., 2017) and social justice education (Ankomah, 2020; Araujo and Strasser, 2003; Rojas-Alfaro and Ramírez-Casalvolone, 2024), to guide solutions and strategies related to curriculum development, teacher professional development, and resource allocation.

Storytelling – present in every culture and used to preserve traditions, entertain, and educate (Rainville and Gordh, 2016) – is frequently discussed in the literature as a powerful tool for promoting reading skills, critical thinking, as well as celebrating multiculturalism and difference (Araujo and Strasser, 2003; Murray, 2011; Ryan and Herman-Wilmarth, 2018).

Similarly, Hess (2021) underscores the potential of “storytelling for social change” in educational contexts, emphasizing that “stories ... [should center] the experiences of minoritized individuals or groups” (p. 71). Rainville and Gordh (2016) further suggest that:

Storytelling promotes community in early childhood classrooms and allows teachers to learn about differences in students’ linguistic and cultural backgrounds. It can be a window into children’s lives outside of school and let teachers learn ways communication is valued in the children’s communities. (p. 76)

Storybooks carry strong cultural significance and have been instrumental in promoting inclusive, diverse, and identity-affirming spaces among primary school students (Akersson and Oba, 2017; Howard and Jackson II, 2013). Local stories told through storybooks that integrate social justice issues as cross-curricular principles – such as gender (De Maio and Rodríguez, 2020), ethnic origin (Grue, 2020), disability (McGrail and Rieger, 2016), sexual identity (Berbary and Guzman, 2018), inclusion, and diversity (Gordon, 2020), among others – can help transform the discourse of privilege, discrimination, and exclusion that existing storybooks and similar media (e.g., television, magazines) often promote (Nijdam, 2020), through disruptive narratives that center the discourse on the lived experiences of individuals and social groups in the very communities where they are used for literacy development. Likewise, using these storybooks intentionally for literacy development can not only make visible but also empower the diverse social groups (Kipnis et al., 2021) whose identities have been historically ignored, devalued, or even misrepresented in these types of texts (Kleinhans, 2020; Langley, 2021; Russell et al., 2013).

Despite these promising approaches, important challenges remain. While Costa Rica’s national commitment to bilingual literacy instruction presents valuable opportunities, learning a new language can still be particularly difficult for emergent bilinguals (EBs) in rural areas. Underserved schools often contend with disadvantaging conditions such as poverty, psychosocial difficulties, and limited access to instructional resources – factors that considerably impact EBs’ academic performance and overall success (Rojas-Alfaro and Montenegro Sánchez, 2024). In response to these challenges, this study aims to explore how a pedagogical design framework can inform creating digital storybooks for FUNREAD, an accessible web platform – partially funded through a Seeds Fund grant from the Universidad de Costa Rica – that supports bilingual (Spanish/English) literacy through digital storytelling. Specifically, the study seeks to answer the research question: How can collaborative design

between researchers and rural-school English teachers inform teaching materials development such as digital storybooks to support literacy development among sixth-grade EBs in rural Costa Rica?

2. Literature Review

As an evolving field, education continually reflects broader societal dynamics, making it essential to recognize the influence of society on new-language learning (López Montero et al., 2014). This influence is especially important when new-language learning takes place in contexts where multiple (home and new) languages – and, by extension, multiple cultures – come into play in the language classroom (García et al., 2012; García, 2020). Concurrently, scholars emphasize that context is a crucial consideration when making curriculum decisions that reflect the sociocultural realities, learning preferences, and specific needs of local communities, particularly in rural areas (Nelson et al., 2021; Pini et al., 2015; Viales Angulo and Carmona Miranda, 2014; White, 2015) – an approach that is essential to truly support equitable learning outcomes. Scholars such as Pishghadam et al. (2011) further underscore the importance of recognizing the connections between social and educational institutions by examining how individuals' diverse social and cultural experiences shape their academic achievement. In light of these realities, culturally responsive teaching emerges as a context-sensitive approach, positioning teachers to “empower their students with high expectations and a commitment to student success and validate the experiences of students by bridging gaps between the home and the school while using non-mainstream curriculum to support learning” (McCorkle, 2019, p. 20).

Culturally responsive teaching builds upon this recognition as teachers incorporate students' lived experiences, linguistic repertoires, and cultural practices into the learning process. Rather than treating cultural and linguistic differences as barriers, culturally responsive teaching reframes them as valuable resources that expand classroom dialogue and enrich learning opportunities (Gay, 2018; Ladson-Billings, 1995). For new-language learners in particular, affirming identities through curriculum choices fosters a sense of belonging that strengthens motivation and engagement in language learning (Lucas and Villegas, 2013). This approach equips teachers to challenge deficit-based perspectives that marginalize EBs from diverse backgrounds, especially in rural and under-resourced settings. Likewise, culturally responsive teaching creates classrooms where students recognize themselves in instruction while engaging with global perspectives. In this way, culturally responsive teaching positions

language classrooms as spaces that advance literacy development, social justice, and empowerment.

Recent studies highlight how teachers and administrators in rural settings shape teaching practices, curriculum, and especially teaching materials in response to national policies that influence student success in under-resourced communities (Chaves Pérez, 2022; Rojas-Alfaro and Ramírez-Casalvolone, 2024). In Rojas-Alfaro and Montenegro Sánchez (2024), the authors suggest that “incorporating an inclusive and diverse equity and representation in English-language teaching materials is a more effective approach for bilingual [learners] in Costa Rica than approaches that do not incorporate these elements” (p. 44), stressing the role of teaching materials in helping students see their identities reflected in the curriculum (Araujo and Strasser, 2003; Rojas-Alfaro and Enriquez, 2025). In another study, Montenegro Sánchez and Rojas-Alfaro (2025) found “socioeconomic disparities on student behavior and learning [in rural classrooms], emphasizing the need for contextually sensitive [curricular] adaptations that can effectively address these challenges” (p. 19), and remarked “how rural educators strive to integrate [established teaching practices] ... amidst significant resource limitations and diverse student needs” (p. 20).

