MDPI

Article

Professional Development of Pre-Service Language Teachers in Content and Language Integrated Learning: A Training Programme Integrating Video Technology

Cristina Díaz-Martín

Department of Education, Faculty of Science Education and Psychology, University of Córdoba, 14003 Córdoba, Spain; z62dimac@uco.es

Abstract: Over the years, the integration of technology in bilingual education has become increasingly significant. In the European context, particularly in Content and Language Integrated Learning (CLIL), supporting the professional development of future educators has emerged as a crucial aspect. Video-based technology plays a key role in the training of pre-service language teachers, where it serves as a valuable tool for teacher education. There is a growing demand to enhance language teachers' professional development programs, especially within the realm of CLIL teacher education. This study presents a video-based technology training programme intended to enhance the professional development of pre-service language teachers in CLIL. After implementation of the video-based training programme, semi-structured interviews with pre-service language teachers were conducted to evaluate the impact of the programme. The results show a positive influence on the pre-service language teachers' professional development. The utilization of video-based technology was found to significantly improve their comprehension of CLIL while fostering their awareness of their teaching practice. For the research community, these encouraging results should act as a driving force to continue exploring video technology within teacher education programs in CLIL to enhance educators' professional development.

Keywords: video technology; professional development; Content and Language Integrated Learning (CLIL); pre-service language teachers; primary education

1. Introduction

Employing technology to improve teachers' professional development is a highly demanded practice within the field of teacher education (Tafazoli 2021). Particularly, video technology has been extensively used in this field over the past decades, and its use has increased in language teacher education due to its potential (Hüttner 2019). The use of this tool promotes reflection on teaching practice (Tripp and Rich 2012), which is a discussion of the practice among both in- and pre-service teachers (Chen and Chan 2022; Marsh and Mitchell 2014), and, importantly, enhancement of professional development (Mann et al. 2019). When used strategically, with a focus on continuous improvement, video can be an asset in enhancing teachers' skills and expertise. Within bilingual contexts, language knowledge and content expertise are both aspects integrated into teachers' professional development, and thus, these skills are crucial for success. In fact, teachers require specific training to work within bilingual environments such as CLIL (Pérez-Cañado 2016). Therefore, the study of the professional development of teachers using video technology is a key element for success in the teacher learning process (Cammarata and Haley 2018) and has been little explored to date.

CLIL is the official approach to bilingual education in Europe and it is defined as a dual-focused approach in which content and language are balanced (Coyle et al. 2010; Mehisto et al. 2008). Within this approach, teachers are expected to demonstrate their proficiency in both the subject content and the language. However, both pre- and in service

teachers conceive the integration of the language and content as a complex process (Cammarata and Haley 2018; He and Lin 2018; Lo 2017; Morton 2016), making the successful implementation of this approach challenging. Thus, although difficult, the process of integrating language and content is relevant and worth conducting for teachers' professional development success. Lo (2020) highlighted the importance of designing more professional development programmes for pre- and in-service teachers. Tafazoli (2021) concluded that it is necessary to train teachers with technologies to enhance their professional development.

Despite the fact that the study of the professional development of CLIL teachers has been increasing in recent times (Kim and Graham 2022), few studies have explored how video technology benefits teacher's professional development, to the best of the author's knowledge. According to Lo (2020), scarce research is found related to CLIL professional development programmes, including studies that integrate the use of video-based programmes to enhance professional development. Integrating video technology as a tool to facilitate this process may be an interesting strategy; therefore, it constitutes a hypothesis to be addressed through this study.

This paper, hence, presents a qualitative study of the professional development of pre-service language teachers at a Spanish university. A video-based technology programme was designed for pre-service language teachers, including interviews that help with reporting how this programme influenced their professional development. The programme used video technology to support pre-service language teachers while analysing their teaching practice. Supportive materials like video annotations and grids of observations were used to guide pre-service language teachers through the programme. Results from the interviews were analysed and discussed in the framework of a literature review in this field. Finally, relevant conclusions were drawn and presented.

2. Professional Development in CLIL: Integrating Video-Based Technology Programmes

Improving the professional development of teachers is normally understood as positively influencing students' learning (Kim and Graham 2022). Thinking about how to enhance training programmes for both in- and pre-service teachers is a key element for achieving teaching and learning process success. As McDougald (2019) affirmed: "It is no secret that learners will not succeed throughout the teaching and learning process if teachers are not properly trained" (p. 199). The concept of professional development must include teacher training as an essential aspect, given that successful programmes combine teacher training and professional development (Cammarata and Ceallaigh 2020). In the CLIL approach, professional development is defined by different aspects like language, content expertise, context, teacher, and learner (McDougald 2019). Apart from these key aspects, the concept of CLIL professional development entails complexities appearing in the teaching practice. Importantly, training teachers for CLIL entails qualifying them as experts in content and language, whose integration is a relevant feature of this approach (Villabona and Cenoz 2021), although also problematic as applied among teachers (Cammarata and Haley 2018; Lo 2020; Morton 2016; Villabona and Cenoz 2021). The concept of CLIL professional development includes key aspects like language but also complexities that appear in teaching practice.

Teachers often encounter challenges when integrating language and content while lecturing. Accurately integrating language and the content to be taught to the learners is usually difficult. On the one hand, expertise in the language does not imply the capacity to teach the integrated content and language (Arnáiz 2017). On the other hand, a lack of language knowledge makes teachers feel closer to the students as co-learners rather than teachers (Hüttner et al. 2013).

To confront this reality, professional development programmes might be orientated towards improving teachers' language competencies in addition to content mastery (Cammarata and Haley 2018). This entails re-designing teacher professional development

programmes for effective CLIL implementation (Lo 2020) and introducing technologies as a relevant aspect of teachers' professional growth (Matarranz 2022).

Video technology is conceived of as a powerful tool for pre-service teachers (Blomberg et al. 2014). The use of this tool has increased since the 1990s (Mann et al. 2019) and has recently expanded its use in bilingual education (Hüttner 2019). This technology offers the opportunity to "capture the everyday experiences of teachers and students" (Borko et al. 2011, p. 176). As a fundamental characteristic, videos "can be viewed repeatedly and paused, so allowing for a selection of focus on the part of the student teachers and teacher educators" (Hüttner 2019, p. 473). The act of watching videos of teaching practice is not limited to a certain point, unlike direct observations. The asynchronous feature of this technology supports its reflection on teaching practice (Marsh and Mitchell 2014). Moreover, reflecting on teaching practice is a key factor in professional development (Mann et al. 2019). Video, therefore, facilitates the teacher's reflection on their teaching practice and enhances professional development (Sun 2014; Schachter and Gerde 2019).

