realia

Teachers' perspectives on technology-mediated plurilingual practices: the TEMPLATE project

Perspectivas docentes sobre prácticas plurilingües mediadas por tecnología: el proyecto TEMPLATE

Perspectives docents sobre pràctiques plurilingües mediades per tecnologia: el projecte TEMPLATE

Enzo Boggio-López*, Noelia Ruiz-Madrid

Department of English Studies, Universitat Jaume I, Castellón de la Plana, Spain
*Corresponding author: boggio@uji.es (Enzo Boggio-López)

ABSTRACT: Plurilingual-inspired pedagogies show multiple potential benefits for teaching and learning languages and have therefore been strongly promoted by the European Union through various policies. Nonetheless, their implementation is not exempt from limitations and difficulties concerning teaching practices and availability of resources. Meanwhile, technology has long been seen as a chief factor in supporting and enhancing learning in the foreign language classroom, and it can now serve plurilingual-inspired pedagogies due to its flexibility and heterogeneity. The present study reports on the results obtained from a questionnaire completed by 306 teachers across Europe, which explores their perspectives on the use of technology-mediated plurilingual practices. The survey has been designed *ad hoc* and then distributed among in- and pre-service teachers at primary and secondary levels in 10 European countries. Our final aim is to investigate the integration of technology and plurilingual-inspired pedagogies in terms of awareness, use and training needs. Results indicate that almost half of the participants have implemented a digital-based activity that involved the use of different languages in the past, but yet claim that there is a scarcity of available information and resources. Further results look into the nature and characteristics of these plurilingual practices, as well as the role played by technology in such activities. Finally, teacher training implications derived from the results are discussed.

KEYWORDS: plurilingualism; multilingualism; ICT; digital competence; teacher training

RESUMEN: Las pedagogías de inspiración plurilingüe presentan múltiples ventajas potenciales para la enseñanza-aprendizaje de lenguas, por lo que la Unión Europea las ha promovido decididamente a través de diversas políticas. No obstante, su aplicación no está exenta de limitaciones y dificultades en lo que respecta a las prácticas docentes y la disponibilidad de recursos. Por su parte, la tecnología, considerada desde hace tiempo como uno de los principales factores de soporte y mejora del aprendizaje en el aula de lenguas extranjeras, puede ahora ser de utilidad para las pedagogías de inspiración plurilingüe por su flexibilidad y heterogeneidad. El presente estudio informa sobre los resultados obtenidos a partir de un cuestionario realizado a 306 profesores europeos, en el que se exploran sus perspectivas sobre el uso de prácticas plurilingües mediadas por la tecnología. La encuesta se diseñó ad hoc y se distribuyó entre profesores en activo y en formación de primaria y secundaria de 10 países europeos. Nuestro objetivo final es investigar la integración de la tecnología y las pedagogías de inspiración plurilingüe, en términos de conocimiento, uso y necesidades de formación. Los resultados indican que aproximadamente la mitad de los participantes han puesto en

práctica alguna actividad digital que implicaba el uso de diferentes lenguas en el pasado, pero sin embargo alegan una escasez de información y recursos disponibles. Los siguientes resultados indagan en la naturaleza y características de estas prácticas plurilingües, así como en el papel desempeñado por la tecnología en dichas actividades. Por último, se discuten las implicaciones para la formación del profesorado derivadas de los resultados.

PALABRAS CLAVE: plurilingüismo; multilingüismo; TICs; competencia digital; formación del profesorado

RESUM: Les pedagogies d'inspiració plurilingüe presenten múltiples avantatges potencials per a l'ensenyament-aprenentatge de llengües; per això la Unió Europea les ha promogudes decididament a través de diverses polítiques. Això no obstant, la seua aplicació no està exempta de limitacions i dificultats pel que fa a les pràctiques docents i la disponibilitat de recursos. D'altra banda, la tecnologia, considerada des de fa temps com un dels principals factors de suport i millora de l'aprenentatge a l'aula de llengües estrangeres, pot ser ara útil per a les pedagogies d'inspiració plurilingüe arran de la seua flexibilitat i heterogeneïtat. Aquest estudi informa sobre els resultats obtinguts a partir d'un qüestionari realitzat a 306 professors europeus, en què s'exploren les seues perspectives sobre l'ús de pràctiques plurilingües intervingudes per la tecnologia. L'enquesta es va dissenyar *ad hoc* i es va distribuir entre professors en actiu i en formació de primària i secundària de 10 països europeus. El nostre objectiu final és investigar la integració de la tecnologia i les pedagogies d'inspiració plurilingüe, en termes de coneixement, ús i necessitats de formació. Els resultats indiquen que aproximadament la meitat dels participants han posat en pràctica alguna activitat digital que implicava l'ús de diferents llengües en el passat; no obstant això, al·leguen escassetat d'informació i de recursos disponibles. A continuació, s'indaga en la naturalesa i les característiques d'aquestes pràctiques plurilingües, així com en el paper exercit per la tecnologia en aquestes activitats. Finalment es discuteixen les implicacions per a la formació del professorat derivades dels resultats.

PARAULES CLAUS: plurilingüisme; multilingüisme; TICs; competència digital; formació del professorat

---

Practitioner Notes

What is already known about this topic

- Plurilingual pedagogies have been said to show multiple potential benefits (for instance, to affirm the legitimacy and appropriateness of learners' plurilingual identities within the classroom). The European Union has long pursued and encouraged plurilingualism through different policies, even including it in the Common European Framework of Reference for Languages (CEFR).
- Previous literature has signaled technology as a chief piece for supporting plurilingualism in the classroom, relying on their flexibility and heterogeneity, through the development of technology-mediated plurilingual tasks.
- It is well-documented that primary and secondary school teachers often struggle to develop their digital competence and to include technology in the classroom effectively. While teacher training on the use of ICTs has been commonplace in the last decades, some scholars have evaluated the training received by teachers as inadequate, inappropriate, or irrelevant, for which a renewed/revisited approach is looked-for.

