



Differentiated Scaffolding Strategies for Inclusive Virtual Exchanges in Primary Education¹

Estrategias de apoyo diferenciadas para intercambios virtuales inclusivos en educación primaria

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Abstract:

This article examines how teachers scaffold synchronous virtual exchanges (VEs) in primary education to support learners with diverse linguistic, developmental, and educational needs. Drawing on two VE projects involving pupils from France, Spain, and the United Kingdom, the study analyses the strategies teachers employed to promote participation and meaningful communication. The findings indicate that effective scaffolding is essential for fostering inclusion and engagement in diverse classrooms. Teachers adapted support according to learners' language proficiency, psychosocial maturity, and special educational needs through peer support, differentiated tasks, and targeted guidance. The study highlights the importance of preparation prior to synchronous

Resumen:

Este artículo analiza cómo el profesorado implementa estrategias de andamiaje en intercambios virtuales (IV) síncronos en primaria para apoyar a estudiantes con diversas necesidades lingüísticas, evolutivas y educativas. Basándose en dos proyectos de IV con alumnado de Francia, España y Reino Unido, el estudio examina las estrategias utilizadas por el profesorado para fomentar la participación y la comunicación significativa. Los resultados indican que la promoción de la inclusión y la implicación del alumnado en aulas diversas depende de un andamiaje eficaz. El profesorado adaptó el apoyo ofrecido en función del nivel de competencia lingüística, la madurez psicosocial y las necesidades educativas especiales del estudiantado mediante el aprendizaje entre iguales, ta-

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interaction and argues that the success of VEs depends largely on flexible scaffolding practices that respond to learner diversity. Implications for the design and implementation of inclusive VEs in primary education are discussed.

reas diferenciadas y orientación específica. Se destaca la importancia de la preparación previa a la interacción sincrónica y se sostiene que el éxito de los IV depende en gran medida de prácticas de andamiaje flexibles que respondan a la diversidad del alumnado. Finalmente, se analizan las implicaciones de estos hallazgos para el diseño y la implementación de IV inclusivos en educación primaria.

Keywords:

Virtual exchange; synchronous interaction; scaffolding; tandem; lingua franca.

Palabras clave:

Intercambio virtual; interacción síncrona; apoyo; tándem; lengua franca.

Résumé:

Cet article analyse la manière dont les enseignants mettent en œuvre des stratégies d'échafaudage (*andamiaje*) lors d'échanges virtuels (EV) synchrones au primaire afin de soutenir des élèves présentant des besoins linguistiques, développementaux et éducatifs divers. S'appuyant sur deux projets d'EV impliquant des élèves de France, d'Espagne et du Royaume-Uni, l'étude examine les stratégies utilisées par le corps enseignant pour favoriser la participation et une communication significative. Les résultats indiquent que la promotion de l'inclusion et de l'engagement des élèves dans des classes diverses repose sur un échafaudage efficace. Les enseignants ont adapté le soutien offert en fonction du niveau de compétence linguistique, de la maturité psychosociale et des besoins éducatifs particuliers des élèves grâce à l'apprentissage entre pairs, à des tâches différenciées et à un accompagnement spécifique. L'importance de la préparation préalable à l'interaction synchronique est mise en avant, et l'étude soutient que le succès des EV dépend en grande partie de pratiques d'échafaudage flexibles qui répondent à la diversité des élèves. Enfin, les implications de ces résultats pour la conception et la mise en œuvre d'EV inclusifs dans l'enseignement primaire sont analysées.

Mots-clés:

Échange virtuel; interaction synchrone; soutien; tandem; langue franque.

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Introduction

Virtual exchange (VE), also referred to as telecollaboration, has increasingly been recognised as an effective pedagogical approach for promoting intercultural communication and authentic language use through online interaction between learners in different geographical contexts. In foreign language education, VE enables learners to engage in meaningful communication with peers abroad, transforming the target language

from a purely academic subject into a practical tool for interaction and social connection. Although VE has been widely explored in secondary and higher education, research involving primary school learners remains comparatively limited (Asensio Pastor & Al-Momani, 2025; Dooly & Sadler, 2016). This gap is particularly evident in studies examining how teachers scaffold synchronous online interaction among young learners with diverse linguistic, cognitive, and psychosocial profiles.

This article examines differentiated scaffolding strategies used in synchronous VEs involving primary-school pupils. It focuses particularly on how teachers support learners with varying levels of linguistic competence, differing degrees of psychosocial maturity and special educational needs (SEN). Drawing on two complementary studies – one involving French and Spanish pupils communicating in English as a lingua franca (ELF) and another involving UK and Spanish learners engaged in a tandem exchange – the article argues that effective scaffolding is fundamental to inclusive VE practices.

The findings demonstrate that successful VE depends not only on technological infrastructure and task design but also on teachers' ability to anticipate learner needs, prepare differentiated support and adapt interactional management strategies before and during online encounters. The article highlights the importance of preparatory work, flexible classroom organisation, peer support, and differentiated participation roles in fostering equitable engagement and intercultural communication.

Literature Review: VE and Diversity in Primary Education

VE refers to “the engagement of groups of learners in extended periods of online intercultural interaction and collaboration with partners from other cultural contexts or geographical locations as an integrated part of their educational programmes and under the guidance of educators and/or expert facilitators” (O'Dowd, 2018, p. 5). Studies have shown that VE enhances language learning by providing authentic communicative opportunities that extend beyond the traditional classroom environment (Dooly & Vinagre, 2022; Lee, 1998). Its use in primary education is particularly promising, as it offers young learners authentic opportunities to use the target language in meaningful contexts (Birsak de Jersey et al., 2025; Kolb & Pinguri, 2026; Pennock-Speck & Clavel-Arroitia, 2022).