Building on Rojas-Alfaro and Montenegro Sánchez’s (2024) findings, integrating teaching materials plays a crucial role in supporting student success, yet addressing these curricular and contextual challenges also requires considering the digital divide that persists in rural classrooms (Okot and Zúñiga Castro, 2023; Vargas Venegas, 2022). Teachers and students often face limited access to technological resources, including reliable internet connectivity, updated devices, and adequate technical support (Glas et al., 2021; Hohlfeld et al., 2017; Montenegro Sánchez and Rojas-Alfaro, 2025). In addition, access to certain generative AI tools (e.g., ChatGPT) can be limited in rural settings due to connectivity constraints, licensing costs, and institutional policies, which can further exacerbate disparities in participation and learning opportunities. Even when resources become available, both groups experience a learning curve as they acquire the digital literacies needed to utilize new tools in everyday teaching and learning practices (Hatlevik and Christophersen, 2013). Without targeted support, disparities in digital access and skills risk reinforcing rather than reducing existing inequities. In this sense, implementing teaching materials in rural settings must account for these divides, with professional development, infrastructural investment, and ongoing technical guidance accompanying their introduction (Montenegro Sánchez and Rojas-Alfaro, 2025). Otherwise,

teaching materials may remain inaccessible to the very communities they are meant to serve, further widening the educational gaps that context-sensitive curriculum seeks to address.

Considering the diversity of EBs in Costa Rica's rural areas, studies highlight the value of developing context-sensitive materials that address students' unique needs and support their student success (Rojas-Alfaro, 2023, 2024). As stated earlier, these materials should reflect students' sociocultural backgrounds and real-life experiences, fostering stronger connections to both their learning and local communities (Gay, 2002; McCorkle, 2019; UNESCO, 2017). Regalla (2013) emphasizes the importance of designing such materials with attention to EBs' cultural contexts to effectively engage them in the learning process. For example, integrating local stories, traditions, and social norms can increase the relevance of content and more deeply resonate with EBs' lived experiences (Araujo and Strasser, 2003; Brochin, 2019; Gay, 2002). In rural Costa Rica, the FUNREAD platform (Rojas-Alfaro and Montenegro Sánchez, 2024) – a digital tool for creating storybooks grounded in social justice education and culturally responsive teaching principles (Araujo and Strasser, 2003; Derman-Sparks and Edwards, 2021; Kaur, 2012) – aligns with the national English curriculum and has the potential to fulfill these goals.

Research suggests that social justice education should take prominence in the school curriculum to promote equitable and inclusive learning environments (Derman-Sparks and Edwards, 2021; UNESCO, 2017; Valdés and Ramírez-Casas del Valle, 2021) – especially in rural contexts, where sociocultural dynamics and disparities in resource allocation directly affect classroom learning (Montenegro Sánchez and Rojas-Alfaro, 2025; Rojas-Alfaro and Ramírez-Casalvolone, 2024). The concepts of justice and equality, in terms of rights and opportunities, refer to equal opportunities to access education through an equitable curriculum that reflects the cultural diversity and lived experiences of a learning community (Simón et al., 2019). Currently, social justice principles are being increasingly recognized as essential components of effective language teaching for EBs since they foster more inclusive and empowering learning environments for all students (Rodas and Osborn, 2016; Rojas-Alfaro and Ramírez-Casalvolone, 2024).

Implementing social justice principles in the national English curriculum offers a promising path to address systemic inequalities (Carneros et al., 2018). They provide EBs with the tools to advocate for themselves and their communities (Rodas and Osborn, 2016; Rojas-Alfaro and Ramírez-Casalvolone, 2024; UNESCO, 2017). In this sense, transforming education to foster greater equity and social justice through targeted strategies (Carneros et al., 2018), while

introducing pedagogical innovations and inclusive learning technologies into the national English curriculum (Rodas and Osborn, 2016; Rojas-Alfaro and Montenegro Sánchez, 2024) represents an important and necessary next step.

3. Methodology

This exploratory qualitative design-based research study (Barab and Squire, 2004) is part of a larger investigation into a digital tool that fosters bilingual literacy skill development – e.g., reading comprehension, vocabulary building, and critical thinking – among rural-school EBs. Specifically, the study examines collaborative design decisions and the steps involved in creating context-sensitive digital storybooks for rural EBs. The storybook creation process relied on extensive collaboration between researchers and rural English teachers, who co-established a pedagogical framework to ensure the storybooks' content is culturally responsive, embraces social justice perspectives, and aligns with existing curricular themes. This process also involved leveraging ChatGPT-4o's capabilities in co-creating digital storybooks.

3.1 Participants and settings

The units of analysis consisted of three rural English teachers who were invited to participate in this stage of the study's design process. All participants were female, had over 12 years of experience teaching English in rural schools in northwestern Costa Rica, and were between 33 and 41 years old at the time of data collection. Participants were reasonably familiar with ChatGPT, regardless of age, and grew more confident through routine use in sessions and on their own. Researchers briefed participants on ChatGPT's limits and ethical issues (bias, uneven reliability, privacy/data use, overreliance); however, this falls outside this article's scope and is therefore not reported in Findings. Participants were recruited through snowball sampling via their school principals and other teacher participants (Merriam, 1998), based on the following criteria: being 18 years or older, currently teaching English in one of the two participating rural schools, and being willing to participate in a series of collaborative design sessions with researchers. Participants received study details via email and were furnished with an informed consent letter outlining the voluntary nature of their participation. The sessions were conducted over Zoom between March and May 2024 and were facilitated by two researchers actively engaged in co-creating digital storybooks for the FUNREAD platform, scheduled for release later in the year.

3.2 Data collection

Researcher field notes from four one-hour, video-recorded Zoom sessions, including transcriptions of the audio portion, served as the primary data collected in this study. Sessions were conducted in both Spanish and English, depending on participants' preferences, as collaborative, non-formal interviews (Rojas-Alfaro, 2025) in which participants and researchers exchanged ideas, offered suggestions, and made revisions while co-constructing a pedagogical framework for creating digital storybooks and integrating ChatGPT-4o into the process. Field notes were shared with participants via email prior to each subsequent session and later discussed during Zoom meetings to obtain their agreement, revise, and confirm the collaborative design decisions made in previous sessions. Each session provided an opportunity to iteratively revise the design, leading to establishing a pedagogical framework and creating digital storybooks. Two storybooks using ChatGPT-4o and a pedagogical framework to guide future digital storybook development resulted from this process.