What this paper adds

- Extent, frequency and purpose of the employment of technology to support teaching by pre- and in-service language and CLIL teachers across primary and secondary schools across Europe.
- Degree and extent to which language and CLIL teachers in schools across Europe are aware of plurilingual-inspired practices. Proof that there is a gap in the information and resources available.
- Proof and description of actual plurilingual activities implemented by language and CLIL teachers in authentic contexts across Europe, and most, particularly, their relation with the use of technology.

Implications for practice and/or policy

- Proof that there is an increasing interest towards plurilingual-inspired practices in teaching.

> - Need to supply the perceived gap of information and resources on technology-driven plurilingual practices.

1. INTRODUCTION AND REVIEW OF THE LITERATURE

The rapid spread and evolution of technology has dramatically changed all aspects of society, creating new opportunities, methods and approaches never seen before for the education field in general and for language teaching in particular. On the one hand, technology has made access to education global and virtual programs have increased exponentially in the last decades, increasing, thus, learners' international mobility and therefore the need for plurilingual teaching and learning (O'Dowd, 2023). On the other hand, language teachers have now access to a wide range of resources and tools to make their teaching more effective, authentic and motivating (Alhinty, 2015). In this sense, digital resources can create enhanced opportunities for contextualized, participatory and situated learning (Lian, Chai, Zheng, & Liang, 2021), which enhances learner satisfaction, since students particularly appreciate immediate feedback from instructors and peer interaction (Lee, 2021). Additionally, technology favors L2 learner autonomy to develop both language skills (Chen, 2021) and active engagement in knowledge construction (Cutrim-Schmid, 2018) since it provides enhanced opportunities for reflecting on their learning, with respect to both the process and outcome of tasks (Lai, 2019). This authentic and active language learning approach, together with a more language learner-centered methodology afforded by technology also involves the possibility of eliminating language barriers and creating multilingual spaces for plurilingual communicative practices (Cenoz & Gorter, 2015; Cutrim-Schmid, Cvetkovic-Kienle, & Şahin, 2023; Luzón, Ruiz-Madrid, & Villanueva, 2010). As a result, teachers confront the growing demand of navigating the evolving landscape of the teaching profession, in which plurilingualism and technology-mediated practices are core current aspects. Indeed, teachers often find themselves in classes with students of multiple different L1s, prompted to integrate those languages through the adoption of a plurilingual approach and expected to make use of technology where and when it can potentially add value (Cutrim-Schmid et al., 2023; Séror, 2021).

In the following sections, we will expand on the concepts of digital competence and plurilingualism, which are central to our study.

1.1. Digital competence for teaching

The irruption of technology in the field of education led the European Commission to support Member States in their efforts to promote the digital competence of their citizens, as well as to endorse innovation in education in response to the urgent need of describing the sort of digital competence that was needed for educators (Redecker & Punie, 2017). Digital competence, in its global nature, is understood as the skills required to use technology, and that develops, renews, and changes as technology develops and evolves (Gümüş & Kukul, 2022). In the field of education, digital competence is understood as the skills required for technology use specifically for teaching. Therefore, digital competence for teaching involves an effective use of technology resources and devices in order to obtain information, process, store, evaluate, produce, share, create, and communicate and cooperate via internet (Gümüş & Kukul, 2022; Redecker & Punie, 2017) .

Precisely with the goal of better defining and outlining —and ultimately improving— educators' digital competence, the European Commission elaborated the European Framework for the Digital Competence of Educators (DigCompEdu), published in 2017. Featuring six proficiency levels, from A1 to C2: A1 (newcomer), A2 (explorer), B1

(integrator), B2 (expert), C1 (leader), and C2 (pioneer), the framework entails 22 digital competences related to educators, which are divided into three major categories (i.e. educators' professional competences, educators' pedagogic competences and learners' competences) and six subcategories (professional engagement, digital resources, teaching and learning, assessment, empowering learners, facilitating learners' digital competence). Figure 1 below shows the specific competences and their categories.
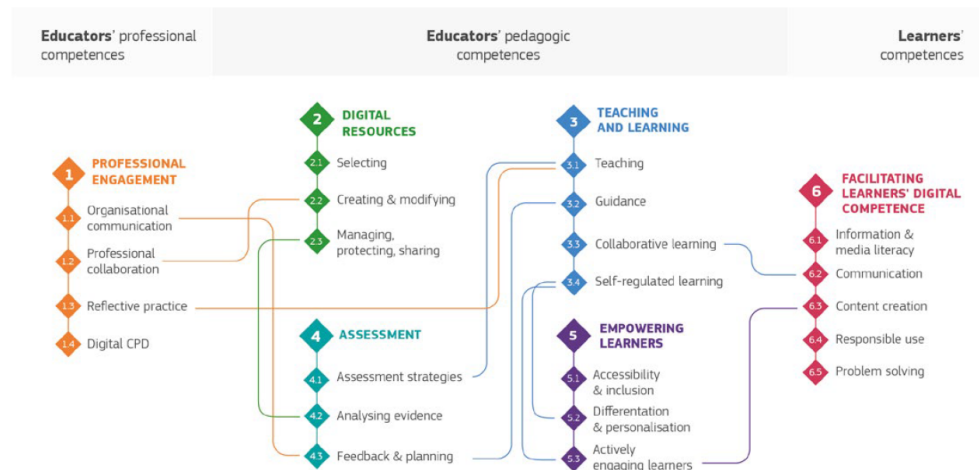

Figure 1. *Competences in DigCompEdu. Source: Redecker and Punie (2017, p. 16)*

Although there are official frameworks and plans for the digitalization of schools all across Europe, research has shown that teachers' low level of digital competence is mainly due to the lack of effective professional training (Williams, Abraham, & Bostelmann, 2014), affecting their teaching practices (Caena & Redecker, 2019; Hanell, 2018; Yazar & Keskin, 2016). This was also reported in a survey conducted by the European Commission, which found that only 20-25% of students in Europe were taught by "digitally confident" teachers (European-Commission, 2013), and that although teachers claimed to be familiar with ICTs for educational purposes, only a few used them in their lessons.