Within CLIL settings, video technology has helped teachers observe effective practices (De Graaff et al. 2007) and identify specific learning moments during lessons (Coyle 2013). Observing practice through videos provides teachers the opportunity to connect theory and practice (Sagasta and Pedrosa 2018). Furthermore, it must be noted that watching and analysing videos to notice teaching practices is fundamental for promoting professional development.

Escobar (2013) explored the connection between reflecting on teaching practice and professional development through a case study in CLIL settings. In his study, reflecting on practice was related to language noticing (i.e., depicting some issues when using the additional language), which is in line with the findings by Morton (2016) highlighting that the additional language played a key role in teaching the content and it causes some struggles for teachers. Other studies in the language teacher education field have explored how video improves teachers' professional development in connection with language (e.g., Eröz-Tuğa 2013; Hüttner 2019; Kourieos 2016). Language awareness, thus, constitutes a relevant dimension to improve professional development according to He and Lin (2018), and it may help with diminishing language issues and its integration within CLIL lessons.

Understanding that video impacts the successful professional development of both in- and pre-service teachers, its use in bilingual teacher education contexts will offer valuable support to teachers. In fact, as reported in the literature, integrating videos within programmes has influenced teachers' practices significantly (Blomberg et al. 2014; Hüttner 2019). Calandra and Brantley-Dias (2010) highlighted the benefits of using video-based technology programmes for teachers' professional growth. However, research in CLIL has paid little attention to incorporating video technology into CLIL teacher training programmes. In fact, Lo (2020) described this gap, demanding more professional development programmes for teachers in CLIL. To cover this gap is, therefore, a key element for the enhancement of teachers' professional development as it has been proven that video technology is a valuable tool in training programmes. This is the fundamental objective of this study, which will be systematically addressed in the ensuing sections.

3. Methods

3.1. The Study Context

The CLIL approach was first applied in Spain in 1996 after an agreement between the Spanish Ministry of Education and the British Council. This approach was implemented within the new guidelines of the Spanish curriculum aiming at improving linguistic competence in second and foreign languages (Lasagabaster and Ruiz 2010). Spain is characterized by monolingual and bilingual communities. Andalusia is an autonomous community in which the present study was developed, characterized as monolingual, with Spanish as the vehicular language for instruction. In this community, like many others in this country, the CLIL approach was introduced to increase the second language level of the learners at schools (Lorenzo 2010), selecting English as the additional language for CLIL implementa-

tion. Previous strategic plans aimed to cover the new language objectives for Andalusian citizens (Barrios and Milla-Lara 2018). Previous plans aimed to accomplish teacher training goals to improve the language level according to the Common European Framework of Reference for Languages (CEFR) (Council of Europe 2020). In this line, the current Strategic Plan for the Development of Languages in Andalusia Horizon 2020 (Junta de Andalucía 2016) kept focusing on this objective by pursuing the improvement of language learning to enhance the learners' communicative and digital competences.

As for teacher training, the bachelor's degree in primary education in Andalusian universities is composed of 3 years of general instruction for all student teachers plus a year of the selected major. In most universities, primary education teachers are trained in different subjects during their last academic years; that is, they can select a preferred major (i.e., general, or an English major). In Spain, particularly, teacher training in CLIL is not officially offered as a syllabus during their academic years at the university (Custodio Espinar and García Ramos 2020). However, when offered as part of a syllabus at some Andalusian universities, CLIL is normally integrated within the English major (i.e., it is not offered for the general studentship). In this study, CLIL was integrated in a syllabus of the English subject, and it was offered to the student teachers that selected the English itinerary.

3.2. Participants

In this study, the target participants were pre-service language teachers at the Faculty of Educational Science and Psychology of the University of Córdoba (Spain). These pre-service teachers chose the English major itinerary in which the practicum and different related subjects are combined. Participants mostly came from monolingual schools, presenting with different English levels (beginner = 1, intermediate = 8, and advanced = 2). During the study, pre-service language teachers were taking a subject methodologically based on CLIL, where the video-based training programme was implemented.

At the same time, pre-service language teachers were developing their practicum at different Spanish primary schools. Participants were then selected through convenience sampling to be interviewed (n = 11). These participants met practical criteria such as accessibility, geographical proximity, availability at a given time, and their willingness to participate (Etikan et al. 2016).

3.3. A Video-Based Technology Training Programme

This programme was designed to improve the professional development of the pre-service language teachers. The programme was implemented in a syllabus named "Foreign Language for the Exercise of the Teaching Profession" included in the English major itinerary of the Primary Education Degree. The syllabus was split into theoretical content and practical seminars. In the former, pre-service language teachers were instructed on the fundamentals of the CLIL approach. During the practical seminars, participants worked in groups while designing a CLIL didactic unit. The programme devoted four video-sessions in the practical seminars to improve the professional development of pre-service language teachers (Table 1): (i) Beginning the CLIL didactic unit: brainstorming, (ii) Teaching vocabulary in CLIL, (iii) Analysing a lesson through video annotations, and (iv) Analysis of the simulated CLIL lesson.

During these sessions (Table 1), video technology was used as the main tool for the pre-service language teachers. The first two sessions were designed to familiarize pre-service language teachers with recording themselves and reflecting on their own videos (i.e., where they appear). Sessions 1 and 2 helped them gain more confidence with digital technologies before moving on to the following sessions. Video sessions 3 and 4 aimed at instructing participants in the analysis of CLIL lessons through video annotation software (i.e., VideoAnt[1]). The video-recorded lessons last approximately 20 min. Participants were guided to analyse their own lesson using an observation guide (Díaz-Martín 2020).

Table 1. Sessions of the training programme.

Phases	Session 1	Session 2	Session 3	Session 4
Phase 1	Brainstorming to come up with different ideas	Creating an activity to teach vocabulary	Introducing participants to using video annotation software and the observation guide	Planning a CLIL lesson of the designed IDUs
Phase 2	Designing the title, objectives, and content of IDUs [1]	Presenting the activity to partners and recording themselves	Watching a real CLIL lesson on YouTube	Simulating a CLIL lesson and recording themselves
Phase 3	Presenting the first draft and recording themselves with smartphones	Watching video recordings and filling out an observation template	Using the video annotation software and the observation guide in the analysis	Using the video annotation software and the observation guide for making the analysis
Phase 4	Watching video recordings and discussing with partners	Providing a space for participants to discuss after filling out the template	Planning a CLIL lesson from the designed IDUs	--

[1] Integrated Didactic Units (IDUs).