The theoretical foundations of synchronous VE in language education are closely linked to Task-Based Language Teaching (TBLT). As Ellis and Shintani (2014) explain, tasks typically involve an information or opinion gap that encourages learners to mobilise whatever linguistic and non-verbal resources they possess in order to achieve a communicative goal. However, the implementation of TBLT with young learners has generated considerable debate. While some scholars question whether beginners possess sufficient linguistic resources to engage successfully in communicative tasks (Littlewood, 2007; Swan, 2005), others contend that carefully scaffolded tasks can support meaningful participation even among novice learners. For instance, Ellis (2020) stresses that success in beginner-level TBLT depends largely on task design, multimodal support and the use of support mechanisms that help learners compensate for limited linguistic competence. Research involving young learners, therefore, suggests that task success depends heavily on pedagogical design, pedagogical guidance, and appropriate scaffolding.

The concept of scaffolding occupies a central position in research on young learners' VEs. Drawing on sociocultural perspectives of learning, scaffolding refers to the temporary support provided by teachers, peers, or mediating tools that enables learners to accomplish tasks beyond their current independent abilities (Vygotsky, 1978; Wood, Bruner & Ross, 1976). In primary education, scaffolding is particularly important because young learners often require assistance not only with language production but also with task management, emotional regulation, and social interaction (Níkleva & López-García, 2019). Legutke et al. (2009) emphasise that young learners benefit from tasks broken down into smaller manageable stages and supported through visual aids, gestures, prompts and collaborative structures. Similarly, Cameron (2001) argues that an appropriate balance must be achieved between teacher support and learner autonomy, since excessive intervention can reduce opportunities for authentic communication while insufficient support may generate frustration and disengagement.

Recent research involving synchronous VE with primary learners demonstrates how scaffolding operates dynamically during online interaction. Wigham and Whyte's (2024) case study of a "Guess Who?" task between French and Spanish primary pupils using ELF provides detailed insight into teacher support and learner autonomy in synchronous exchanges. The authors found that teachers played a highly active media-

ting role throughout the exchange, guiding task progression, facilitating communication, and supporting interaction between local and remote participants. Although learners produced more independent than dependent turns, the teacher remained central in managing the interactional flow, particularly during opening and closing phases and during backstage interactions occurring within the local classroom. Wigham and Whyte (2025) distinguish between “frontstage” interaction directed toward remote partners and “backstage” interaction occurring locally between pupils and teacher. Their analysis revealed that backstage scaffolding was essential to task success. Much of the teacher’s intervention consisted of prompts related to task management rather than direct correction of linguistic form. This finding suggests that synchronous VE requires teachers to mediate not only language production but also the organisational and social dimensions of interaction. The authors further observed that no learners produced task-management turns independently, indicating that young learners still relied heavily on teacher orchestration to maintain the flow of communication. Nevertheless, learners demonstrated substantial autonomy in generating their own utterances and successfully scaffolded VE tasks to support meaningful language use among beginner learners.

The role of scaffolding becomes even more significant in inclusive classrooms characterised by diversity in language proficiency, learning needs and psychosocial maturity. Diversity is a defining feature of contemporary classrooms and includes linguistic, cultural, cognitive, and psychosocial dimensions (Gearon et al., 2009). In fact, research emerging from the E-LIVE³ and TeCoLa⁴ Erasmus+ projects has repeatedly highlighted that diversity is one of the most relevant characteristics of current VE classrooms. Clavel-Arroitia et al. (2023) found that teachers frequently reported challenges associated with heterogeneous linguistic competence when organising VE activities. Similarly, Pennock-Speck and Clavel-Arroitia (2022) observed that mixed-ability groups complicated both task design and classroom management, particularly in large classes where teachers struggled to provide individualised support. In heterogeneous language classrooms, diversity is a multi-dimensional construct that can lead to frustration and disengagement if not properly addressed. To promote success for all students – particularly those at the “extremes” of the proficiency spectrum – researchers advocate for diffe-

3 <https://sites.google.com/view/eliveproject>

4 <https://sites.google.com/site/tecolaproject/>

rentiated instruction and the implementation of differentiated pedagogical strategies capable of accommodating learner variability.

Differentiation has consequently emerged as a key concept in inclusive VE research. Although terminology varies across educational traditions, including terms such as adaptation, accommodation and adjustment, differentiation generally refers to tailoring instruction to learners' individual needs, abilities and learning styles (Bondie et al., 2019; Tomlinson, 2001). Convery and Coyle (1993) define differentiation as the process through which teachers provide opportunities for all learners to achieve their potential at an appropriate pace and through varied learning activities. Tomlinson (2001) similarly emphasises the importance of adapting tasks in mixed-ability classrooms to ensure that all learners encounter suitably challenging experiences.

Within VE contexts, Jauregi et al. (2019) propose differentiation strategies such as offering multiple communication modes, varying levels of linguistic support and personalised task pathways to promote participation and inclusion. More particularly, in synchronous VE contexts, scaffolding strategies could include providing language models and sentence starters, using multimodal resources such as visual aids and word banks, pairing less proficient learners with stronger peers, rehearsing tasks prior to interaction, assigning differentiated communicative roles, and strategically intervening during exchanges through repetition, reformulation and turn-management support (Clavel-Arroitia & Pennock-Speck, 2025; Wigham & Whyte, 2025).

Research has also shown that scaffolding techniques must be adapted according to learners' linguistic competence and educational needs. In the VE analysed by Clavel-Arroitia and Pennock-Speck (2025), teachers differentiated tasks by assigning less proficient and SEN pupils activities in their stronger language, while more proficient learners engaged more extensively in the target language. Peer scaffolding also played an important role, with lower-performing pupils paired with stronger classmates to foster inclusion and participation. The study further highlights how psychosocial maturity, understood as "the social-cognitive capacity to differentiate and coordinate the social perspectives of self and other as central to character development and education" (Schultz et al., 2003, p. 67), influenced participation, as some pupils required additional behavioural guidance to engage seriously with the exchange activity. Additionally, the presence of neurodivergent learners and students with SEN

requires teachers to adopt inclusive practices that ensure accessibility (Ubaque-Casallas, 2024). These findings reinforce the idea that scaffolding in VE extends beyond linguistic support and includes emotional, behavioural, and organisational dimensions.