Initially, the storybook creation process involved a discussion of design principles that became part of a pedagogical framework for creating such teaching materials. Drawing from culturally responsive teaching and social justice education principles, the resulting framework (1) centered student and community experiences, (2) facilitated understanding of social justice representations (i.e., dilemmas and dimensions), and (3) aligned with curricular themes. Once design principles were determined, the next step comprised a thorough discussion with teacher participants of rural EBs' lived experiences in the classroom, as well as in their communities, regarding sociocultural situations affecting their learning and literacy development at school. Researchers and teachers collaboratively selected student and community experiences and paired them with curricular themes to create two initial storybooks, one of which is discussed in Findings. Finally, storybooks were created according to four main storytelling elements: setting, conflict, plot, and characters. In storytelling, setting establishes the time and location of the story, conflict introduces the problem or struggle the characters face, plot outlines the sequence of events, and characters are the people, animals, or beings who interact within the narrative.

3.3 Data analysis

Thematic analysis (Braun and Clarke, 2006) was used to code qualitative data, identify patterns, and determine emerging themes. Initial codes, including design principles, storybook creation steps, student experiences, community experiences, and ChatGPT prompt

components, were developed collaboratively with participants. These codes informed broader themes that shaped the resulting pedagogical framework and guided the iterative design of digital storybooks using ChatGPT-4o. The resulting categories – social justice dilemmas and dimensions, curricular themes and content, and ChatGPT-4o prompt components – were used as themes in Findings. Data were triangulated through field notes, session transcripts, and participant feedback to support consistency and credibility, and processed using Microsoft Word 365. Member checking involved sharing thematic summaries and coded data with participants, who confirmed, clarified, or revised the findings to reflect their contributions.

4. Findings

The following sections describe how researchers and participants co-created digital storybooks based on a collaboratively established pedagogical framework. The storybook discussed here, *Susana's Dream*, illustrates how the lived experiences of rural students and communities can be integrated into the curriculum through storytelling and supported by ChatGPT-4o, suggesting that digital tools can transform literacy instruction in resource-limited rural areas. These sections are thematically organized into phases to highlight each stage of the study's iterative design process.

4.1 Phase I: Social Justice Dilemmas and Dimensions

In determining an initial framework aligned with social justice education and participants' understanding of EBs' backgrounds and needs, researchers proposed a focus on three social justice principles originally introduced in Fraser (2008): redistribution, recognition, and representation. Researchers also suggested drawing from the validated social representations of social justice in education (SRSJE) framework (Jacott et al., 2014; Sainz López, 2017), which centers student and community experiences and builds on Fraser's (2008) theoretical model. The SRSJE framework identifies redistribution, recognition, and representation as three broad social justice dilemmas, each associated with seven dimensions. Researchers explained that these dimensions encompass social issues that raise questions of justice across various domains, including economy, education, democracy, diversity, and gender. One participant emphasized the relevance of this framework, stating, "I find it very appropriate to use a social justice framework that can reflect the realities of students in our school, especially when addressing topics such as curricular accommodations, access to technology, and socioeconomic inequalities" (field notes, March 21, 2024). Another participant added,

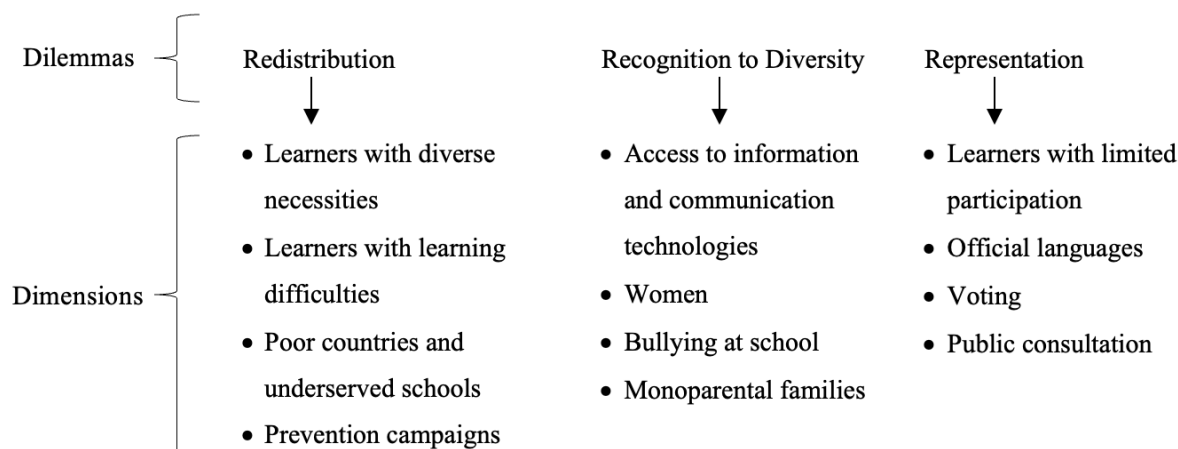
There's a lot we can learn from creating storybooks for students who mostly come from marginalized areas. I also think it's great that we get to work together on the stories and share our own perspectives as English teachers in the classroom (field notes, March 21, 2024).

Researchers also elaborated on Sainz López's (2017) distribution of these dilemmas, which are organized into the three social justice dimensions:

- redistribution – the equitable distribution of resources, goods, and capabilities;
- recognition – the acknowledgment of diversity and the valuing and celebration of differences; and
- representation – the democratic inclusion of all people, particularly in areas that affect them most and where they are most directly involved (p. 170).

In shaping the initial design of digital storybooks, researchers and participants collaboratively selected specific dilemmas within each of the three SRSJE dimensions that reflect and respond to sociocultural realities affecting EBs' learning and literacy development in school. Figure 1 displays the selected dilemmas and dimensions in Jacott et al. (2014) that guided the digital storybook creation process.

Figure 1
Dilemmas and dimensions for creating digital storybooks.



Source: Own elaboration from Jacott et al., 2014.