The evaluation of the programme was conducted in two different stages: (i) firstly, some participants were selected and interviewed to evaluate qualitatively how the video-based technology programme enhanced their professional development, and (ii) secondly, the acquired knowledge of the programme's participants on CLIL teaching was quantitatively analysed (Díaz-Martín et al. 2022).

3.4. Data Collection

Qualitative interviews were conducted as the main technique to collect data from the participants. The interview designing process followed several steps according to Taylor et al. (2015) (see Appendix A, Figure A1). Interviews included descriptive, open-ended, and close-ended questions as a first draft. This was piloted by selecting a single pre-service teacher among those participating in the video-based training programme (i.e., the participant met the characteristics of the selected participants for this study). The interview questions were revised to improve their clarity, and relevant modifications were made to enhance the overall structure of the instrument. The final interview included a first section to gather descriptive data (e.g., age, gender), a section with close-ended questions (i.e., yes/no questions) (e.g., Have you studied in a bilingual school?), and a section composed of nine questions to establish in what way video supported the enhancement of the participants' professional development (Appendix B). To prevent potential data gaps from arising due to language difficulties, participants were interviewed using their mother tongue (i.e., Spanish).

3.5. Data Analysis

Data analysis was conducted following a three-step procedure by Merriam and Tisdell (2015) (i.e., establishing a purpose, developing a theoretical framework, and starting the codification process). First, once the purpose of this study was established, a literature review was conducted to understand the topic for an accurate description of the theoretical framework. Next, the analysis of the collected data was conducted using the qualitative software *Atlas.ti Qualitative Data Analysis*. Interviews were transcribed and then imported into the qualitative software. Note that *Atlas.ti* allows collecting all interviews as individuals' comments, facilitating the codification process. This codification process was inductive, with codes assigned depending on the participants' discourse and connected to the research questions (Azungah 2018). In this study, codes were added to pre-service teachers' responses in connection with specific aspects like teacher noticing, language awareness, etc. After coding all information, categories were constructed by grouping similar subcategories (see Appendix C, Figure A2). This inductive process was undertaken

to initiate the interpretation of the information gathered from the interviews. Ultimately, the results revealed two significant dimensions: (i) "reflective teaching" and (ii) "teaching aspects in CLIL", both derived from the participants' responses.

4. Results

Results derived from the interviews highlighted the positive influence of the video-based technology programme on professional development of the participants. The results presented in this section show various interview extracts from the participants' responses, translated from Spanish. Certain portions of the responses have been modified to elucidate the meaning of specific participants' expressions. Among the six categories established in the interview analysis, 'reflective teaching' and 'teaching aspects in CLIL' applied to most of the pre-service teachers' responses (see Appendix C, Figure A2). Other participants' responses referred to other aspects related to language, like speech and pronunciation, and significantly, pre-service language teachers' concerns about teaching in CLIL. The following sections depict the main results according to the categories of the analysis, providing detailed responses by the participants.

4.1. Video for Reflective Teaching and Improvement of Practice

The "reflective teaching" category presented the highest frequency of participants' responses (i.e., from the subcategories of teacher noticing, improving teaching practice, and checking mistakes). During the interviews, video was perceived as a useful tool by pre-service teachers to observe their actions while conducting the simulated CLIL lesson. They highlighted that observing themselves through video improved their sense of noticing specific aspects of their teaching. This implied they could realize mistakes they made while delivering a CLIL lesson [Extracts 1 and 2]. Further, they noted that being aware of the mistakes they made was crucial to improve their teaching practice and, indeed, to deliver the next lessons, bearing in mind previous mistakes [Extract 3]. Many participants affirmed that video, in this sense, helped them notice key teaching aspects frequently unnoticed during their practice [Extract 4]. Video, therefore, facilitated them to be aware of many specific details while teaching that were systematically ignored [Extract 5]. Among these details, participants highlighted body language and speaking. Particularly, they noticed how they acted while speaking in a second language, focusing on features like speed and pronunciation [Extract 6].

> [Extract 1]: . . . because when you are explaining or you are the practical session, you are not really aware of what you are doing . . . it is like disconnecting and deliver a speech . . . because you have everything prepared and you feel the necessity to finish as soon as possible, after all, when you watch that in the video, you notice about the mistakes . . ./*Porque cuando tú estás exponiendo, o estás en la sesión práctica, no eres realmente consciente de lo que estás haciendo . . . es como que desconectas y lo sueltas . . . porque lo tienes tan preparado que necesitas soltarlo cuanto antes para como quitártelo del medio, al fin y al cabo, y cuando lo ves en vídeo, te das cuenta de los errores . . .*

> [Extract 2]: . . . because it helps you to enhance. You see your mistakes and you can learn about solving them./*. . . porque te ayuda a mejorar. Ves tus errores y puedes aprender para solucionarlo.*

> [Extract 3]: . . . you do not notice your mistakes . . . but when you really watch yourself talking and doing the simulation of the lesson, the truth is that you see yourself, do you know? you must improve . . ./*no te ves tú tus propios fallos y tus cosas pero cuando tú te ves realmente hablando y dando como si fuera una clase, la verdad que te ves ¿sabes? Que tienes que mejorar tus cosas . . .*

> [Extract 4]: . . . lots of mistakes that you make unconsciously and then, when you realize about that you say: I can correct that. And, in the following session, you try to correct them, it might be right or wrong, but you are aware of that error,

and you have to work on that. It is becoming aware of your own teaching./*De muchísimos errores que cometes no eres consciente y después cuando lo ves dices: esto puedo corregirlo. Y en la siguiente práctica pues intentas corregirlo, te sale bien o no, pero ya eres consciente de ese error y que tienes que trabajar en eso. Es tomar conciencia de tu propia docencia.*

[Extract 5]: . . . because you realize the things you thought you had a lot of confidence, and then it seems that you hadn't; social skills, the way you look at your students, the way you talk to them, adapt yourself to their level. . . . *porque te das cuenta de las cosas en las que tu pensabas que tenías muchísima seguridad, y luego parece, que no; habilidades sociales, como miras a tu alumnado, como le hablas, adaptarte a su nivel.*

[Extract 6]: But when you are speaking in class, I think I were speaking too quickly, and the pronunciation was not good speaking in that way. Then, when you watch the video you notice that./*Pero cuando estás en clase exponiendo, yo creo que lo decía muy rápido, y la pronunciación al decirlo tan rápido no era buena. Entonces luego al ver el vídeo te das cuenta de eso.*

On the other hand, the category of "Video annotations usefulness" was connected to teacher noticing, especially, of the fact of checking mistakes. In this category, participants commented how using VideoAnt supported their video analysis. The video annotation software permitted participants to make annotations on specific parts of their video. In fact, they shared and discussed annotations made on the videos. Generally, it was found that making annotations promoted them to be aware of their practice. As highlighted by participants, identifying mistakes was an easy task by using this software, assuring that using video annotation was not complicated and it supported their video analysis [Extract 7]. Particularly, the fact of using video annotations fostered the observations of peers [Extract 8]. The possibility of comparing videos of the simulated CLIL lessons engaged pre-service teachers in thinking about how to enhance their future practice as teachers.