Previous studies also emphasise how teacher guidance is shaped by technological and organisational constraints. Wigham and Whyte (2024) observed that the teacher's highly interventionist role was partly needed by technical limitations such as poor sound systems and webcam positioning, which made communication difficult for both local and remote participants. Similarly, in the exchange both teachers remained physically positioned at the front of the classroom throughout the interaction in order to coordinate participation, repeat unclear questions and ensure audibility. These findings imply that synchronous VE requires teachers to function simultaneously as language facilitators, technical coordinators, classroom managers and intercultural mediators, which are important teacher roles in VE (Clavel-Arroitia & Pennock-Speck, 2015).

Another recurring theme in the literature concerns learner motivation and authenticity. Several studies suggest that VE increases engagement because learners use the target language with real interlocutors rather than solely for classroom exercises. Teachers in both the TeCoLa and E-LIVE projects reported that pupils became more motivated when they realised that the language learned in school could be used to communicate with children abroad. This authentic communicative purpose appears particularly significant for young learners, whose motivation is often strongly influenced by social interaction and emotional engagement (Philp & Duchesne, 2016).

Despite all of these positive outcomes, research also emphasises the practical challenges associated with differentiation and scaffolding in VE. Riordan and Convery (2022) note that empirical evidence supporting differentiated instruction remains relatively limited, partly because of the complexity of conducting systematic classroom research. Teachers frequently describe differentiation as highly time-consuming, particularly when multiple versions of activities and varying levels of support are required. Other teachers explained that limited instructional time complicated preparation for the exchange and yet others highlighted the extensive effort required to organise inclusive activities and recruit suitable pupils when some students were insufficiently prepared. These challenges become amplified in synchronous VE settings, where teachers must

simultaneously manage technology, intercultural interaction, classroom dynamics, and varying learner needs in real time.

Finally, earlier work consistently underlines the importance of preparation before synchronous exchanges take place. Successful VE implementation depends not only on technological access but also on careful pedagogical planning, rehearsal and scaffolding (Dooly & Vinagre, 2022; Wigham & Whyte, 2024,2025). Teachers in previous studies prepared learners through activities such as exchanging letters, rehearsing questions and answers, creating visual supports, and pre-teaching relevant vocabulary. Such preparation reduces anxiety, increases learner confidence, and facilitates smoother interaction during live exchanges. The evidence, therefore, suggests that effective synchronous VE in primary education relies fundamentally on differentiated and adaptable scaffolding strategies capable of addressing the diverse linguistic, cognitive and social needs of learners while simultaneously fostering autonomy, inclusion, and intercultural communication.

All in all, the literature suggests that successful synchronous VE in primary education depends not simply on technology or task design but fundamentally on adaptable and differentiated scaffolding strategies. Effective VE requires teachers to consider learners' linguistic competence, psychosocial maturity, intercultural awareness, and educational needs while simultaneously managing classroom interaction and technological mediation. Inclusive VE can be achievable when teachers provide flexible support through peer collaboration, differentiated language use, careful preparation, multimodal resources, and active mediation.

Despite these insights, several aspects remain insufficiently explored. First, although previous research has established the importance of scaffolding in synchronous VE, relatively little attention has been paid to how teachers differentiate such support in response to diverse linguistic, psychosocial and educational needs of primary-school learners. Second, existing studies tend to examine particular dimensions of scaffolding, such as task management, linguistic support, or technical mediation, rather than providing a more comprehensive account of how these forms of support are combined and adapted during actual VE interaction. Finally, there is limited empirical evidence of how differentiated scaffolding operates across different VE contexts and groups of learners with varying levels of proficiency and educational needs. The present study addresses these gaps by examining how teachers implement and adapt scaffolding

strategies to support diverse primary-school learners before and during synchronous VEs.

Against this background, the present study addresses the following research question: How do teachers implement differentiated scaffolding strategies to support the participation of primary-school learners with diverse linguistic abilities, levels of psychosocial maturity and educational needs in synchronous virtual exchanges? More specifically, the study examines (i) how teachers adapt tasks and linguistic demands to accommodate learner diversity, (ii) how they provide linguistic, behavioural, organisational and technical support before and during synchronous interaction and (iii) how these scaffolding strategies contribute to learners' participation, engagement and opportunities for meaningful intercultural communication.

The study

Context and participants

This study draws on qualitative and quantitative data from two primary education VEs: a French-Spanish exchange using ELF and a UK-Spanish tandem exchange. In the tandem exchange, British and Spanish pupils took turns participating in tasks in English and Spanish, with the respective cohort alternating between the roles of native-speaker model and L2 learner according to the language being used. In both exchanges, the participants were primary school pupils with ages ranging from 8 to 11 years old. They provided consent to have their information used for research purposes. Participants included mixed-ability learners, with a significant proportion of SEN pupils, particularly in the UK cohort. Both exchanges were conducted within the Engaging Languages in Intercultural Virtual Exchange (E-LIVE) Erasmus+ project (KA220-SCH-A0796E7A), which promotes intercultural telecollaboration in school education. In this project, university lecturers acted as coaches supporting school teachers in the design and implementation of VEs. The coaches guided the teachers throughout the process, helping them prepare their pupils and organise the exchange activities. As part of the project, the coaches also developed a range of tasks specifically designed for primary-school learners, which could be implemented through different technological

environments, including videoconferencing and a virtual world created within the project. Thus, the university coaches were not the pupils' regular teachers but supported the participating teacher in integrating these resources and activities into their classroom practice and in facilitating VEs.