Promoting high digital competences among teachers will not only facilitate learning possibilities for students, but can also improve their learning quality through more enjoyable learning processes (Caena & Redecker, 2019; Redecker & Punie, 2017). In order to promote the effective integration of technology in schools, teachers' digital competence needs to be developed as technology itself develops (Starkey, 2020). However, some difficulties have been reported concerning the how and the what in teachers' digital competence training. In this regard, a survey conducted by the European Commission (2019) identified two frequent obstacles in the implementation of technology in European classrooms: the first barrier referring to limitations in the availability of equipment, and the second referring to pedagogical-related challenges:

> Within the category of pedagogy-related obstacles, teachers especially perceive a lack of pedagogical models on how to use ICT for learning as an important obstacle, next to insufficient technical support for teachers, a lack of adequate skills of teachers and insufficient pedagogical support for teachers.
>
> *(European-Commission, 2019)*

These data show the need to conduct teacher training that supports teachers' digital skills. Indeed, teacher training on digital competence has been commonplace in the

last decades, yet some scholars have evaluated the preparation received by teachers as inadequate, inappropriate, or irrelevant (Kessler, 2010). This idea gives rise to questioning the manner in which such a teacher training should be designed and organized. The problematic on defining an effective approach to teacher training design has been addressed by Egbert, Preuss, Huff, Sellen, and Mcneil (2009), who defend a change of perspective and urge to adopt a more practical and active perspective that combines the collaboration between teachers and researchers. Similarly, Anjos-Santos and Cristovão (2016) believe that teachers need to adopt a more active role, and engage in a reflective and critical assessment of their own teaching practice, rather than being presented with theoretical notions on the benefits of ICTs from a rather passive perspective.

1.2. Plurilingual approaches in teaching

In parallel with the need for digital competence, there is also a strong demand for stimulating plurilingual competence in education. The Council of Europe defines plurilingualism as "the dynamic and developing linguistic repertoire of an individual user/learner" (CE, 2020) and the plurilingual competence as:

> the fact that as an individual person's experience of language in its cultural context expands, from the language of the home to that of society at large and then to the languages of other peoples [...], he or she does not keep these languages and cultures in strictly separated mental compartments, but rather builds up a communicative competence to which all knowledge and experience of language contribute and in which languages interrelate and interact.
>
> *(CE, 2020)*

The adoption of plurilingual pedagogies in education reports multiple potential benefits (Busse, Cenoz, Dalmann, & Rogge, 2019; Ciaramita & Fortanet-Gómez, 2023; Hopp, Jakisch, Sturm, Becker, & Thoma, 2019; Rosca & Sevilla-Pavón, 2021), since it fosters the value of students' plurilingual repertoires as both linguistic and cultural resources for learning, with the core concept of affirming the legitimacy and appropriateness of learners' plurilingual identities within the classroom (Cutrim-Schmid & E, 2021). A widespread approach to include plurilingualism in the classroom is the use of plurilingual activities, which are defined by Schmid and Kienle (2022) as follows:

> a language learning activity that a) requires (or allows) the use of multiple languages and diverse cultural knowledge b) creates opportunities for learners' use of their plurilingual resources to engage in meaningful and personally relevant communication and c) builds on authentic plurilingual practice experienced by learners in their everyday lives.
>
> *(Eurocall, 2022)*

Although both digital competence and plurilingual competence may be seen as separate concepts, many scholars have signaled technology as a chief piece for supporting plurilingualism in the classroom, highlighting its flexibility and heterogeneity. Elsner (2011) and Lohe and Elsner (2019) describe the experience of a pilot study framed in the European Comenius project MuViT – Multiliteracy Virtual. This experience consisted of creating and using multilingual digital books in primary education in 5 different languages (German, English, Russian, Spanish, and Turkish). Such plurilingual practice is aimed at supporting multilingual and audiovisual reading. The implementation of this tool, as reported in the paper, led to the development of multimodal literacy,

plurilingual awareness and transcultural understanding among the pupils. Similarly, a case study from Cutrim-Schmid and Whyte (2014) explores the interaction between German and French pupils through video communication by means of digital whiteboards. In this project, students from different schools had to communicate among them by participating in a task that simulated the scenario of 'buying in a supermarket'. The experience of cross-language communication helped eliciting multiple communication strategies in the students, including translating and mediating among peers, thus demonstrating the potential of telecollaboration and videoconferencing for stimulating plurilingualism. Most recently, Séror (2021) refers to how technologically-mediated plurilingual practices can benefit students' learning process by analyzing powerful models of how emergent bi/plurilinguals can and do rely on technology to build on their linguistic resources in creative and powerful ways. Similarly, projects such as ESCAPE[1] or TEMPLATE (see next section above) report the implementation of technology-based plurilingual pedagogies to support learning. ESCAPE aims to address this synergy by examining how middle-grade children and youth use the multilingual content of a digital learning tool to access STEM content. TEMPLATE focuses on the description, creation and implementation of technology-mediated plurilingual activities for primary and secondary education.

Theory and practice on technology-mediated plurilingual practices suggest that the synergy between digital and plurilingual competence can become an effective tool for promoting plurilingual competence, including language development, students' awareness of multilingual realities, and cross-cultural understanding. However, it is important to note that the use of technology-mediated plurilingual pedagogies is subject to teachers' digital competence, which previous research has shown to be limited. Furthermore, the effectiveness of these practices may also vary depending on the specific technology available and the context in which it is implemented. The next section presents the TEMPLATE project, which shows how this synergy works and how teachers perceive it.

1.3. The TEMPLATE Project

This study is framed within the European Project TEMPLATE, which stands for Technology-Mediated Plurilingual Activities in Language Teacher Education. The project, funded under the Erasmus+ program, entangles the collaboration between five universities from five different European countries, namely: Universitat Jaume I (Spain), Universität Schwäbisch Gmünd (Germany), Université Catholique de Louvain (Belgium) and Vilniaus Universitetas (Lithuania), coordinated under the supervision of Università degli Studi di Torino (Italy).