[Extract 7]: I think that it is a useful tool because it is handy. It is easy to use. I think it is a suitable tool./*Yo creo que es una herramienta útil en el sentido de que es muy práctica. Y es fácil de usar. Yo creo que si es una herramienta apropiada.*

[Extract 8]: I liked it a lot because you can go forward and back in the video, you can make notes, check what your partners have commented, things that I have commented . . ./*Me gustó un montón porque, al poder darle para adelante para atrás, puedes añadir notas, ves lo que me han escrito mis compañeras, lo que había escrito yo . . .*

4.2. Using the Additional Language in CLIL

As for the "Language aspects" category, language concerns of pre-service language teachers were frequently highlighted. When asked about the practical lessons in which the programme was implemented, they commented on the use of the language when delivering the lesson. Some participants showed disconformity about their pronunciation or expressions used in their instruction [Extracts 9 and 10]. In this regard, language level was considered, and identified, as a relevant factor in teaching CLIL. Actually, a participant questioned their training to use a second language in teaching [Extract 11]. In this sense, language skills were decisive for some pre-service language teachers even before delivering the lesson. Feeling unconfident about teaching through an additional language influenced them due to their language level [Extract 12]. Being trained in language skills was also important for them, and video technology made them aware of this issue. The video-based training programme helped pre-service language teachers' realize their language proficiency and the need to improve their English level [Extract 13 and 14].

[Extract 9]: Or see pronunciation mistakes that you have made when delivering the lesson . . ./*O ver errores de pronunciación que has tenido durante la exposición . . .*

[Extract 10]: My colleagues and I, what we saw was that there were a lot of expressions and things that we did not realize . . . I don't know, it is something very ordinary but we do not see that . . ./*Hombre mis compañeros y yo lo que vimos era eso que, había un montón de expresiones y de cosas que no caíamos . . . no sé, que es algo muy cotidiano pero que no vemos . . .*

[Extract 11]: our concern is, are we qualified to use a second language? Do we know to use L1 to enrich the L2? We have a lot of concerns that are there . . ./. . . *nuestra preocupación es ¿estamos a la altura en la lengua? ¿sabemos usar la lengua 1 para enriquecer la lengua 2? Tenemos muchas inquietudes que están ahí . . .*

[Extract 12]: . . . we had a classmate who in our presentation, he wanted to present . . . but because he is better at doing the presentation part because he felt more insecure when giving the contents in English . . ./*teníamos un compañero que en nuestra presentación, él quería presentar . . . pero porque a él se le da mejor hacer la parte de presentación porque él se sentía más inseguro al dar los contenidos en inglés . . .*

[Extract 13]: . . . we need to make better because we were blocked . . . perhaps the pronunciation . . . we need to practice more English to give a lesson . . ./*necesitamos mejorar porque es que nos quedamos pillados . . . a lo mejor la pronunciación . . . que necesitamos practicar más el inglés a la hora de dar una clase . . .*

[Extract 14]: . . . We need to enhance our level of English a lot because you must be spontaneous./*Y eso, y la mayoría necesitamos mejorar nuestro nivel de inglés bastante porque es que tienes que tener mucha espontaneidad.*

When participants discussed what they watched on the video lessons, language level and pronunciation mistakes were broadly commented on. Participants shared how mainly focusing on the language brought an exclusion of other pedagogical aspects when teaching in CLIL. For example, one of the participants commented that focusing on the language draws attention away from other critical issues [Extract 15]. It should be noted that pre-service teachers struggled while focusing on both language and content. The act of integrating language and content required participants to adapt the way teachers teach. In fact, participants commented on the complexity of adapting the language in CLIL, highlighting this aspect as key for the language learning of the learners [Extracts 16 and 17].

[Extract 15]: . . . we worry too much about speaking well instead of doing things good. You . . . in class you do not have to be perfect, no one speak a language perfect even in their native language . . . We are worried about pronouncing things correctly and maybe we run out of time, or we do not do the activity the way we wanted to do it or . . ./. . . *nos preocupamos demasiado por hablar bien, en vez de por hacer las cosas bien. Tu . . . en clase no tienes por qué ser siempre perfecto, nadie habla perfecto siempre ni en tu propio idioma, . . . Estamos preocupados por pronunciar bien y a lo mejor se nos va el tiempo o, no hacemos la actividad como queríamos hacerla o . . .*

[Extract 16]: . . . on the other hand, contents of . . . you should adapt the contents to the learners, not only to the first level as this can be different in other courses./*por otra parte, los contenidos de, que tienes que adaptarlo también a los alumnos, no solo a un primero, pues un primero puede ser muy distinto en varios cursos.*

[Extract 17]: Yes, what kind of expressions we are going to use if we want the students to learn . . ./*Sí, qué expresiones vamos a utilizar si queremos que aprendan [los estudiantes].*

4.3. Video as a Tool to Understand the CLIL Approach

Relevant results were extracted from the category "Teaching aspects in CLIL". Particularly, the subcategory "Understanding of CLIL approach" underlined interesting findings according to how video benefited the pre-service language teachers' understanding of CLIL. The video-based technology programme was found to make them clearly differentiate between teaching an English lesson and teaching a CLIL lesson [Extracts 18 and 19], as

emphasised by various participants. One participant described vocabulary teaching as a common action within CLIL [Extract 20]. Similarly, others noticed that they were more focused on the vocabulary and grammar rather than the content they were delivering [Extract 21]. Upon analysing the videos, they gained awareness of the CLIL approach and its significance in differentiating it from other teaching approaches.