In the first exchange, 25 Spanish and 20 British pupils aged 9-11 participated in the project. Some of the Spanish pupils had special educational needs, but the teacher was strongly committed to ensuring their inclusion in the activity. In the case of the British school, more than half of the students had some type of educational need. The main phase of the exchange took place in a videoconference setting with the British and Spanish students carrying out a getting-to-know you task⁵ and the British participants also participated in an activity in a virtual world with their teacher and the two coaches (who are the two authors of this article). As a preparatory task, the students exchanged letters with personal information as a getting-to-know-you pre-task. The post-task phase consisted of interviews with the respective teachers. In figures 1 and 2, we can see the layout of the classroom during the main synchronous activity which was held with the whole group of students and with both teachers situated close to the pupils:

Figure 1

Teacher and students in Spain during the main task



⁵ This and the rest of the tasks employed in both exchanges can be found here: <https://sites.google.com/view/eliveproject/resources/ve-tasks/elive-tasks?authuser=0>

Figure 2

Teachers and students in the UK during the main task

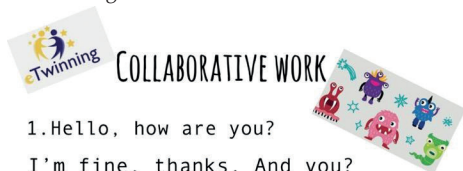


In the second exchange, 22 French students and 25 Spanish students, aged from 8 to 9, participated in the activities. The students carried out a pre-task activity consisting of a Guess-Who game, a main activity where they shared the results of their respective online Monsters' books together with two other activities: singing a Christmas carol and an activity based on guessing the names of a series of school items. In the post task phase, the coach, Ciara Wigham, interviewed both teachers and the French participants completed a post-questionnaire. The teacher in Spain also asked the parents and the pupils to fill in a post-survey.

Figure 3 shows an example of the scaffolding materials prepared by the teachers for use before and during the main task:

Figure 3

scaffolding material for main task in EFL exchange



2. Let's work together!

3. Our monster can have
(1,2,3,4,5), (big/small), (red,
purple, yellow, green, orange,
blue),
(head, ears, eyes, mouth, nose).

4. What do you think ?

Yes, I think is ok/good/fine.

No, I prefer :

(1,2,3,4,5), (big/small), (red,
purple, yellow, green, orange,
blue), (head, ears, eyes, mouth, nose).

5. Ok, perfect

Data collection and analysis

To carry out this study, we employed a mixed-methods approach in which we took the role of participant observer (Freeman & Hall, 2012). In the analysis of the first exchange, our data collection methods included observation of recorded videoconference sessions, analysis of learner interaction and teacher interviews. The two researchers were also present during the main task-phase and during the activities taking place in the virtual world.

In the case of the second exchange, our data collection methods involved the observation of the recorded videoconference sessions, analysis of learner interaction, and teacher interviews. We also offer a descriptive statistical analysis of the results of the post-questionnaires.

Qualitative data from the recorded sessions, learner interactions, and teacher interviews were analysed thematically, with particular attention to the scaffolding strategies used before and during the synchronous exchanges. The analysis focused on how support was differentiated in response to learners' linguistic competence, psychosocial maturity, and

educational needs, including linguistic, behavioural, organisational, technical, and peer-mediated scaffolding. Questionnaire data from the French cohort were analysed descriptively using means and standard deviations for each Likert-scale item.

Results and discussion

The findings are presented separately for the two VEs in order to highlight the specific ways in which scaffolding and differentiation were implemented in each context. The first section focuses on the UK-Spain tandem exchange, where learner diversity, particularly in terms of SEN and linguistic proficiency, made differentiated support particularly salient. The second section examines the France-Spain EFL exchange, focusing on preparation, teacher mediation, multimodal support, and learner perceptions as reflected in the post-questionnaire. The section concludes by bringing the two cases together to identify the main implications for inclusive synchronous VE in primary education.

1. The UK-Spain tandem exchange: differentiated scaffolding and teacher mediation

The importance of differentiation is particularly evident in the UK-Spain tandem exchange between pupils in London and Badajoz. More than half of the UK pupils were identified as having SEN, while the Spanish class also included pupils with SEN and lower-performing learners. The teachers and coaches therefore designed the exchange carefully to ensure inclusivity and participation for all learners. Observation of the lessons allowed us to identify a range of differentiated scaffolding strategies, particularly in relation to linguistic demands, peer support, psychosocial maturity and classroom management.

Teachers adapted tasks according to pupils' linguistic competence and educational needs. SEN pupils and lower-performing learners were frequently allowed to use their stronger language in order to participate successfully and confidently. In the Spanish classroom, lower-performing and SEN pupils were assigned tasks involving communication in Spanish rather than English to facilitate participation and reduce anxiety. Similarly, in the UK classroom, native Spanish speakers and SEN pupils often

worked in English, which represented a more accessible linguistic challenge for some learners. This differentiated allocation of language tasks illustrates how teachers adjusted communicative demands according to individual learner profiles (Clavel-Arroitia & Pennock-Speck, 2025; Jauregi et al., 2019).

Peer scaffolding also emerged as a significant strategy. In line with Clavel-Arroitia and Pennock-Speck (2025) and Wigham and Whyte (2025), less proficient learners were paired with stronger classmates to support participation and inclusion. This approach reflects sociocultural views of learning in which collaboration with more capable peers enables learners to operate within their zone of proximal development (Vygotsky, 1978; Wood, Bruner & Ross, 1976). Importantly, differentiation did not simply involve simplifying tasks for lower-performing pupils; teachers also adjusted the complexity of the expected responses. For example, learners with lower Spanish proficiency answered the same questions as more proficient peers but were expected to produce simpler responses. Such practices enabled pupils to participate in shared communicative activities while accommodating differences in linguistic ability (Bondie et al., 2019; Jauregi et al., 2019; Tomlinson, 2001).