The TEMPLATE project is targeted at pre-service and in-service teachers of both language and content in primary and secondary levels. The project aims to generate and provide research-based professional development on the integration of technology-mediated plurilingual pedagogies in teachers' teaching practices. The TEMPLATE project has been developed in three differentiated phases. The first phase focused on collecting quantitative and qualitative data on teachers' knowledge, practices and needs about technology and plurilingualism. This initial phase was undertaken between September 2020 and July 2021, and for that purpose a specific questionnaire was designed and distributed. The outcomes of the initial survey were used to inform the second phase of the project, which involved the design and implementation of professional training modules for primary and secondary school teachers.

The training consisted of four different modules:

---

[1] https://escapeprojects.ca/sshrc/ (29/09/2023)

- Module 1 introduced plurilingualism, and tackled aspects such as awakening to languages, cross-language intercomprehension and interculturality, and plurilingual CALL (Computer Assisted Language Learning).

- Module 2 introduced the concept of CLIL (Content and Language Integrated Learning) in the plurilingual classroom and presented digital tools to assist CLIL activities and development.

- Module 3 consisted of a telecollaboration experience among the participant teachers from different countries, and aimed at providing guidance while offering the possibility to explore different multilingual VE (Virtual Exchange) scenarios that replicated authentic multilingual situations that were action-oriented (i.e., task-based).

- The final module (Module 4) consisted of the description of different digital tools for the implementation of technology-mediated plurilingual language learning tasks, for which a repository of digital tools and models was created so teachers could refer to when designing activities for their own classroom contexts.

Finally, for the third phase of the project, teachers involved in the training from the previous phase were asked to implement technology-mediated plurilingual tasks in the classroom. The observation of their pedagogical proposals and the pedagogical results obtained served TEMPLATE researchers as empirical data for improving the training modules.

The present study analyses and reflects on the results obtained during the first phase of the project (i.e., teachers' awareness on both digital competence and plurilingual competence), which served as the starting point for the rest of the phases of the project.

2. THE STUDY

The aim of the present study is to shed light on teachers' awareness of technology-based plurilingual practices, to what extent they know them and implement them in their teaching, with the ultimate goal of determining their training needs. Accordingly, we formulate the following research questions:

- RQ1. What are teachers' knowledge, reported use of ICTs and training needs regarding digital competence?

- RQ2. What are teachers' knowledge, reported use and training needs regarding technology-based plurilingual teaching?

- RQ3. What sort of technology-based plurilingual-inspired practices have teachers implemented in the past?

In order to answer these questions, we draw on the data from a specific survey designed and distributed within the framework of the TEMPLATE project. Section 2.1 below expands on the process of design, validation and distribution of the survey as well as the participants' profile.

2.1. Design, validation and distribution of the survey

The survey designed within the framework of the TEMPLATE project is originally targeted at pre-[2] and in-service teachers across Europe, including specialists in foreign

---

[2] *Pre-service teachers* refer to university students who are pursuing a degree and/or career in teaching (either at primary or secondary levels), and who may have brief teaching experience, limited to practicum or internship periods.

languages, and specialists in a content discipline who deliver their instruction through a foreign language (CLIL).

The original survey is made up of 25 questions in total distributed in 5 major sections: (i) demographic and professional data (questions Q1-Q9); (ii) awareness of plurilingualism (Q10-Q12); (iii) knowledge and use of ICTs in their instruction (Q13-Q18); (iv) previous experiences with (technology-based) plurilingual activities in their classes (Q19-Q-23); and (v) exploration of participants' training needs concerning plurilingualism (Q24-25).

For the purposes of the present study, we have focused on questions Q16-Q25. The following figure (see Figure 2) presents the correlation between the RQs in this study and the questions from the survey, and these questions as appearing in the survey can be read inAppendix A.
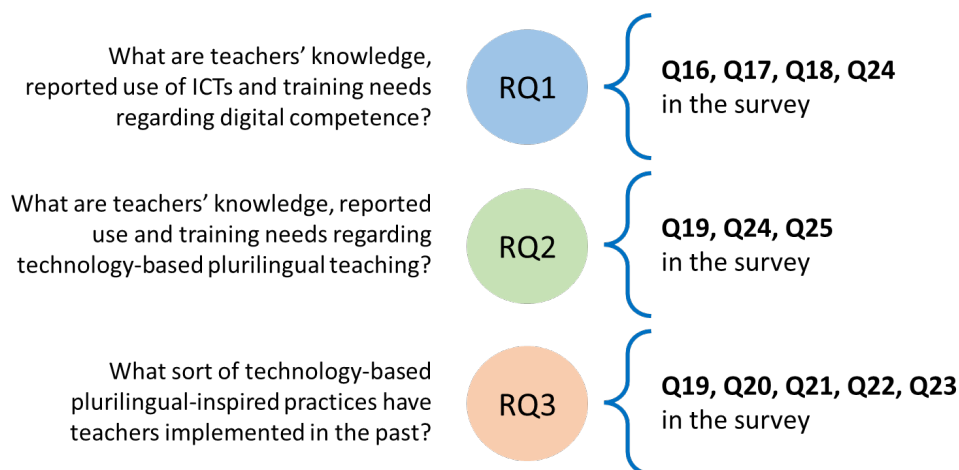
What are teachers' knowledge, reported use of ICTs and training needs regarding digital competence?

RQ1

Q16, Q17, Q18, Q24 in the survey

What are teachers' knowledge, reported use and training needs regarding technology-based plurilingual teaching?

RQ2

Q19, Q24, Q25 in the survey

What sort of technology-based plurilingual-inspired practices have teachers implemented in the past?

RQ3

Q19, Q20, Q21, Q22, Q23 in the survey

Figure 2. Correlation between the RQs and the questions in the survey

The survey was created and hosted through *Qualtrics*, a specific software that also enabled the analysis of the data. The survey underwent a validation process to ensure its reliability and validity. Accordingly, the research team reviewed the initial version of the survey to ensure content validity and alignment with the study's objectives. Additionally, a pilot study was conducted with a small sample of pre- and in-service teachers to assess the clarity, comprehensibility, and conciseness of the survey questions. Based on the pilot study feedback, necessary modifications were made concerning clarity, conciseness and transparency of the survey items. Moreover, special attention was given to the timing-flow completion of the survey to prevent participants from quitting before full completion. Additionally, in alignment with the commitment of the project with plurilingualism, the survey was presented in 6 languages, so respondents could choose among English, Catalan, French, German, Italian, Lithuanian, or Spanish. Once validated, the survey was then distributed online between the 30th April and the 30th May 2021, advertised on the project's website, social networks, as well as shared with the partner schools.