[Extract 18]: . . . because you notice that CLIL is something more than giving an English lesson. It is building concepts from different perspectives . . ./*porque te das cuenta de que AICLE es algo más que dar una clase en inglés. Es construir conceptos desde distintas perspectivas.*

[Extract 19]: And to see that, to differentiate from one more class and a class of . . . a class of content and a foreign language that is completely different./*Y de ver que, diferenciar de una clase más y una clase de . . . que sea de contenido y lengua extranjera que es completamente diferente.*

[Extract 20]: And also, fear of falling into the different practices of "I'm going to give a list of English vocabulary, and I have already done my CLIL lesson . . . we want to avoid that./*Y también miedo a caer en las distintas prácticas de "voy a dar una lista de vocabulario en inglés y ya he hecho mi AICLE" . . . queremos evitar eso.*

[Extract 21]: There are times that we were delivering the class, and it seemed like we were giving a vocabulary lesson rather than a class on specific content. Then, how I explain myself . . . we focused a lot, for example, on the present simple, when what we should be giving is some content within English . . ./*Hay veces que estábamos dando la clase y parecía que estábamos dando una clase de vocabulario y no una clase de un contenido concreto. A ver, cómo me explico, nos centrábamos mucho por ejemplo en el presente simple, cuando lo que tendríamos que estar dando es unos contenidos dentro del inglés . . .*

The link between theory and video sessions of the training programme was also found to be fundamental for pre-service language teachers. For some of them, it was the first time they had studied the CLIL approach as a subject in their bachelor's degree [Extract 22]. Others highlighted the application of video sessions as a fundamental factor for understanding CLIL, strengthening their knowledge [Extract 23]. The CLIL approach was nearly new for most of the participants. However, combining theory and practice in which videos are embedded benefited pre-service language teachers in their understanding [Extract 24].

[Extract 22]: . . . furthermore, as it was the CLIL syllabus, I have never studied CLIL before and . . . the truth is that it helped me to focus a little bit more on what CLIL was./*. . . además, como era la asignatura de CLIL, yo nunca había tocado CLIL y me ha . . . la verdad es que me ha enfocado un poco más sobre lo que era CLIL.*

[Extract 23]: . . . then, although in the theoretical classes I tried to understand it, it was in the practical lessons when I realized what it was. When I watched the video and see how we, my classmates too, had adapted the material, how they had made resources, all of that helped us unite what CLIL meant./*. . . entonces, a pesar de que en las clases teóricas intentaba entenderlo, fue en las prácticas cuando me di cuenta de lo que era. Y, a la hora de ver el vídeo y ver cómo habíamos, mis compañeros también, cómo habían adaptado el material, cómo habían hecho recursos, todo eso nos ayudó a cohesionar lo que significaba CLIL.*

[Extract 24]: . . . previously I did not know anything . . . now I have taken the subject and the practical lessons plus watching themselves on the video, see the activities that have done, that you have prepared, how you have adressed the contents, objectives, and all of that, it helps you to understand how CLIL works./*. . . anteriormente no sabía nada, entonces ahora al hecho de dar la asignatura y hacer esas prácticas y verte en el vídeo y ver las actividades que has hecho, que has*

*preparado, como has tratado los contenidos, los objetivos y todo eso, te ayuda a conocer
un poco más cómo funciona.*

5. Discussion

The results of this study have shown how videos influenced the teaching practices of
the participants (Sagasta and Pedrosa 2018). Video made an impact on the development of
pre-service language teachers' noticing skills, which is in line with the findings by Marsh
and Mitchell (2014). As Calandra and Brantley-Dias (2010) highlighted, video technology
offers the chance for pre-service teachers to check successful practices. Particularly, combin-
ing the use of videos and observation grids helps teachers identify effective practices in
CLIL (De Graaff et al. 2007) and, indeed, in detecting "learning moments" in this setting
(Coyle 2013). Notably, implementing the video-based technology programme in this study
was found to foster the awareness of teaching practices and the focus on language aspects
(Eröz-Tuğa 2013; Escobar 2013; Hüttner 2019; Kourieos 2016; Morton 2016). Apart from
teaching noticing and language, understanding the meaning of CLIL was also found rele-
vant for pre-service language teachers (Sagasta and Pedrosa 2018). These aspects stand out
as the most prominent results, echoing the findings of other studies in the literature.

Being aware of teaching practices after watching themselves on videos was the utmost
relevant aspect of the results. Among others, the sense of improving the teaching practice
was notably commented on by participants. This finding is relevant as it has been scarcely
explored in other studies. Pre-service language teachers highlighted the potential benefits
of observing themselves through videos in practice, indicating the possibility of checking
aspects not easily identified during teaching, such as pronunciation and body language.

Importantly, this is in line with concluding remarks in related literature. According to
Eröz-Tuğa's (2013) study: "they became more conscious about classroom events as they
watched themselves on screen" (p. 181). Sagasta and Pedrosa (2018) interviewed students'
teachers that affirmed to express "awareness of their performance but most became aware
after watching their self recordings" (p. 8). This sense of noticing, thus, benefited pre-
service language teachers by identifying specific details of lessons using video technology,
especially those related to teaching (Hüttner 2019). Due to the visualization and analysis of
videos, once pre-service language teachers are aware of these details, they are in a better
position to address mistakes in teaching practice. This concluding remark fully concurs
with the findings by Kourieos (2016).

Furthermore, when observing themselves, similar to participants in Eröz-Tuğa (2013)
research, pre-service teachers are more likely to focus on the use of body language and
pronunciation. These are common aspects found among pre-service language teachers,
along with worries about using the second language in CLIL (Morton 2016).

Responses of the participants in this manuscript have demonstrated a high correlation
between mistakes identification and the improvement of teaching practices. In this sense,
note that only a few studies have emphasized the role of using video as a valuable tool for
enhancing teaching practices, according to Sydnor (2016), as it has been corroborated to
date by the literature review in this work. Unlike most previously reviewed studies that
barely explored this aspect, the present study's research underscores the significance of
focusing on the sense of enhancement in teaching when mistakes are identified.

Apart from teaching noticing, language aspects (i.e., language proficiency, using
the additional language to teach, and pronunciation) were also found to influence the
teaching practice of pre-service language teachers. Certain similarities were found in
research findings by Eröz-Tuğa (2013) and Kourieos (2016). Both studies were not directly
conducted in CLIL settings but are still relevant for comparison as they closely resemble
most of the conditions in the present work. In both studies, participants described problems
when speaking in English. Kourieos (2016) highlighted the difficulty for participants to
adapt the language level to the learners, as one of our participants mentioned (further
highlighting difficulties in adapting language to the content). These problems typically
appear within CLIL settings. For instance, in the case study by Escobar (2013), the pre-

service teacher affirmed that it was difficult to adapt the language when delivering the lesson. Similarly, interviewed participants in Morton's (2016) study felt worried about their language expertise and using the additional language with struggles in different teaching situations. In this sense, the reviewed literature (see Section 2) and the present study show a direct relationship among using video technology, teacher noticing, and the use of the language. This tool, thus, enables pre-service teachers to observe and become aware of their language use during their teaching practice.