The analysis also highlights the importance of psychosocial maturity in VE participation. The teacher in Spain reported that some pupils initially did not take the exchange seriously enough, which threatened the smooth functioning of the activity. This observation reinforces Schultz et al.'s (2003) argument that psychosocial maturity affects learners' ability to engage respectfully and responsibly in collaborative social interaction. In this context, teacher scaffolding extended beyond linguistic support to include behavioural guidance, emotional regulation and preparation for intercultural communication (Cameron, 2001; Clavel-Arroitia & Pennock-Speck, 2025; Wigham & Whyte, 2024). The finding is particularly relevant in primary education, where pupils' ability to manage the social and behavioural demands of an unfamiliar communicative situation may vary considerably.

Preparation before the synchronous interaction emerged as another important component of the UK-Spain exchange. Pupils exchanged letters before meeting online, introducing themselves and sharing information about their hobbies, families and school life. Teachers also prepared pupils through rehearsals, pronunciation practice, written question preparation and vocabulary review. These activities provided learners

with linguistic and interactional resources that they could subsequently draw upon during the live exchange. Preparation therefore functioned as an important form of anticipatory scaffolding, helping pupils to become familiar with the content, language, and interactional demands of the forthcoming encounter. This finding is consistent with Ellis's (2020) argument that beginner-level tasks require substantial preparation and multimodal support.

Teacher mediation was also shaped by the technological and organisational conditions of the exchange. During the main task, both teachers remained physically positioned at the front of the classroom in order to coordinate participation, repeat unclear questions and ensure audibility. Their role consequently extended beyond language teaching to include the management of the physical classroom and the technological conditions of the online interaction. This evidence illustrates how, in synchronous VE, teachers may simultaneously function as language facilitators, classroom managers, technical coordinators, and intercultural mediators (Clavel-Arroitia & Pennock-Speck, 2015).

The teachers in this exchange also highlighted the motivational value of authentic communication. The teacher in Spain emphasised that pupils gained greater meaning from language learning because they were able to apply what they had learned in interaction with peers abroad. Similarly, the teacher in the UK highlighted the emotional impact of allowing pupils to meet the peers with whom they had previously exchanged letters. These observations suggest that the social and authentic nature of the exchange contributed to pupils' engagement by giving classroom language learning a communicative purpose beyond the immediate classroom context. This interpretation is consistent with broader VE research indicating that authentic intercultural communication can enhance learner engagement and emotional investment (Dooly & Vinagre, 2022, Lee, 1998; Pennock-Speck & Clavel-Arroitia, 2022).

The UK pupils additionally participated in a series of activities in a space in the E-LIVE virtual world designed specifically for them by the second author of this article. These activities provide further examples of how scaffolding was implemented through multimodal and technology-mediated resources. They included:

- 1) a visit to a large map of Spain, where pupils identified familiar places and were introduced to Valencia;

- 2) an animal-discovery activity involving animated 3D models accompanied by the corresponding animal sounds;
- 3) quiz activities in two multimedia booths, one showing animal video clips and the other using only sounds to prompt pupils to identify animals by ear;
- 4) a gamified hunt in which learners had to locate as many hidden animals as possible and report their findings to the teacher; and
- 5) two wrap-up activities consisting of a virtual race followed by the group of pupils dancing to Spanish music using avatar animations

These activities combined visual, auditory, linguistic and kinesthetic resources, thereby providing multiple means of engaging with language and content. The interaction also illustrates how the teacher and coaches used these resources to scaffold participation, in line with previous recommendations for scaffolding young learner in synchronous VE (Jauregi et al., 2019; Legutke et al., 2009; Wigham & Whyte, 2024).

In the first activity, for example, pupils demonstrated their engagement with the virtual environment:

Figure 4

activity 1 (map of Spain)



Example 1:

S1: I found it!

S2: I found it! Valencia!

S3: Yeah! Yeah!

S4: I've got three heads blocking me!

S5: So, so far, I'm enjoying it!

The teacher reinforced this engagement by providing explicit instructions for navigating the environment and encouraging pupils to explore it:

Example 2:

T: Only answer the questions because everything will be heard in the beautiful world, ok?

T: Ok, find the map, everyone and you gather there [...] Okay, so when you find the map, they will give you instructions, ok?

The animal-discovery activity provides a further illustration of linguistic scaffolding:

Figure 5

activity 2 (animal discovery)



One of the coaches guided pupils through the different animals, drew their attention to pronunciation difficulties and provided positive feedback:

Example 3:

C1: A ver qué animal tenemos aquí... el siguiente...

Ss: ¡Perro!

C1: "Perro" es difícil, ¿verdad? La "r", -rro, perro

S6: Perro

(the dog barks)

C1: ¡Chicos, seguidme! Muy bien: qué rápidos

S7: Eso es una... un loro

T: Eso es un loro: ¡muy bien!

S8: Loro

(They move to a different animal)

S9: ¿Caballo?

S10: Caballo

S11: Un caballo

T: ¡Muy buena pronunciación! ¡Muy bien!

S11: Gracias!

(C1 chuckles)

C2: Very good pronunciation!

C1: "Gracias!", how cute!

Here, scaffolding involved modelling pronunciation, drawing attention to a specific phonological difficulty, repetition and positive reinforcement. The teacher and coaches therefore provided immediate support while allowing pupils to produce the target-language items themselves.

The quiz activities further demonstrate how pupils themselves participated in the regulation of the interaction:

Figure 6

activity 3 (quiz activities in the booths)



Some pupils reformulated the coach's Spanish instructions in English for their classmates, while others reminded their peers of the behavioural expectation of the task:

Example 4:

C1: Ahora seguidme a otra actividad

S12: We just have to follow her

(They get to the booth)

S13: Don't touch it!

S14: I'm not touching it!

C1: Vale, escuchad un poco, por favor

Ss: Ok!