4.2 Phase II: Curricular Themes and Content

Once dilemmas and dimensions were selected, researchers and participants discussed how these could be aligned with the existing curriculum. As one participant noted, “The sixth-grade English curriculum has its particularities, so I think we need to focus on a unit that can help us implement the storybooks in the classroom” (field notes, March 21, 2024). This process initially involved identifying units within the curriculum that could be paired with the selected dilemmas and dimensions. Researchers suggested focusing on unit 1, *Costa Rican heroes*, the first unit in the sixth-grade curriculum. Participants emphasized the importance of clearly aligning curricular themes and their linguistic components with the intended dilemmas and dimensions in ways that could facilitate their integration into digital storybooks. One participant agreed with the idea of focusing on heroes, but pointed out, “it’s a good idea to talk about heroes in the stories. But we have to remember that the students might have a low level of English in sixth grade, so the stories need to be easy to understand” (field notes, March 21, 2024).

According to participants, unit 1 introduces heroes and heroines who have impacted Costa Rican history and culture; therefore, EBs are expected to become familiar with them through “authentic teaching materials” (field notes, April 4, 2024). Participants suggested that the linguistic components selected for creating storybooks should include vocabulary related to heroism, grammar structures for narrating historical events, and adjectives to describe the characteristics of specific heroes and heroines. One participant explained that “we need to emphasize everyday descriptive vocabulary to talk about the heroes and heroines in the stories. That way, we’re not just making the stories relevant, we’re also helping students use that language in their everyday lives” (field notes, March 21, 2024). They further emphasized that EBs could improve specific language skills, as well as further their understanding and appreciation of their country’s history and culture by engaging with context-sensitive digital storybooks featuring relatable national figures. Table 1 presents the curricular themes and content from unit 1 discussed for use in storybook creation.

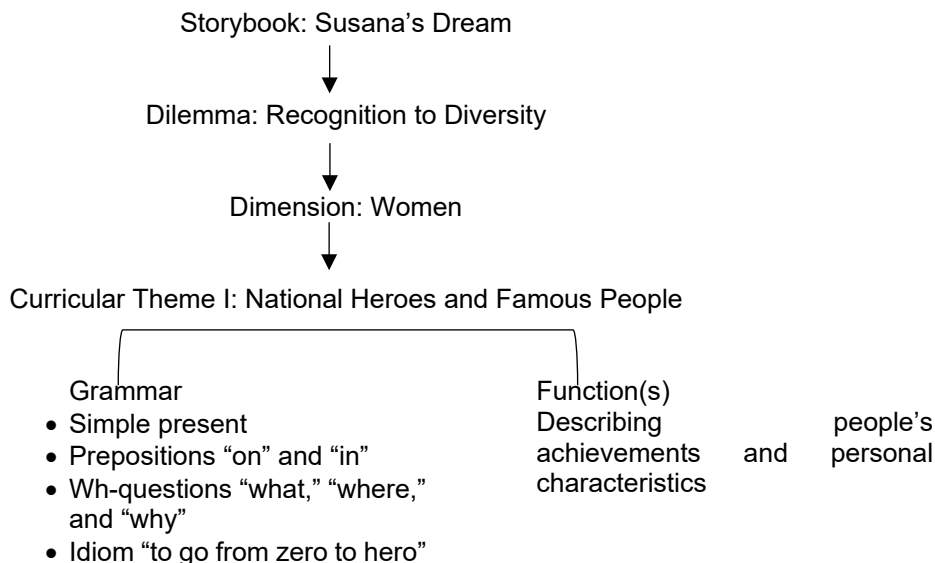
Table 1
Curricular themes and content within unit 1: Costa Rican heroes.

Unit:	Costa Rican Heroes
Themes:	<ol style="list-style-type: none"> 1. National heroes and famous people 2. Superheroes world famous people 3. My hero is the best 4. I can be a hero
Enduring understanding:	Heroes make sacrifices to improve the lives of those they serve.
Essential question:	What actions define a hero?
Oral and written comprehension:	R.1 distinguishes and understands the important information in everyday visual text. R.2 reads patterned and predictable text.
Grammar sentence frame:	Simple present tense and personal subject pronouns (SVC); simple past tense with prepositions of time (i.e., on, by, during); comparative and superlative forms; adverbial phrases of cause and time; sequencing adverbs with modal “must;” wh-questions.
Language functions:	Retelling/relating past events using connectors.
Psycho-social functions:	<ul style="list-style-type: none"> - Expressing respect and pride for local and national culture, outstanding people, family and friends. - Explaining motivations to improve/change lives. - Expressing respect for diversity of gender roles and senior citizens in our society.
Sociocultural functions:	Expressing belief in one's own capacities and values.
Social language and idioms/phrases:	Idioms <ul style="list-style-type: none"> - To take the bull by the horns (to make something hard in a brave determined way). - To fill someone's shoes (to take someone's place and do the work satisfactorily). - To go from zero to hero (someone with a sudden rise in popularity or success).
Assessment:	R.1. Distinguishes the important information in everyday visual text. R.2. Reads patterned and predictable text.

Source: Own elaboration from Ministerio de Educación Pública, 2016.

While several storybooks were created from unit 1, Susana's Dream is used for illustration in this study. Figure 2 displays the framework components that researchers and participants determined for this storybook. In the context of unit 1, Susana's Dream tells the story of Susana, a young Costa Rican student who, inspired by the life experiences and accomplishments of NASA scientist Sandra Cauffman, learns to believe in her potential, pursue her passion for science, and empower others through friendship, storytelling, and perseverance.

Figure 2
Pedagogical framework components for the digital storybook: Susana's Dreams.



Source: Own elaboration from study results, 2025.