Teaching culture, planning lessons, students learning or motivation towards CLIL were the less commented on aspects when discussing CLIL implementation during interviews. Unlike Escobar's (2013) research, the participants showed a strong focus on ensuring learners' comprehension of the content. Similarly, Sydnor (2016) reported that participants concentrated their attention more on students than on themselves. In contrast, in Sagasta and Pedrosa's (2018) study, participants focused more on language rather than the learning of the students when analysing the video. As found in the present study, pre-service language teachers rarely mentioned the students learning. This could probably be caused by the context of the delivered lesson. As they were simulating a CLIL lesson, their audience was their colleagues. Furthermore, for most of them, this was their first time delivering a CLIL lesson. Notwithstanding, to focus on themselves when observing videos is perceived as something natural, according to Calandra and Brantley-Dias (2010).

6. Conclusions

This study describes a video-based training program aimed at enhancing the professional development of pre-service language teachers in CLIL settings. The designed programme combined different video sessions to encourage pre-service language teachers to reflect on their practice. Interviews were designed and applied to explore how video technology in the programme impacted the participants' professional development. The results highlighted the significance of the video-based technology programme for pre-service language teachers in four main aspects: (i) participants developed greater self-awareness during lessons, (ii) they identified areas for improvement by checking mistakes, (iii) they became aware of their language proficiency, and (iv) they gained a deeper understanding of the CLIL approach. Integrating video technology in the programme was found crucial to improve the professional development of pre-service language teachers. Importantly, their awareness of their own teaching practices was found relevant and common through different areas of knowledge.

By means of video technology, participants were able to reflect on specific teaching techniques previously unnoticed, which appeared after analysing the videos. This process of noticing enabled them to recognize mistakes related to their language use, such as pronunciation errors. In this vein, pre-service language teachers were concerned about their English proficiency and how to deal with language within CLIL environments. Adapting the language by considering the context where they were immersed was demonstrated as another topic of concern. Nonetheless, making language mistakes and being aware of teaching aspects in CLIL acted as a key point for engaging participants to keep improving their teaching practice. In addition, using videos benefited pre-service language teachers by connecting the fundamentals of the CLIL approach with practice. This connection made pre-service language teachers better understand what CLIL meant and how to deliver a lesson by differentiating CLIL from other teaching approaches.

Despite pre-service language teachers focusing their attention on their teaching style, relegating the students learning somehow, implementing this programme has brought benefits to their professional development. Thus, the implementation of video-based training programmes, combining simulated and real lessons in CLIL contexts, is highly recommended to enhance the training of pre-service language teachers. These programmes offer the opportunity for pre-service teachers to reflect on their teaching practice and to improve their professional development. In so doing, they can, therefore, improve their performance in real situations (e.g., practicum).

The number of participants is one of the limitations of the present study. Selecting more participants could shed light on the research topic and, indeed, address the problem significantly. Increasing the number of participants is essential to give a better description of their professional development. On the other hand, using different methods for collecting and analysing data are limitations. Applying different qualitative and quantitative methods provides a better understanding of the topic through data triangulation. Therefore, this study encourages the research community and educators to continue investigating the integration of video technology in teacher training programmes within CLIL settings.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethics Committee of the University of Córdoba (Ref. CEIH-23-20. 23 July 2023), for studies involving humans.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A. Interview Guide

Interviewing guide

1. Introduction

Interviews are developed to study how video sessions and particularly the self-video analysis help pre-service language teachers in their professional development within CLIL. Especially, our main goal is to study whether the video is a potential tool to enhance the professional development of pre-service language teachers for implementing CLIL effectively.

2. Goals

- To interview pre-service language teachers after the video-based programme.
- To analyse participants responses, focusing the attention on how video helped them.
- To gather those aspects that help pre-service language teachers by self-analysing their practices within CLIL.

3. Sample

The sample was selected from those pre-service teachers that participated in the video-based technology training programme. A volunteer sampling was applied, and pre-service teachers decided to take part in this study by answering questions of interviews.

4. Interview's description

Duration	15–20 minutes
Number of interviews	One interview per participant
Place	Researcher office
Participants	Students of the 4° course of Primary Education Bachelor Degree that participate in the video-based technology training programme implemented in the syllabus "Foreign Language for the professional teaching practice (English)"

5. Organization and question sequence

Interviews with participants will follow the next sequence:

1. Explaining to the participants the purpose and objectives of the interview.
2. Explaining who is doing the research.
3. Anonymous and confidencial interview.

Figure A1. Interview guide to collect data.

Appendix B. Interview Final Questions

These questions were designed to know in what way videos supported the enhancement of participants' professional development.

1. How did you find VideoAnt as a tool to analyse your video?
2. Did the analysis help you out? How?
3. Do you think that video sessions helped in your teacher training in CLIL?
4. Do you think watching yourself helps you in reflecting on your teaching practice? Why?
5. Did video sessions help you understand the meaning of CLIL?
6. Did video sessions influence the way you see your teaching practice in CLIL?
7. How did video sessions help you in sharing teaching experiences with your partners?
8. Do you believe video sessions help you share worries about CLIL with your partners?
9. Did video sessions make you feel like part of a professional community?