2.2. Participants' profile and data processing

A dataset of 306 respondents has been considered for this study[3] out of a total of 385 responses. The profile of the respondents was varied in terms of nationality, gender, and professional profile. Regarding nationality, respondents are from Spain (n=93), Italy (n=65); Germany (n=57), Belgium (n=38), Lithuania (n=47), Netherlands (n=2),

---

[3]For this research paper, we have conducted a refinement process aimed at narrowing our scope to our specific geographical area, disregarding responses outside Europe, as well as educators at tertiary level.

Austria (n=1), France (n=1), Ireland (n=1), and the United Kingdom (n=1). Regarding their gender, 228 participants were female, 75 were male, and 3 identified as non-binary, with ages ranging between 21 to 70 years old. The professional profile of the respondents included 120 pre-service teachers; and 160 in-service language teachers and 26 in-service CLIL teachers in primary and secondary education. The diversity of participants' profile can be of interest for the analysis of results and discussion of the RQs, since it can provide tentative reasons for the different conclusions derived from answers to the survey.

It is important to note that for answering RQ3, the sample saw itself reduced to 99 participants who indicated previous experience implementing digital activities involving the use of multiple languages (Q19 in Annex). This sample is comprised mainly by in-service teachers, but also embraces pre-service teachers with teaching experience during practicum or internship periods.

Having gathered the data, we drew on Qualtrics to calculate percentages, filter and compare responses across different profiles, for their interpretation. Furthermore, our exploration of RQ3 involved the classification of teachers' prior technology-based plurilingual practices. In order to do this, we elaborated a data-driven classification based on (i) the role attributed to ICTs, and (ii) the nature of the pedagogical component in the activities described by the teachers. To ensure the reliability of our data-driven classification, both authors of this study classified them independently, and then put their resulting classification in common. While some discrepancies were discussed, the overall reliability ratio indicated a high level of agreement ensuring the consistency of the classification approach and findings in this paper reported.

3. RESULTS AND DISCUSSION

3.1. Teachers' knowledge, use and training needs regarding digital competence

This section focuses on RQ1 (i.e., What are teachers' knowledge, actual use and training needs regarding digital competence?). Regarding teachers' self-assessment on their own level of digital competence, survey responses reveal a high degree of confidence in both pre- and in-service teachers. On the one hand, the vast majority (82.83%) of the in-service teachers claimed to "feel comfortable" using technology from a technical point of view. Later, when asked about their capacity to integrate technology in their classes, that is, their actual and effective use to boost the learning process, the percentage rose up to 92%. On the other hand, in the case of the pre-service teachers, the confidence was slightly higher at both the technical level (86.21%) and the integration in their teaching activity (93.39%).

These results are somewhat unexpected, since being able to integrate technology with didactic purposes commonly involves a higher level of expertise in terms of digital competence, being the former a prerequisite for the latter, as also pointed out by teachers in previous surveys (European Commission. Directorate General for Communications Networks, Content and Technology *et al.*, 2019). More data is needed to better understand the reasons behind this result. Nevertheless, a tentative interpretation is that while in-service teachers perceive that their technical abilities with ICTs is limited and there is room for improvement (e.g. by increasing their command of new software), they feel confident enough to design and implement pedagogical activities within their limited scope of action. In this regard, when the teachers were asked about technology-driven practices that they had implemented in the past (c.f. sections 3.2 and 3.3), most of the examples were activities that do not seem to require a particularly complex technical command.

Regarding the frequency in which the teachers (or their students) used technology in the classroom (Q18), half of the in-service teachers (54%) said to use technology "in

every lesson", followed by "once a week" (29.33%). Similar frequencies were found in pre-service teachers, in which the majority said to use technology "once a week" (53.45%), and "in every lesson" (34.48%). This high frequency differs from previous studies (European Commission - Directorate General for the Information Society and Media, 2013). The reason for this may have to do with the outcomes of the COVID-19 pandemic and emergency remote learning situation that forced the need for teachers and students worldwide to rely on digital tools for both communicating and learning, as more recent studies have noted (Fortanet-Gómez & Ruiz-Madrid, 2023; Winter, Costello, O'brien, & Hickey, 2021). It is also worth mentioning that despite this considerably high frequency of technology use, both pre- and in-service teachers reported (Q24) an interest in increasing their use of technology (pre-service teachers= 90.22%; in-service teachers= 83.45%). When asked about their purpose for using technology in the classroom (Q17), responses shed light on the various roles played by ICTs in the European classrooms. The most common choice among in-service teachers (39.42%) involved "keeping their usual teaching practices" and relying on ICTs to make it more effective. Very closely, nearly a third of the in-service teachers (32.21%) aimed at "complementing traditional resources (paper or book-related) with a digital tool". An example of this would be projecting digital versions of conventional paper-based textbooks. This was the most common option among pre-service teachers (56.90%). Finally, the use of technology to perform innovative tasks was the least popular option among in-service teachers (27.40%) and even less popular among pre-service teachers, receiving only 18.97% of the responses. These results show that teachers consider technology as an opportunity to motivate their students and make their classes more appealing but they do not consider their practices innovative enough despite the use of technology. This leads us to think that, for teachers, designing innovative activities is a challenging task that requires a high level of digital competence as well as pedagogical reflection (Caena & Redecker, 2019; Redecker & Punie, 2017).

Finally, in terms of training needs, the vast majority of respondents expressed a desire to learn how to increase the effectiveness of their teaching through technology (in-service teachers= 89.93%; pre-service teachers= 97.83%), and how to better integrate it in their teaching practice (in-service= 88.49%; pre-service= 96.74%). These results are coherent with those of the European Commission (2019). Furthermore, the positive attitude from teachers towards technology is also noteworthy, as the former survey found that the most frequent barrier for ICT implementation in classroom (after lack of technical equipment) is precisely teachers' lack of interest, together with a lack of pedagogical models and/or pedagogical support. In the same vein, some scholars have identified (positive) opinions towards ICTs in teachers as key predictors in their use (Sosa-Díaz & Valverde-Berrocoso, 2020) or even in the effectiveness of received professional training (Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012).