4.3 Phase III: ChatGPT-4o Prompt Components

In this phase, researchers and participants developed ChatGPT-4o prompts for generating content-sensitive storybooks by intentionally selecting unit 1: *Costa Rican Heroes*, within the sixth-grade curriculum. Table 1 illustrates the content of this unit, including an enduring understanding, essential questions, and four curricular themes. Participants explained that this unit guides their weekly planning and instruction of grammar structures and vocabulary needed for EBs to develop specific language skills by the end of the unit. As reported earlier, researchers and participants used unit 1 for creating the storybook, *Susana's Dream*. From their design decisions following their co-established pedagogical framework (see Figure 2), researchers and participants identified a series of necessary component requirements for ChatGPT-4o prompts to create digital storybooks such as *Susana's Dream*. Reflecting on the process, one participant shared, "I like that we can use tools like ChatGPT to write stories. To be honest, I had no idea it could be so flexible and useful for something like this" (field notes, April 4, 2024). Initial prompt requirements comprised the following: (a) dilemma: *recognition to diversity*; (b) dimension: *women*; (c) curricular theme #1: *national heroes and famous people*; (d) grammatical structures: *simple present, etc.*; (e) language function(s): *describing people's achievements and personal characteristics*, and (f) idiom(s): *to go from zero to hero*.

In this process, researchers and participants considered prompt requirements that addressed not only specific linguistic components and social justice dilemmas but also observed that storybooks met EBs' current English language proficiency. They established level A1 of the common European framework of reference for languages (CEFR) as the appropriate starting level for storybooks, based on participants' assessment of EBs' current language proficiency. As one participant put it, "A basic level of English is best for these stories since it helps us introduce vocabulary and grammar structures students can build on later" (field notes, April 4, 2024). Beyond language-level considerations, researchers and participants agreed that one of the most important goals in the storybook creation process is to develop ChatGPT-4o prompts that accurately reflect the sociocultural realities of EBs in the classroom and their communities. To achieve this, they discussed possible sociocultural scenarios related to the selected dimensions in Figure 1. Researchers emphasized that participants' understanding of EBs' backgrounds and needs is essential to ensuring the prompt requirements accurately represent EBs' lived experiences. One participant highlighted the importance of representing local realities, stating, "It's important that we emphasize the role of women in the stories, especially since in our communities, women are often the heads of household and carry a big responsibility in raising the children that we teach in our school" (field notes, April 4, 2024).

The sample prompt below illustrates the collaborative work of researchers and participants in creating Susana's Dream using ChatGPT-4o.

4.3.1 *ChatGPT-4o sample prompt*

Write a story into a cartoon from dialogue among characters using the information below.

The story should include a beginning, rising action, climax, falling action, and resolution.

The story should be crafted at the A1 level within the common European framework of reference for languages using simple present, prepositions such as on and in, and wh-questions such as what, where, why, descriptive adjectives, the idiom to go from zero to hero, and important facts about the characters in the story.

Shape the story around the social issue of recognition to diversity and women. In this case, Susana sees herself in Sandra Cauffman, who struggled in life to become the NASA scientist she is today. Susana is a very invested student in science and technology and dreams of becoming another science woman at NASA, despite the limited presence of women in this field.

Characters: Susana, Rocio, Patricia, Teacher, Judge.

Plot: Rocio and Patricia are very good friends with Susana and wish to support her dreams of becoming a scientist. They all learned about Cauffman in school, and Susana is interested in becoming a scientist in the future.

Sandra Cauffman's background: Sandra Cauffman is used as a role model of what women in engineering have accomplished and endured on their journey to recognition, despite their limited but growing presence in science and technology. Cauffman, daughter of María Jerónima Rojas, was born in Costa Rica in a one-parent home of very scarce resources in Hatillo. She grew up extremely poor but refused to give up her love for space science. Cauffman had been inspired by the first Moon landing and recalled that she told her mother that she, too, wanted to go to the Moon. Cauffman recalls that she had a difficult childhood, moving often and with her mother working two or three jobs at a time. Her mother, however, supported Cauffman's dreams, and whenever Cauffman thought things were too hard, she looked to her mother for inspiration. She's a Costa Rican woman with a scientific career at NASA. She is a specialist in the areas of electrical engineering and physics, known for her work at NASA in various positions. Her profile has been highlighted by UN Women as a positive example for women, especially young women and girls (Wikipedia contributors, 2024).

Below is the resulting storybook using the ChatGPT-4o prompt above.

4.3.2 *Generated story*

Title: Susana's Dream

Scene 1: Inspiration in the Classroom

Setting: Classroom

Characters: Susana, Rocio, Patricia, Teacher

Dialogue:

Teacher: Today, we will learn about Costa Rican NASA scientist Sandra Cauffman.

Susana: Wow! She is from Costa Rica, like me. To work at NASA, she has to be intelligent and brave. But, I am not sure if I am like Sandra Cauffman.

Rocio: Wow! She is an example for all of us.

Patricia: Susana, you are intelligent too. You can be a scientist like her! You just need to believe in your dreams.

Susana: You are right, Patricia, I just need to believe I can accomplish my dreams.

Scene 2: Sharing a Dream

Setting: Schoolyard

Dialogue:

Susana: I want to work at NASA like Sandra Cauffman.

Patricia: I know there are a few women who work as scientists at NASA.

Rocio: Why is that?

Susana: I don't know, but I love space and science. I will work at NASA one day.

Rocio: Yes, you can! Never give up!

Patricia: Yes, we believe in you!

Scene 3: Inspiring Others

Setting: Classroom

(The teacher is giving the information about the Arts Festival that is in a few days. The students who want to participate in the festival need to prepare a play.)

Dialogue:

Susana: Girls, why don't we prepare a play about Sandra Cauffman's story. Her life is so inspiring for other girls who want to be scientists like her.

Patricia: That is a great idea!

Rocio: Let's do it!

Susana: We can present Sandra's challenges and achievements to become a scientist.

Patricia: I can play Sandra Cauffman's mom.

Rocio: I can be the narrator of the story.

Susana: I can be Sandra Cauffman.

Susana, Rocio, and Patricia: Let's do it!

Scene 4: The Arts Festival

Setting: Arts Festival

Dialogue:

Rocio (as Narrator): Sandra Cauffman had a difficult life. She was born in 1962 and grew up in Hatillo, San José, living with her adoptive mother. Her mother had very little money but worked hard to send Sandra to school. Sandra went to university in Costa Rica and wanted to study Electrical Engineering. However, she was told it was not for a woman to study Electrical Engineering and had to study Industrial Engineering instead. Later, her mother got married, and they moved to the United States. Sandra did not give up on her dream and studied Electrical Engineering at George Mason University. Now, she is the assistant director at NASA in the United States.