C1: ¿Estáis preparados?

S15: No one touches the screen!

This interaction suggests that scaffolding was not exclusively teacher-led. Pupils also contributed to the management of the activity and supported one another, illustrating the collaborative dimension of the exchange. The gamified animal hunt provides an especially clear example of multimodal and bilingual scaffolding. One of the coaches first explained the instructions in Spanish and then in English, while the Spanish teacher repeated the initial instructions in English. That coach also entered the instructions in the chat, providing pupils with written support in addition to the oral explanation. Pupils subsequently used the chat to report their answers:

Example 5:

C1: ¡Vale, muy bien, chicos! ¡Perfecto! ¡Lo habéis hecho muy bien!

Ss: ¡Gracias!

(Some Ss clap)

C1: Vale, ahora vamos a hacer un juego. Tenéis que prestar mucha atención. Mirad: es un juego. Lo voy a explicar en español y después en inglés. ¿De acuerdo?

T: She's gonna explain it in Spanish and then in English.

C1: Primero español. El juego es el siguiente: tenéis que andar por todo el mundo virtual y buscar animales. Están escondidos. You're gonna have to walk around this virtual world and you have to look for hidden animals. They are hidden everywhere around here. The winner is the one that finds most animals. Ok?

Ss: Ok!

(C1 counts until 3 and says go and the Ss run around the virtual world looking for the animals. She also types the instructions on the chat)

S16: I saw a hamster!

S17: I found a fish!

S18: I found a cat!

S19: I have seven!

S20: This is fun!

(Ss type the names of the animals they have found in Spanish on the chat)

The use of Spanish followed by English, the written instructions in the chat, and the possibility of responding through different channels created multiple points of access to the task. One pupil also used translan-

guaging when reporting that “the *perro* is inside the cube”, demonstrating how learners themselves drew flexibility on their linguistic resources to accomplish the task and illustrating how linguistic and multimodal resources can be combined to support participation in synchronous VE (Clavel-Arroitia & Pennock-Speck, 2025; Jauregi et al., 2019; Wigham & Whyte, 2025). Finally, the singing and dancing activity provided an additional opportunity for collective participation and positive emotional engagement:

Figure 7

activity 5 (singing and dancing to “*Despacito*” by Luis Fonsi)



After learning how to move their avatars, pupils danced to a Spanish song and responded enthusiastically:

Example 6:

S21: Hey! I know how to dance! I know how to dance! I know how to dance! Hey, hold three to clap!

Ss: I like this part! I like this part, too! I like this part!

S22: He’s so talented!

At the end of the activities, the coaches and pupils exchanged thanks in both languages:

Example 7:

C1: ¡Han hecho todas las actividades fenomenal! Muy bien, eh?

T: Can you, guys, thank them?

Ss: Thank you! Thank you! ¡Gracias! Bye!

C1 and C2: Bye, bye! Adiós

These examples show that the virtual-world activities were not simply an additional motivational component of the exchange. They provided a multimodal environment in which the teacher and the coaches could combine oral and written instructions, modelling, repetition, translation, pronunciation support, positive feedback, peer support, and translanguaging. The activities therefore illustrate how technology can provide additional resources for differentiated scaffolding when it is integrated into a carefully structured pedagogical sequence. The frequent use of praise, repetition, modelling and bilingual explanations also illustrated the multiple dimensions of scaffolding identified in previous research, which extends beyond linguistic assistance to include affective, organisational and interactional support (Cameron, 2001; Clavel-Arroitia & Pennock-Speck, 2025; Wigham & Whyte, 2025).

2. The France-Spain EFL exchange: preparation, mediation, and learner perceptions

The second case study involved 22 French and 25 Spanish pupils aged 8-9 who participated in an EFL exchange. In contrast to the reciprocal language arrangement of the UK-Spain tandem, English functioned as the shared language of interaction. The analysis of this exchange provides complementary evidence concerning the importance of preparation, teacher mediation, and multimodal support. In addition, the post-questionnaire completed by the French pupils provides quantitative evidence of learner perceptions of the exchange.

Preparation was particularly prominent in this exchange. Before the videoconference, learners completed a pre-task involving the creation and exchange of identity cards for a Guess-Who? activity. This provided pupils with information about their remote partners and familiarised

them with the content they would subsequently need to use during the synchronous video interaction. The preparation therefore reduced some of the linguistic and cognitive demands of the live task by giving pupils opportunities to rehearse relevant vocabulary and information beforehand.

The importance of such preparation is consistent with Ellis's (2020) argument that beginner-level task-based activities require substantial support and preparation. In the context of primary-school VE, pre-task activities can therefore be understood not merely as introductory exercises but as an important component of differentiated scaffolding that prepares learners for the linguistic, cognitive and social demands of the interaction.

Teacher mediation was also prominent during the France-Spain exchange. The teachers' interventionist role was partly necessitated by technological limitations, including poor sound systems and webcam positioning, which sometimes made communication difficult for both local and remote participants (Wigham & Whyte, 2025). The teachers consequently had to monitor audibility, repeat or clarify questions, and help maintain the flow of interaction. These observations reinforce the finding from the UK-Spain exchange that teacher scaffolding in synchronous VE encompasses technological and organisational as well as linguistic dimensions.

Thus, although the two exchanges differed in their linguistic configuration, both demonstrate that primary-school pupils cannot be expected to manage all aspects of synchronous online interaction independently. Teacher mediation remained important for maintaining access to the task and ensuring that pupils could participate despite linguistic and technical difficulties.