3.2. Teacher's knowledge, use and needs on (technology-based plurilingual teaching

This section focuses on RQ2 (i.e. What are teachers' knowledge, use and training needs regarding (technology-based) plurilingual teaching?). Responses to the survey (Q24), showed that both profiles of respondents were generally aware of the concept 'plurilingual didactics'. When asked directly whether they had implemented an activity of the sort in the past (Q19), 48% of in-service teachers answered positively, in front of the 52% who reported no experience at all. In the case of the pre-service teachers, the difference is more prominent, since only a third (31%) were familiarized with this concept, in front of the majoritarian 69% who held no experience in these matters. This is an expected result, since the implementation of plurilingual practices is a recent practice in the current classrooms and their degree of implementation varies across

countries and schools as Ciaramita and Fortanet-Gómez (2023) noted. Additionally, this outcome reveals that training on plurilingualism should concern both in-service and prospective teachers. Regarding their views towards training (Q24), both profiles showed interest in learning more about the plurilingual approach. At the same time, most of the participants reported difficulties in finding information and practical resources to integrate it into their curricula, attributing it to a 'lack of information'. The difference between both profiles —as displayed in Figure 2 below (see item B)—, is minor, but demonstrates a slightly higher degree of unawareness among pre-service teachers, who are, in turn, somewhat more attracted to this approach (see Figure 2, item 3).
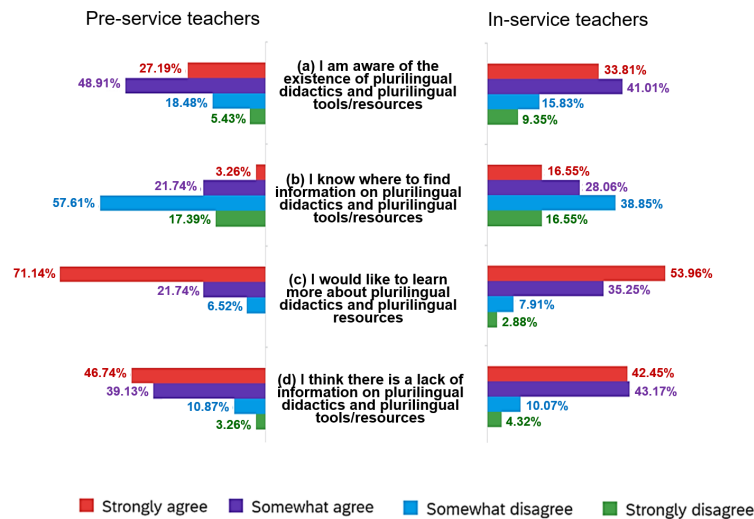

Figure 3. *Pre- and in-service teachers answers to Q24*

Furthermore, participants provided input on their specific requirements and expectations for prospective teacher training programs (Q25). Most responses indicated a desire for specific examples or models of plurilingual activities. Teachers also communicated their interest in developing networks and share perspectives and insights with colleagues from diverse educational settings. Some of these opinions are presented below:

> *Mi piacerebbe trovare un portale nel quale sia possibile condividere opinioni e trovare materiali, risorse online per le lezioni e proposte di attività didattiche, suddivise in base al livello e all'età degli studenti.* [I would like to find a portal in which one can share opinions and find materials, online resources for lessons, and proposals for teaching activities, categorized according to the level and age of the students].

> *Voldria vore exemples* [I would like to see examples]

> *Mi piacerebbe conoscere una bibliografia approfondita sulla didattica plurilingue e vorrei avere più formazione sull'uso delle tecnologie in classe* [I would like to know an in-depth bibliography on multilingual education and would like to have more training on the use of technology in the classroom]

> More contacts with other teachers/students form countries where multilingualism is more frequent, where good practices can be shared

These responses partially echo those of Cutrim-Schmid and Hegelheimer (2014), who report positive feedback from pre-service teachers who conducted school-based research projects, which involved designing, implementing, and evaluating technology-enhanced EFL lessons in collaboration with in-service teachers.

Overall, the findings of this section suggest a perceived lack of access to information and resources in these areas among pre- and in-service teachers and underscore the urgent need for teacher training and support in both plurilingualism and technology integration. The outcome of the survey led us —as TEMPLATE researchers— to reflect and discuss on possible contents for teachers' training on technology-based plurilingual skills that could help teachers to design and implement their own technology-based plurilingual practices. Accordingly, theoretical contents on what plurilingual and digital competence mean in the language learning field should be considered in such a program, as well as practical cases, examples and activities that could serve as effective models should be provided to the teachers' community. Furthermore, training on the curation of online resources to be used for the design of plurilingual activities should be included in the activities designed for the program.

3.3. Teachers' implementation of technology-based plurilingual practices

RQ3 of this study explores teachers' previous experiences implementing technology-based plurilingual practices. While 99 respondents to the survey affirmed to have implemented a digital activity involving the use of multiple languages, an accurate description of such activities was presented in only 54 instances, which is the dataset used in this section.

Our exploration of this RQ has a twofold objective. Firstly, we aim at presenting the activities as described by participants as possible models to be followed by other teachers (in relation and response to participants' training needs, as shown by the answers to RQ1 and RQ2). Secondly, we aim at classifying them according to (i) the role of technology, and (ii) the plurilingual component, in an attempt to provide a systematic overview.

A summary of the activities reported by the participants in our study is shown in Table 1 below.

Table 1. Main (technology-based) plurilingual practices described by respondents, ranged by frequency of appearance.

Frecuency	Plurilingual Practice
n=15	1. Activities related to vocabulary: a. Unspecified vocabulary activities (n=6) b. Cross-linguistic lexical comparison (n=5) c. Use of (multilingual) dictionaries (n=3)
n=8	2. Multilingual interpretation & mediation
n=7	3. Alternation among languages
n=5	4. Multilingual research and processing of information
n=5	5. Multilingual video projects
n=4	6. Virtual exchanges
n=3	7. Translation of texts
n=3	8. Exposure to multilingual texts (written or spoken)
n=1	9. Reproducing tongue-twisters
n=1	10. Breakout/escape room

In this table, `frequency' refers to the number of responses found related to each type of activity.