Susana (as Sandra): Mom, people are telling me that studying Electrical Engineering is not for me. I have to study Industrial Engineering instead!

Patricia (as Sandra's Mom): Sandra, stay strong and positive! You need to follow your heart and your dreams. You can do anything! Just believe you will have the opportunity to study Electrical Engineering. You will see!

Susana (as Sandra): Thank you, Mom! I won't give up on my dreams. I know they will come true!

Rocio (as Narrator): Sandra's story shows that women can achieve anything they dream of, despite the challenges. We just need to have faith and work toward our dreams to make them a reality. It doesn't matter what your circumstances are; you just need to believe in yourself.

Judge: This play is so inspiring! Great job, girls!

Scene 5: Recognition

Setting: School

Dialogue:

Teacher: Your play was the best at the festival!

Susana: Thank you, Teacher. We wanted to show Sandra's story to inspire other girls.

Rocio and Patricia: Yes!

Scene 6: A New Dream

Setting: Schoolyard

Dialogue:

Susana: One day, I will work at NASA like Sandra Cauffman.

Rocio: You can do it! Just believe in yourself.

Patricia: We believe in you, Susana!

End: Susana wants to work at NASA like Sandra Cauffman. She learns that if she believes in her dreams, she can do anything. Her friends help her, and together they tell Sandra's story. Susana shows us that we can follow our dreams if we work hard and never give up.

4.4 Discussion

This study sought to explore how collaborative design between researchers and rural-school English teachers could inform creating digital storybooks as teaching materials to support literacy development among sixth-grade EBs in rural Costa Rica. Working from a collaboratively established pedagogical framework, researchers and participants engaged in

an iterative design process in which each phase required critical reflection, negotiation, and context-sensitive decision-making. These phases – social justice dilemmas and dimensions, curricular themes and content, and ChatGPT-4o prompt components – produced specific design decisions that intentionally departed from the initial pedagogical framework (see Table 2). These decisions reflect the flexible and responsive nature of collaborative work when engaging with rural school settings and demonstrate how teaching materials can be tailored to reflect students' cultural realities, language needs, and learning goals. The digital storybook *Susana's Dream* exemplifies the ways in which these decisions materialized in practice, with the decisions outlined in Table 2 implemented to a reasonable extent, given the amount of content suitable for a single storybook; remaining elements, such as additional context about the characters and their communities, are proposed as accompanying supplementary materials to support the storybook under analysis.

Table 2

Design principles and examples from the collaboratively established pedagogical framework

Phases	Design Principle (Decision + Rationale)	Examples from Susana's Dream
Phase I: Social justice dilemmas and dimensions	<ul style="list-style-type: none"> - Identify relevant social justice dilemmas and their dimensions using the SRSJE framework to center students' lived experiences and support social justice education - Select social justice dilemmas that reflect students' sociocultural realities and use them to shape narrative goals focused on equity, diversity, and inclusion 	<ul style="list-style-type: none"> - The story centers on recognition of diversity and the dimension of women, representing a young Costa Rican girl inspired by Sandra Cauffman - The plot focuses on empowerment through representation, enabling Susana to visualize herself as a future scientist
Phase II: Curricular themes and content	<ul style="list-style-type: none"> - Align selected dilemmas and dimensions with curricular themes and content to make storybooks relevant to what students are already learning - Expand the definition of curriculum-aligned content to include diverse and contemporary role models so students can see themselves reflected in the curriculum 	<ul style="list-style-type: none"> - Unit 1 themes (e.g., national heroes, vocabulary, grammar) are used to support both content and linguistic objectives - Sandra Cauffman is introduced as a modern national hero, challenging conventional images of success
Phase III: ChatGPT-4o prompt components	<ul style="list-style-type: none"> - Match language level in teaching materials to students' current proficiency to make stories more comprehensible and appropriate for their learning stage - Design ChatGPT-4o prompts to incorporate both curriculum-aligned language structures and culturally responsive content - Integrate sociocultural scenarios in prompts to reflect EBs' lived experiences and local community contexts 	<ul style="list-style-type: none"> - Storybooks were generated at CEFR A1 level with simple structures and vocabulary appropriate for rural EBs - Prompts included grammar (e.g., simple present), idioms (e.g., "to go from zero to hero"), and descriptive functions tied to national identity - Story events and character interactions reflect rural schooling and familiar aspirations, making the text feel situated and meaningful
Cross-phase	<ul style="list-style-type: none"> - Use storytelling as a pedagogical tool to connect literacy development with identity, emotion, and social justice themes 	<ul style="list-style-type: none"> - The story conveys perseverance, friendship, and learning, using a culturally grounded narrative arc that supports literacy and empowerment

Source: Own elaboration from study results, 2025.

The first phase involved selecting social justice dilemmas and dimensions that could guide the narrative content of digital storybooks. Drawing on Fraser's (2008) conceptualization of redistribution, recognition, and representation, researchers proposed using the SRSJE framework (Jacott et al., 2014; Sainz López, 2017). Participants engaged with the SRSJE framework to identify dilemmas and dimensions that corresponded with the sociocultural realities of their students. These included the need to value gender representation, amplify underrepresented voices, and acknowledge structural inequalities in rural Costa Rican schools. Selecting the *recognition of diversity* dilemma and the dimension of *women* helped shape the central storyline of Susana's Dream, where a young girl inspired by Costa Rican scientist

Sandra Cauffman learns to believe in her own intellectual potential. This early design decision illustrates how teachers can interpret the framework in ways that could support student identity development and encourage more inclusive literacy instruction.