The post-questionnaire completed by 20 French pupils provides additional evidence concerning how learners perceived the exchange. The questionnaire explored motivation, communication, language learning, intercultural learning, task enjoyment, and teacher support. Responses were analysed using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Table 1
Descriptive statistics for questionnaire items

Questionnaire item	<i>M</i>	<i>SD</i>
I enjoyed the virtual exchange project	4.00	0.65
The project was motivating	3.75	0.91
I enjoyed communicating with my Spanish friends	4.30	0.92
I succeeded in making myself understood	3.70	0.80
I was able to understand my Spanish friends	3.40	1.19
I needed a lot of help from my teacher	3.10	1.17
The project helped me improve my English	4.45	0.69
During the project, I learned things about Spain	3.25	1.45
I liked the self-introduction activity	3.15	1.35
I liked singing a Christmas song together	3.90	1.29
I liked the school-equipment game	3.60	1.23
I liked the monsters activity	3.65	1.46
I liked my teacher being present during this type of activity	4.50	1.05
I would like to participate in another project like this	3.40	1.35

The quantitative results indicate generally positive perceptions of the VE experience. The highest mean score was observed for the item concerning teacher presence during the exchange activities ($M = 4.50$, $SD = 1.05$), indicating that pupils strongly valued having their teacher present during this type of activity (Clavel-Arroitia & Pennock-Speck, 2025; Wigham & Whyte, 2025). Learners also reported that the project helped them improve their English ($M = 4.45$, $SD = 0.69$), while overall enjoyment of the project was also high ($M = 4.00$, $SD = 0.65$). The relatively low standard deviations for these items indicate relatively broad agreement among participants.

These findings provide further support for the importance of teacher mediation identified in the qualitative analysis (Jauregi et al., 2019; Pennock-Speck & Clavel-Arroitia, 2022; Wigham & Whyte, 2024). In particular, the high rating for teacher presence suggests that pupils did not necessarily perceive teacher support as an obstacle to participation or autonomy. Rather, teacher presence appears to have been valued as a source of security and assistance during an unfamiliar communicative situation. This is consistent with sociocultural perspectives on learning, according to which learners benefit from mediation when participating

in activities that exceed their current independent abilities (Cameron, 2001).

The social dimension of the exchange was also positively evaluated. Pupils reported enjoying communicating with their Spanish peers ($M = 4.30$, $SD = 0.92$) and several open-ended responses referred positively to enjoying “talking with them” and “communicating”. This result reinforces VE research suggesting that authentic communication with peers abroad can enhance learner involvement and motivation (Birsak de Jersey et al., 2025; Dooly & Vinagre, 2022; Kolb & Pinguri, 2026; Pennock-Speck & Clavel-Arroitia, 2022). The opportunity to communicate with children of a similar age therefore appears to have been an important component of the pupils’ positive perceptions of the exchange.

By contrast, understanding their Spanish peers received somewhat lower rating ($M = 3.40$, $SD = 1.19$) than pupils’ perception that they had succeeded in making themselves understood ($M = 3.70$, $SD = 0.80$). Although this difference should be interpreted cautiously given the small sample, it may indicate that comprehension presented a greater challenge for some learners than language production. This difference may reflect the linguistic asymmetry often observed in ELF exchanges involving beginner-level learners. This finding further underlines the importance of repetition, reformulation, multimodal support and teacher mediation during synchronous interaction (Jauregi et al., 2019; Legutke et al., 2009).

Interestingly, the item “I needed a lot of help from my teacher” produced a more moderate mean ($M = 3.10$, $SD = 1.17$), with greater variation across responses. This contrasts with the very high rating for teacher presence ($M = 4.50$). These findings suggest that pupils valued having the teacher present without necessarily perceiving themselves as uniformly dependent on teacher assistance. The variation may reflect differences in language proficiency, confidence, psychosocial maturity and communicative competence among the participants (Cameron, 2001; Pennock-Speck & Clavel-Arroitia, 2022; Wigham & Whyte, 2024). It also supports the broader argument of this study that scaffolding needs to be flexible rather than uniformly applied to all learners.

The questionnaire also provides some evidence of intercultural learning. Pupils generally agreed that they had learned things about Spain ($M = 3.25$, $SD = 1.45$), although the relatively high standard deviation indicates considerable variation in responses. This variability may suggest

that intercultural learning outcomes were not equally salient to all pupils or that the activities prioritised communication and joint participation over explicit cultural comparison (Dooly & Vinagre, 2022; Pennock-Speck & Clavel-Arroitia, 2022).

The activity-based items received moderately positive ratings. Pupils particularly enjoyed singing a Christmas song together ($M = 3.90$, $SD = 1.29$), while the school-equipment game ($M = 3.60$, $SD = 1.23$) and the monsters activity ($M = 3.65$, $SD = 1.46$) were also favourably evaluated. The open-ended responses similarly suggest that creative and playful activities contributed to learner enjoyment (Birsak de Jersey et al., 2025; Kolb & Pinguri, 2026). The repeated references to the “monsters” activity, in particular, suggest that imaginative tasks may be particularly engaging for primary-school learners.

Finally, pupils expressed a moderately positive willingness to participate in another VE project ($M = 3.40$, $SD = 1.35$). Although this score was lower than those for teacher presence, perceived language improvement and communication with peers, it nevertheless indicates generally favourable attitudes towards participating in another exchange. This finding is consistent with research suggesting that authentic communication and interaction with peers abroad can foster positive attitudes towards language learning and encourage continued engagement with VE (Clavel-Arroitia, 2025; Kolb & Pinguri, 2026; Pennock-Speck & Clavel-Arroitia, 2022). All in all, the questionnaire results suggest that pupils valued the social and communicative dimensions of the VE while also recognising the importance of teacher support.

3. Cross-case synthesis: differentiated scaffolding across the two exchanges

Although the two exchanges differed in their linguistic configuration and task design, the findings converge on several important points. First, both cases demonstrate that preparation is a fundamental component of scaffolding. In the UK-Spain tandem, preparation involved letter exchanges, rehearsals, pronunciation practice, question preparation and vocabulary work, while the France-Spain ELF exchange incorporated identity cards and pre-task activities. In both cases, preparation provided learners with linguistic and interactional resources before they encountered the demands of live communication (Dooly & Vinagre, 2022; Wigham & Whyte, 2024).