Appendix C. Results of Participants' Responses: Categories and Subcategories
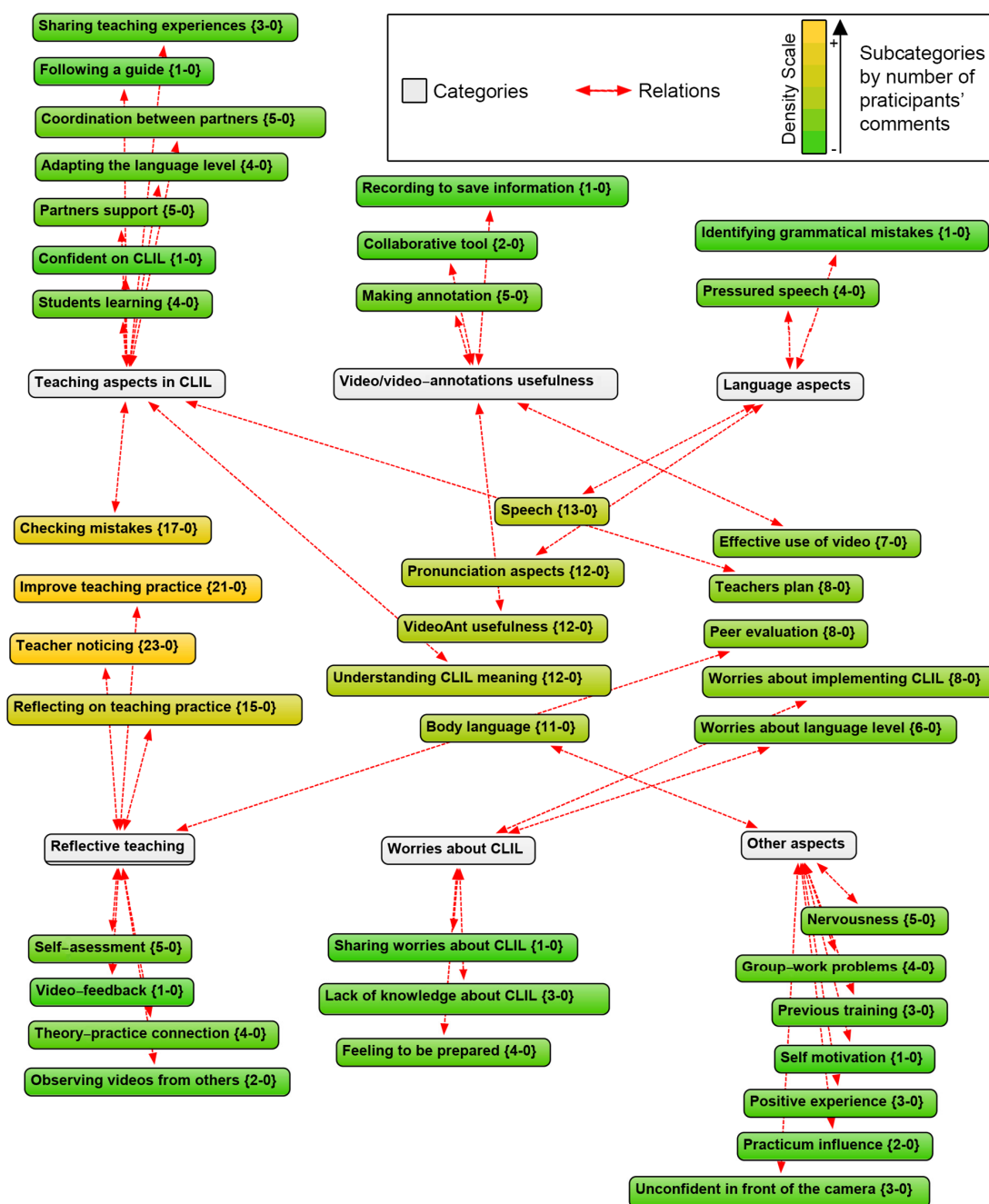
Figure A2. Results of Participants' Responses: Categories and Subcategories.

Note

¹ VideoAnt is an online software for making annotations to an online video. Source: https://ant.umn.edu/ (accessed on 22 September 2023).

References

Arnáiz, Patricia. 2017. El inglés como lengua extranjera en España. ¿En qué convocatoria superaremos esta asignatura? In *La Educación Bilingüe Desde una Visión Integrada e Integradora*. Edited by María Isabel Amor, Rocío Serrano and Elisa Pérez. Madrid: Síntesis, pp. 51–63.

Azungah, Theophilus. 2018. Qualitative research: Deductive and inductive approaches to data analysis. *Qualitative Research Journal* 18: 383–400. [CrossRef]

Barrios, Elvira, and María Dolores Milla-Lara. 2018. CLIL methodology, materials and resources, and assessment in a monolingual context: An analysis of stakeholders' perceptions in Andalusia. *The Language Learning Journal* 48: 60–80. [CrossRef]

Blomberg, Geraldine, Miriam Gamoran Sherin, Alexander Renkl, Inga Glogger, and Tina Seidel. 2014. Understanding video as a tool for teacher education: Investigating instructional strategies to promote reflection. *Instructional Science* 42: 443–63. [CrossRef]

Borko, Hilda, Karen Koellner, Jennifer Jacobs, and Nanette Seago. 2011. Using video representations of teaching in practice-based professional development programs. *ZDM Mathematics Education* 43: 175–87. [CrossRef]

Calandra, Brendan, and Laurie Brantley-Dias. 2010. Using digital video editing to shape novice teachers: A generative process for nurturing professional growth. *Educational Technology* 50: 13–17.

Cammarata, Laurent, and Corey Haley. 2018. Integrated content, language, and literacy instruction in a Canadian French immersion context: A professional development journey. *International Journal of Bilingual Education and Bilingualism* 21: 332–48. [CrossRef]

Cammarata, Laurent, and T. J. Ó Ceallaigh. 2020. *Teacher Development for Immersion and Content-Based Instruction*. Amsterdam and Philadelphia: John Benjamins Publishing Company.

Chen, Gaowei, and Carol K. K. Chan. 2022. Visualization-and analytics-supported video-based professional development for promoting mathematics classroom discourse. *Learning, Culture and Social Interaction* 33: 100609. [CrossRef]

Council of Europe. 2020. Common European Framework of Reference for Languages: Learning, Teaching, Assessment. Council of Europe Publishing. Available online: https://rm.coe.int/common-european-framework-of-reference-for-languages-learning-teaching/16809ea0d4 (accessed on 5 October 2023).

Coyle, Do. 2013. Listening to learners: An investigation into 'successful learning' across CLIL contexts. *International Journal of Bilingual Education and Bilingualism* 16: 244–66. [CrossRef]

Coyle, Do, Phillip Hood, and David Marsh. 2010. *Content and Language Integrated Learning*. Cambridge: Cambridge University Press.

Custodio Espinar, Magdalena, and José Manuel García Ramos. 2020. Are accredited teachers equally trained for CLIL? The CLIL teacher paradox. *Porta Linguarum* 33: 9–25.