The second phase involved aligning the selected dilemmas and dimensions with Costa Rica's sixth-grade English curriculum. Researchers and participants chose to work with unit 1: *Costa Rican Heroes*, a unit already used by teachers to introduce figures of national importance. Rather than treating the curriculum as fixed, participants explored ways to adapt its content to reflect their students' lived experiences (e.g., a culturally grounded arc of perseverance and friendship; women's representation through a Costa Rican girl inspired by Sandra Cauffman; and an empowerment plot that helps Susana envision herself as a scientist – situating the story in under-resourced rural schools) while maintaining its linguistic objectives. They emphasized the importance of integrating vocabulary related to heroism, grammar for narrating historical events, and adjectives for describing personal characteristics. Susana's Dream embeds these components in a narrative that elevates a contemporary Costa Rican female scientist, thereby expanding the definition of heroism in the classroom. This curricular alignment phase reflects a crucial departure from the pedagogical framework, as teachers reshape curricular themes through the lens of social justice, further grounding literacy instruction in culturally responsive teaching.

The third phase of the design process involved collaboratively developing prompt components for ChatGPT-4o. This required identifying specific linguistic and thematic elements that would guide the storybook creation process. Participants determined that prompts should reflect both language-based components – such as grammatical structures and vocabulary from unit 1 – and the social justice dimensions selected earlier. For Susana's Dream, prompt inputs included the simple present tense, descriptive adjectives, and the idiom “to go from zero to hero,” all centered around a female national figure. In addition, participants assessed their students' English proficiency and identified A1 of the common European framework of reference for languages as the appropriate starting point for the storybooks. This attention to language level and sociocultural relevance demonstrates how participants translated their knowledge of student needs into tangible decisions that guided the AI-assisted storybook creation process. In doing so, this phase marks an important design decision that reinforces the practical relevance of the pedagogical framework.

Storytelling, the art of conveying stories that resonate universally by engaging audiences through characters and their interactions in various situations (Rainville and Gordh, 2016), was

central to co-create storybooks. Additionally, storytelling plays a crucial role in both meaning making and learning because it helps individuals interpret the world around them and acquire new knowledge (Scolari, 2009; Smeda et al., 2014). It also encompasses three crucial elements: the heart, the physical body, and the spirit (Lawrence and Paige, 2016), crucial for creating meaningful and relatable stories. Susana's Dream is an example of how this approach, guided through a collaboratively established pedagogical framework with rural English teachers, can impact EBs in ways that represent their sociocultural realities in rural settings. The importance of these premises in creating meaningful and relatable stories lies in their ability to connect with individuals on a deeper level. This approach highlights the importance of stories to express feelings and previous experiences and amplifies its impact on EBs' personal and academic development (Lawrence and Paige, 2016).

The study also points to the value of grounding teaching materials in frameworks such as culturally responsive teaching (Gay, 2002). Participants' decision to align storybook content with students' lived experiences and language needs reflects the multi-dimensional nature of culturally responsive teaching, which encompasses "curriculum content, learning environment, classroom atmosphere, student-teacher relationships, teaching strategies, and performance assessment" (Gay, 2018, p. 31). The collaboratively developed storybook Susana's Dream drew on these principles by integrating both curriculum-aligned content and themes of representation and gender equity. These design decisions inspired Susana's Dream and hold promise for future iterations of teacher co-created storybooks using the storybook creation process established in this study.

Collaboratively creating storybooks with teachers (and ideally students) is a first step in acknowledging and visibilizing EBs' backgrounds and needs in rural settings. The design decisions reflected in Susana's Dream demonstrate that collaboration goes beyond input – it becomes a method for reimagining what literacy instruction can look like in settings that have been historically underrepresented in materials development. As Hess (2021) explains, "Stories of the Other mobilized by dominant bodies to accomplish particular agendas operate as modes of representation that stabilize and make the Other knowable while simultaneously marking the groups so represented as lacking" (p. 71). In this context, designing storybooks collaboratively allows teachers to shift the locus of representation back toward the students and their communities. This approach emphasizes the value of listening, co-planning, and testing narratives that reflect not only what students know but also how they live and imagine (Rainville and Gordh, 2016).

Additionally, this study facilitated integrating social justice into literacy instruction, using storytelling as a tool to address and discuss sociocultural scenarios directly affecting EBs (Lawrence and Paige, 2016; Rojas-Alfaro and Ramírez-Casalvolone, 2024). The social justice dilemmas discussed during Phase I did not remain theoretical. They informed the construction of storybook content and the choices participants made throughout the process – from selecting relatable national figures to ensuring that linguistic scaffolds were aligned with students' levels. These design decisions brought visibility to structural inequities while also offering a narrative framework for students to see themselves as part of the learning process. This study can serve as a model for future pedagogical interventions where storytelling is used as a vehicle for social justice in the classroom.

Finally, digital tools such as ChatGPT-4o and FUNREAD hold significant potential when guided by collaborative frameworks. Rather than replacing teachers' roles in content creation, ChatGPT-4o supported and expanded their ability to generate context-sensitive teaching materials. Participants' engagement with prompt writing showed that the tool could accommodate highly localized inputs while still aligning with curriculum and pedagogy. Similarly, platforms such as FUNREAD can offer a space to host these materials and make them shareable among educators (Rojas-Alfaro and Montenegro Sánchez, 2024). Developing Susana's Dream through this digital support structure illustrates the possibility of scaling teacher-led innovation while honoring the time and constraints rural educators face (Montenegro Sánchez and Rojas-Alfaro, 2025; Viales Angulo and Carmona Miranda, 2014).

5. Conclusion

Collaborative pedagogical frameworks and digital tools can transform how teachers support literacy development in resource-limited rural areas. When teachers and researchers work together, they create teaching materials that reflect the cultural and linguistic realities of students. These frameworks help teachers select social justice dilemmas, align them with curriculum goals, and develop stories that connect classroom content with students' everyday experiences. Through storytelling, teachers can foster student engagement, support language skills, and affirm learners' identities. Storybooks such as Susana's Dream model this process, showing how narratives grounded in students' social contexts can serve as both language learning tools and empowerment sources. Teachers do not need to separate curriculum from context; they can integrate both through intentional, collaborative design.

Digital tools such as ChatGPT-4o (within free-plan limits) and open-access generative AI tools platforms as DeepSeek offer additional ways for teachers to create relevant and responsive materials. When teachers shape the prompts, fine-tune language input, and choose narrative features based on student needs, they direct the tool toward meaningful outcomes. Consequently, AI becomes a support for teacher-driven decisions, not a replacement for professional judgment. Likewise, using tools such as FUNREAD to host and share storybooks allows teachers to revise and improve content through classroom implementation and reflection. This approach helps teachers working with limited time and resources to continue producing context-sensitive teaching materials that support their students. When teachers lead the creative process, AI expands what they can accomplish – especially in classrooms where relevant, inclusive teaching materials are not readily available.