Most of the activities described by the teachers happened to focus on lexicon across different languages (n=15). Teachers also referred to activities of multilingual interpretation and mediation (n=8). This result is in line with that discussed by Ciaramita and Fortanet-Gómez (2023) in their study, who found that although teachers are aware of the meaning and importance of the mediation competence, its inclusion in the curriculum is not systematic. In our study, teachers reported being aware of this type of activities, and being able to implement them in class in punctual activities.

According to teachers' responses about the pedagogical aim underlying these activities, some of the plurilingual practices proposed would be aimed at fostering classroom interaction and management and not promoting plurilingualism itself. Accordingly, teachers allow students to use multiple languages in order to facilitate communication as shown in the example below:

- **Excerpt 1 – Alternation among languages. Teacher's answer to Q23**

  (...) the students have to read a text and answer a series of questions. Those questions of direct comprehension had to be unswered in the target language [English]. On the other hand, reflection and critical thinking questions could be answered in the language that the students preferred.

These would be examples of pedagogical translanguaging, a practice which has been found beneficial to enhance comprehension of academic content and to foster both students' metalinguistic awareness and their plurilingual competence (Cenoz & Gorter, 2022). Similarly, other teachers reported the same flexible attitude towards the use of other languages (and even its promotion), for practical activities in which students are required to engage in information search:

- **Excerpt 2 – Multilingual research. Teacher's answer to Q23**

  Searching for information. The language is indifferent: Spanish or Catalan.

- **Excerpt 3 – Multilingual research. Teacher's answer to Q23**

  Construir un esquema general sobre una época (por ejemplo, la Ilustración) recopilando toda la información de los diferentes libros de texto que poseían (inglés, francés, alemán, español e italiano) y resumiéndolos después en un único póster en el que informaban de la información adquirida "a partir" de otros idiomas, en la lengua de enseñanza (en mi caso, castellano).[4]

In turn, another major type of activities can be distinguished, as some other of the reported practices do seem to specifically and intentionally target the promotion of plurilingual and intercultural competences. These are the cases of activities such as cross-linguistic lexical comparison, virtual exchanges, or reproducing tongue twisters.

---

[4]Translation: [Building a general outline on an era (e.g. Enlightenment) by collecting all the information from different textbooks in their possession (English, French, German, Spanish, and Italian) and then summarizing them in a single poster in which they reported the information acquired "from" other languages, in the language of instruction (in my case, Spanish)]

- **Excerpt 4 – Virtual Exchange. Teacher's answer to Q23**

    Scambio virtuale con student di un'alttra nazionalità per scoprire una nuova cultura. [Virtual exchange with students of another nationality to discover a new culture].

- **Excerpt 5 – Tongue twisters. Teacher's answer to Q23**

    Ser capaces de reproducir un trabalenguas. Aprovechando la diversidad del aula, pudimos reconocer trabalenguas en varios idiomas: marroquí, rumano, italiano, catalán y castellano, entre otros.[5]

In sum, results on teachers' knowledge and actual technology-based plurilingual teaching practices show that teachers recognize the concept and know what it refers to. They are also able to enumerate and describe the activities they have implemented based on technology and plurilingualism. However, the type of activities they referred to are mainly vocabulary-based (i.e., activities related to vocabulary) and vary basic in terms of communicative competence development (i.e., cross-linguistic activities or use of multilingual dictionaries), which reflect a limited understanding of what technology-based plurilingual pedagogy involves and affords. In this sense, most of these activities are far from creating opportunities for to engage in meaningful and personally relevant plurilingual communicative practices that reflect everyday communication processes (Cutrim-Schmid, 2022).

As for the reported practices considering the role played by technology, we have observed that teachers reported using technology mainly with the following functions in mind: i) presentation of content; ii) gamification and games; iii) source of input; iv) communication tool for international meetings; v) creative tool for student projects; vi) lexicographic function and vii) research tool for students.

Table 2 includes some examples that illustrate how teachers reported the role of technology in the technology-based plurilingual activities they had described in the survey.

Table 2. *The role of technology in technology-based plurilingual practices.*

Role of technology	Example
I. Presentation of content	"Projecting the vocabulary that they needed to use for carrying out the interaction."
II. Gamification and games	"Game for finding out vocabulary by means of PowerPoint (interactive)
III. Source of input	"View of the film `Azur and Asmar' (in which Italian and Arab are spoken (…)"
IV. Communication tool for international meetings	"Online communication with students from other countries of the eTwinning project in which we participate. Elaboration of written and graphic documents. Collaborative final product (e-book) with other centers".
V. Creative tool for student projects	"Creation of videos in which the students had to imitate a radio program with interviews to famous people using the three foreign languages they study".

---

[5]Translation: [Being able to reproduce a tongue twister. Taking advantage of the diversity of the classroom, we were able to recognize tongue twisters in several languages: Moroccan, Romanian, Italian, Catalan and Spanish, among others].

Table 2 continued	
VI. Lexicographical function	"Viewing of the film Azur and Asmar (in which Italian and Arabic are spoken) and attached activities; creation of `multilingual dictionaries' with similar terms in Italian and pupils' L1s."
VII. Research tool	"Looking for resources on the web, then working in small groups to listen/read about the topic, then discussing with all the other groups, sharing information and points of view.

An examination of the roles of technology reveals that in some categories the teacher can be considered to have a more active role, since technology seems to be serving the teacher, as either a tool for presenting or creating activities, or as a resource for presenting content or relevant material. The last four categories, on the other hand, can be classified as more student-oriented, since it is the students the ones who adopt a more active role. Such apparent dichotomy between teacher-centered and learner-centered use of technology partially echoes the findings of Tondeur, Roblin, Van Braak, Voogt, and Prestridge (2016), who found that pre-service teachers used a variety of technology tools primarily for structured teaching methods, but only a minority provided opportunities for student-centered use of technology.