De Graaff, Rick, Gerrit Jan Koopman, Yulia Anikina, and Gerard Westhoff. 2007. An observation tool for effective L2 pedagogy in content and language integrated learning (CLIL). *International Journal of Bilingual Education and Bilingualism* 10: 603–24. [CrossRef]

Díaz-Martín, Cristina. 2020. Diseño y validación de un instrumento de observación para docentes en formación en AICLE. In *Claves para la innovación pedagógica ante los nuevos retos: Respuestas en la vanguardia de la práctica educativa*. Edited by Eloy López-Meneses, David Cobos-Sanchiz, Laura Molina-García and Alicia Jaén-Martínez y Antonio Hilario Martín-Padilla. Barcelona: Octaedro, pp. 1592–600.

Díaz-Martín, Cristina, María-Elena Gómez-Parra, and Dara Tafazoli. 2022. Studying the professional identity of pre-service teachers of primary education in CLIL: Design and validation of a questionnaire. *Aula Abierta* 51: 329–40. [CrossRef]

Eröz-Tuğa, Betil. 2013. Reflective feedback sessions using video recordings. *ELT Journal* 67: 175–83. [CrossRef]

Escobar, Cristina. 2013. Learning to become a CLIL teacher: Teaching, reflection and professional development. *International Journal of Bilingual Education and Bilingualism* 16: 334–53. [CrossRef]

Etikan, Ilker, Sulaiman Abubakar Musa, and Rukayya Sunusi Alkassim. 2016. Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics* 5: 1–4. [CrossRef]

He, Peichang, and Angel M. Y. Lin. 2018. Becoming a "language-aware" content teacher: Content and language integrated learning (CLIL) teacher professional development as a collaborative, dynamic, and dialogic process. *Journal of Immersion and Content-Based Language Education* 6: 162–88. [CrossRef]

Hüttner, Julia. 2019. Towards 'professional vision': Video as a resource in teacher learning. In *The Routledge Handbook of English Language Teacher Education*. Edited by Steve Walsh and Steve Mann. New York: Routledge, pp. 473–87.

Hüttner, Julia, Christiane Dalton-Puffer, and Ute Smit. 2013. The power of beliefs: Lay theories and their influence on the implementation of CLIL programmes. *International Journal of Bilingual Education and Bilingualism* 16: 267–84. [CrossRef]

Junta de Andalucía. 2016. Strategic Plan for the Development of Languages in Andalusia Horizon 2020. Available online: https://www.juntadeandalucia.es/export/drupaljda/plan_estrategico.pdf (accessed on 5 October 2023).

Kim, Haemin, and Keith M. Graham. 2022. CLIL Teachers' Needs and Professional Development: A Systematic Review. *Latin American Journal of Content and Language Integrated Learning* 15: 1–22. [CrossRef]

Kourieos, Stella. 2016. Video-mediated microteaching: A stimulus for reflection and teacher growth. *Australian Journal of Teacher Education* 41: 65–80. [CrossRef]

Lasagabaster, David, and Yolanda Ruiz, eds. 2010. *CLIL in Spain: Implementation, Results and Teacher Training*. Cambridge: Cambridge Scholars Publishing.

Lo, Yuen Yi. 2017. Development of the beliefs and language awareness of content subject teachers in CLIL: Does professional development help? *International Journal of Bilingual Education and Bilingualism* 22: 818–32. [CrossRef]

Lo, Yuen Yi. 2020. *Professional Development of CLIL Teachers*. Singapore: Springer.

Lorenzo, Francisco. 2010. CLIL in Andalusia. In *CLIL in Spain: Implementation, Results and Teacher Training*. Edited by David Lasagabaster and Yolanda Ruiz. Cambridge: Cambridge Scholars Publishing, pp. 2–11.

Mann, Steve, Andrew Davidson, Monika Davis, Jo Gakonga, Maricarmen Gamero, Tilly Harrison, Penny Mosavian, and Lynnette Richards. 2019. Video in language teacher education. *ELT Research Papers* 19: 1–37.

Marsh, Brian, and Nick Mitchell. 2014. The role of video in teacher professional development. *Teacher Development: An International Journal of Teachers' Professional Development* 18: 403–17. [CrossRef]

Matarranz, María. 2022. Aspectos clave de la profesionalización docente. Una revisión bibliográfica. *Cuestiones Pedagógicas. Revista de Ciencias de la Educación* 2: 129–44. [CrossRef]

McDougald, Jermaine S. 2019. What is next for CLIL professional development? *Latin American Journal of Content & Language Integrated Learning* 12: 197–206. [CrossRef]

Mehisto, Peeter, David Marsh, and María Jesús Frigols. 2008. *Uncovering CLIL: Content and Language Integrated Learning in Bilingual and Multilingual Education*. Oxford: Macmillan Education.

Merriam, Sharan B., and Elizabeth J. Tisdell. 2015. *Qualitative Research: A Guide to Design and Implementation*, 4th ed. San Francisco: John Wiley & Sons.

Morton, Tom. 2016. Being a language teacher in the content classroom: Teacher identity and content and language integrated learning (CLIL). In *The Routledge Handbook of Language and Identity*. Edited by Siân Preece. London and New York: Routledge, pp. 382–94.

Pérez-Cañado, María Luisa. 2016. Are teachers ready for CLIL? Evidence from a European study. *European Journal of Teacher Education* 39: 202–21. [CrossRef]

Sagasta, Pilar, and Begoña Pedrosa. 2018. Learning to teach through video playback: Student teachers confronting their own practice. *Reflective Practice* 20: 13–26. [CrossRef]

Schachter, Rachel E., and Hope Kenarr Gerde. 2019. Personalized professional development. *YC Young Children* 74: 55–63.

Sun, Yu-Chih. 2014. Microteaching writing on YouTube for pre-service teacher training: Lessons learned. *CALICO Journal* 31: 179–200. [CrossRef]

Sydnor, Jackie. 2016. Using Video to Enhance Reflective Practice: Student Teachers' Dialogic Examination of Their Own Teaching. *The New Educator* 12: 67–84. [CrossRef]

Tafazoli, Dara. 2021. Language teachers' professional development and new literacies: An integrative review. *Aula Abierta* 50: 603–14. [CrossRef]

Taylor, Steven J., Robert Bogdan, and Marjorie DeVault. 2015. *Introduction to Qualitative Research Methods: A Guidebook and Resource*, 4th ed. Hoboken: John Wiley & Sons.

Tripp, Tonya R., and Peter J. Rich. 2012. The influence of video analysis on the process of teacher change. *Teaching and Teacher Education* 28: 728–39. [CrossRef]

Villabona, Nerea, and Jasone Cenoz. 2021. The integration of content and language in CLIL: A challenge for content-driven and language-driven teachers. *Language, Culture and Curriculum* 35: 36–50. [CrossRef]