Second, both exchanges demonstrate that scaffolding extends beyond linguistic assistance. Teachers and coaches supported pupils with task management, behavioural regulation, technological difficulties, turn-taking and participation. This reinforces the view that synchronous VE with primary-school learners requires teachers to mediate multiple dimensions of interaction simultaneously.

Third, the two cases illustrate the importance of differentiated rather than uniform support. In the UK-Spain exchange, linguistic demands were explicitly adapted to learners' abilities and educational needs, and peer scaffolding was used to support less proficient pupils. In the France-Spain exchange, the questionnaire findings suggest that pupils differed in their perceived need for teacher support and in their ability to understand their partners. These differences reinforce the need for teachers to monitor learner needs and adjust accordingly.

Finally, the two cases seem to demonstrate the potential of VE to provide meaningful opportunities for young learners to use language with peers abroad. The positive learner perceptions recorded in the France-Spain questionnaire, together with the engagement evident in the UK-Spain interaction, suggest that authentic communication, playful activities and multimodal environments can contribute to learner involvement. However, these opportunities did not arise from technology alone. Rather, they depended on careful preparation, differentiated pedagogical support and active teacher mediation. In sum, the two cases therefore provide converging evidence for the central argument of this study: inclusive synchronous VE in primary education requires teachers to adapt scaffolding to learners' linguistic, educational and psychosocial needs while creating the conditions for equitable participation in authentic intercultural interaction.

Conclusions and Pedagogical Implications

This article has examined differentiated scaffolding strategies in synchronous VEs involving primary-school learners in two distinct educational contexts: a French-Spanish EFL exchange and a UK-Spanish tandem exchange. Drawing on classroom observation, learner interaction, teacher interviews and questionnaire data, the study demonstrates that successful VE implementation in primary education depends fundamentally

on adaptable teacher scaffolding capable of addressing linguistic diversity, psychosocial maturity and special educational needs.

The findings from both exchanges highlight the central role of teacher mediation in facilitating inclusive participation, particularly during synchronous online interaction. Teachers did not simply act as language instructors but also functioned as classroom managers, technical coordinators, behavioural guides and intercultural mediators. The results show that differentiated scaffolding was essential in enabling all learners to participate meaningfully. Teachers adapted tasks according to learners' linguistic competence and confidence levels, paired less proficient learners with stronger peers, rehearsed activities beforehand, provided multimodal support and strategically intervened during live interaction through repetition, reformulation, prompting and turn management.

The study also demonstrates that scaffolding in VE extends beyond linguistic support. Psychosocial maturity emerged as an important factor influencing participation, particularly among younger learners who required behavioural guidance and emotional support in order to engage appropriately in collaborative interaction. Similarly, technological and organisational constraints frequently required teachers to adopt highly interventionist roles to ensure smooth communication during videoconference sessions.

The questionnaire finding from the French cohort further reinforce these conclusions. Learners reported highly positive perceptions of the VE experience, particularly regarding teacher presence, language improvement and communication with peers abroad. The results suggest that authentic intercultural interaction contributes positively to learner motivation, engagement and confidence in language use. At the same time, the variability observed in some questionnaire items indicates that learners experience VE differently depending on their linguistic competence, confidence and individual learning needs. These findings support previous research emphasising the importance of differentiated instruction and flexible scaffolding in heterogeneous classrooms.

One of the clearest conclusions emerging from the study is the importance of preparation before synchronous interaction takes place. In both exchanges, extensive pre-task preparation, including letter exchanges, identity cards, rehearsals, vocabulary work, pronunciation practice and visual scaffolding, appeared to be essential in reducing learner anxiety and facilitating smoother interaction during live exchanges. Therefore,

the findings suggest that success in synchronous VE depends not solely on technological access or task design, but also on careful pedagogical planning and the provision of differentiated support before, during and after interaction.

Several limitations of the present study should, nevertheless, be acknowledged. First, the number of participants was relatively small and involved only two VE contexts, which limits the generalisability of the findings. Second, although both exchanges were analysed qualitatively through classroom observation, analysis of the interaction and teacher interviews, quantitative analysis was only conducted on one of the post-surveys, namely the questionnaire completed by the French cohort. A more extensive comparative statistical analysis involving all participating groups could have provided additional insight into learner perceptions across contexts. However, the purpose of this article was to offer a broad perspective on differentiated scaffolding across both exchanges while simultaneously illustrating the complexity of synchronous VE through concrete examples of activities, interaction and teacher mediation. For this reason, the study prioritised breadth of pedagogical illustration over highly detailed quantitative comparison.

The study also has several pedagogical implications for practitioners implementing VE in primary education. First, teachers should recognise that synchronous VE requires substantial preparation and ongoing mediation, particularly when working with beginner learners or heterogeneous groups. Pre-task scaffolding activities, multimodal resources and opportunities for rehearsal appear particularly important in supporting learner confidence and participation. Second, differentiated instruction should be considered a central component of inclusive VE practice. Flexible grouping, peer support, varied linguistic demands and differentiated communicative roles can help ensure equitable participation among learners with diverse needs and abilities. Third, teachers should be prepared to address not only linguistic challenges, but also emotional, behavioural, organisational and technological aspects of interaction. Therefore, successful VE requires a holistic pedagogical approach combining language teaching, classroom management, intercultural facilitation and digital mediation.

Finally, further research is needed to explore differentiated scaffolding strategies in a wider range of primary education VE contexts. Future studies could include larger participant groups, comparative cross-national

analyses and longitudinal approaches examining the long-term effects of VE on language development, learner autonomy and intercultural competence. Furthermore, future work could investigate how emerging technologies, including immersive virtual worlds and artificial intelligence tools, may support differentiated scaffolding and participation in synchronous online interaction among younger learners.

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