These implications extend to teachers, curriculum planners, and education programs seeking to make literacy instruction more inclusive and equitable. Supporting teachers in designing teaching materials that reflect student identities, language goals, and lived experiences fosters more responsive and engaging classrooms. Policies that encourage teacher collaboration, provide time for design, and recognize the value of local knowledge can help sustain this work. Teachers can reshape instruction when they create space for student voice and prioritize content that reflects the knowledge, experiences, and cultural practices of their communities. Susana's Dream demonstrates what is possible when storybooks grow from these values. When teachers focus on what matters to their students, they do more than teach language – they build classrooms where all learners can imagine, participate, and succeed.

This study points to important implications for literacy instruction and materials development in rural settings. When teachers help design digital storybooks through a collaboratively established pedagogical framework, they bring in knowledge that reflects their students' identities, learning needs, and community realities. These decisions allow teaching materials to become more relevant and responsive to the contexts in which EBs learn. In this study, selecting recognition of diversity as a social justice dilemma and focusing on women as a dimension led to a story that could help students see themselves as capable of achievement and belonging. The storybook Susana's Dream presents a relatable protagonist (Susana) inspired by a Costa Rican figure (Sandra Cauffman), inviting students to connect language learning with personal empowerment. Rather than rely on imported materials, teachers can shape content that reflects real student experiences and classroom goals. This approach

supports equitable instruction and shows how collaborative material design can support literacy development through culturally responsive and social justice teaching practices.

The study also highlights implications for education policy and professional development. Teachers in this study worked within an existing curriculum while making design decisions that reframed content through a social justice lens. They restructured unit 1 of the sixth-grade curriculum to include grammar and vocabulary that met required standards, while also selecting story elements that emphasized gender representation and local heroes. These shifts did not replace the curriculum but adapted it to reflect what students know and care about. The work teachers did with ChatGPT-4o prompts – setting language level, selecting vocabulary, and shaping story structure – demonstrates the level of expertise required to create context-sensitive materials. These processes call for support through professional learning communities, compensated collaboration time, and policy flexibility that recognizes teacher-led adaptation as a central part of curriculum work. Treating teachers as pedagogical content designers affirms their role in building inclusive classrooms and responding directly to local needs.

Similarly, the study suggests implications for how teachers can leverage digital tools such as ChatGPT-4o to support literacy instruction. Teachers used ChatGPT-4o not as a shortcut for content creation but as a support system for shaping storybooks that matched their students' language proficiency and cultural context. Developing prompt components involved selecting grammar structures, vocabulary, language functions, and sociocultural references that aligned with both curricular themes and EBs' lived experiences. This process shows that digital tools such as ChatGPT-4o can help teachers create relevant teaching materials when they apply their pedagogical knowledge and understanding of the classroom. Teachers tailored each prompt with intention, drawing on the collaboratively established pedagogical framework and their understanding of student needs. The tool extended their ability to create meaningful texts without replacing their professional judgment. These findings suggest that ChatGPT-4o and similar tools should support – not override – teacher decision-making. When teachers control how these tools operate in the design process, they can use AI to produce storybooks that promote access, cultural relevance, and literacy development in rural classrooms.

This study invites continued research on how collaborative design between teachers and researchers can support teaching materials development rooted in culturally responsive teaching and social justice education. Future work can explore how this model adapts to different rural contexts, grade levels, and language combinations beyond Spanish-English

bilingualism. Examining how teacher collaboration unfolds in regions with distinct sociocultural histories may clarify how local values, community knowledge, and national policies interact in material design. Further research can also study how students respond to storybooks co-created through these frameworks, particularly in relation to language development, motivation, and identity formation. Research also can examine how social justice dilemmas and dimensions function in the storybook creation process. This study focused on the recognition of diversity dilemma and the dimension of women as a point of departure. However, other dilemmas – such as redistribution and representation – remain underexplored in classroom narratives. Exploring how teachers interpret and apply these dilemmas in relation to teaching materials' design decisions can offer new approaches for embedding equity, diversity, and inclusion in literacy instruction. Future studies might also examine how collaborative frameworks evolve when students participate directly in content creation, providing their perspectives on relevant issues, themes, and storytelling structures.

Likewise, future research should further examine the role of generative AI tools like ChatGPT-4o in teacher-led design processes. This study focused on prompt development and co-creation, but longer-term studies can investigate how teachers refine their use of AI over time and how they adapt these tools for different pedagogical goals. Research could also explore ethical considerations, such as authorship, data privacy, and representational accuracy when using generative AI in classroom settings. As digital platforms like FUNREAD expand, researchers can examine how teachers use these systems to share materials, sustain collaborative practices, and create knowledge networks across rural schools. These lines of inquiry will help shape future innovations in bilingual education and support teachers as agents of change in their classrooms and communities.

Regarding the study's limitations, several challenges arose during the collaboration phase with participants in the storybook creation process and the development of the pedagogical design framework. The main issues included time commitments, scheduling conflicts, and meeting locations, which at times disrupted the continuity of the work. These challenges were mitigated through flexible scheduling and virtual meetings via Zoom. Another limitation was participants' digital divide, particularly with using ChatGPT, which was addressed in the first two sessions through technical support and guidance. In addition, this study is part of a larger research investigation and was intentionally bounded by a localized context (two rural schools) and the availability of participating teachers; accordingly, the small sample (three participants) recruited via snowball sampling limits representativeness and may introduce

selection bias. The short, two-month co-design period further constrains claims about long-term impact and scalability. As the work relied on digital platforms (e.g., Zoom, ChatGPT-4o), uneven access and readiness remained a contextual constraint despite supports. As with qualitative research, thematic interpretation carries inherent subjectivity, which was mitigated through triangulation and member checking. Finally, although risks and ethics of AI use were discussed with participants to promote critical use, a full analysis of these issues lies beyond this article's scope and is not reported here.

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