Among the different roles, function v. (i.e., Creative tool for student projects) is worth mentioning for its innovative nature and the wide range of competences and tools entailed. Up to 8 teachers described an activity which involved students in the creation of a project with plurilingual components. The interesting aspect of this practice is the goal and result of such projects, since most of them (n=5) referred to the creation of a multilingual video. Below we present one of the described practices.

- **Excerpt 6 – Description of a video-project. Teacher's answer to Q23**

    Conversation with foreign students about two literary works: one Spanish and one English, and creation of a trailer in both languages dealing with some of the themes that the works had in common.

In the described video-projects, a wide range of audiovisual genres have been explored, including a 'book trailer', an 'advertising spot', 'an interview in a radio program', and 'storytelling'. This sort of practices demonstrates the need and possibility of promoting audiovisual projects that involve speaking skills and are the result of the allowances offered by current technology, which could not have been devised some decades ago.

All in all, the outcomes of the survey, obtained during the first phase of the project, and presented here in the form of RQ1, RQ2 and RQ3 have helped to inform the subsequent phases of the project. Therefore, the training activities developed during Phase 2 attempted to directly address teachers' reported needs and expectations. Accordingly, digital interactive books were designed to provide accessible theoretical and practical resources on ICTs and plurilingualism.

4. CONCLUSIONS

Drawing on the data obtained in the first phase of the European project TEMPLATE, this study looks into European pre- and in-service CLIL and language teachers' views towards technology-based plurilingual practices their knowledge and utilization of these practices, as well as their training needs. With this purpose in mind, we designed a comprehensive survey within the framework of the TEMPLATE project. Drawing on 306 answers, we aimed at answering RQ1 and RQ2, and the previous experience from 99 participants allowed us to draw data to investigate RQ3.

Regarding RQ1, i.e., teachers' awareness, reported use of ICTs in the classroom, and training needs, most teachers claimed to feel comfortable when using technology both from a technical and pedagogical perspective. In fact, most of the teachers reported being able to integrate them into their teaching, and nearly half of the respondents stated to use technology in each lesson. Concerning RQ2, results revealed that, while both pre- and in-service teachers are generally aware of plurilingual didactics, implementation remains limited, especially among pre-service teachers. This lack of implementation of plurilingual activities seems to be due to the poor offer of resources for plurilingual teaching according to the teachers' responses. In addition, respondents agreed with a professional training course that merged technology and plurilingualism. These results support the need for the design of teacher training programs that provide specific examples and resources for plurilingual teaching, as well as opportunities for teachers to collaborate and share perspectives. As for RQ3, results show that the plurilingual activities implemented by the teachers are mainly focused on exploring vocabulary by, for instance, asking students to do cross-linguistic comparisons in order to make them aware of the similarities and differences among words in different languages. Additionally, other practices referred to the allowance or promotion of pedagogical translanguaging in students' oral speech or collaborative projects, and some involved interpretation and mediation between languages. Concerning the role of technology in teachers' reported plurilingual practices, results show that there is an apparent dichotomy between teacher-centered and learner-centered use with technology serving as a tool for teachers (e.g. presentation and content delivery) or as a creative tool for student projects. In addition, teachers also praised the potential of technology to facilitate innovative and multilingual projects.

All in all, this study sheds light on the actual use and degree of awareness of European pre- and in-service language and CLIL teachers towards digital competence and plurilingualism. In fact, it offers a portrayal of teachers' degree of awareness towards technology-mediated plurilingual practices and proves the need for the design and implementation of specific teacher training, in primary and secondary schools across Europe.

While our study provides some insights into European teachers' knowledge and awareness, and teaching practices, it is not exempt from limitations. Our limited number of respondents does not allow for the generalization of results. Furthermore, our study relies on self-reported data provided by teachers, which may introduce a degree of bias. Therefore, teachers' reports on their implementation of ICTs, plurilingual practices, and training needs may not always align with their actual in-classroom behaviors. However, we consider that the plurilingual activities described by the participants can support and complement their reported knowledge and awareness for the purpose of the present study. Further research including more teachers and incorporating different tools to complement self-reported data could contribute to confirm the results obtained in the present study.

In conclusion, this study highlights the importance of looking into teachers' digital competence and plurilingual teaching practices to be able to design informed teacher training programs that meet the evolving needs of language education in the digital age in the present global society.

A. APPENDIX. SURVEY (QUESTIONS 16-25)

Q16 - For the following statements, choose one answer. If you are not currently teaching, please refer to a time when you have taught.

Q17 - In my classroom... If you are not currently teaching, please refer to a time when you have taught.

I feel comfortable using technology from a technical point of view	● Strongly agree ● Somewhat agree ● Somewhat disagree ● Strongly disagree
I feel capable of integrating technology in my class	● Strongly agree ● Somewhat agree ● Somewhat disagree ● Strongly disagree

- I don't use/haven't used technology.
- I keep/have kept the traditional (paper or book-related) practice and complement it with a digital tool (projection, replacement of a hard-copy exercise with a digital one, etc.)
- I keep/have kept my usual practice and use technology to make it more effective.
- I use/have used technology to make learners perform innovative tasks (that would not be possible without technology).

Q18 - How often do your learners use/have used technology in class?

- Never
- Once a year
- Once a month
- Once a week
- In every lesson

Q19 - Have you ever done a digital activity in class where your learners were encouraged to use several languages?

- Yes
- No

Q20 - If so, for which skill(s)? (multiple choice is allowed)

- Listening
- Reading
- Speaking
- Writing

Q21 - For which type of activities? (multiple choice is allowed)

- Individual
- Collaborative

Q22 - With which tool/equipment? (Please specify)

- _____ [open-ended response]

Q23 - Describe the activity/-ies in a few words:

- _____ [open-ended response]

Q24 - For the following statements, please choose one answer:

I am aware of the existence of plurilingual didactics and plurilingual tools/resources.	Strongly agree Somewhat agree Somewhat disagree Strongly disagree
I know where to find information on plurilingual didactics and plurilingual tools/resources.	Strongly agree Somewhat agree Somewhat disagree Strongly disagree
I would like to learn more about plurilingual didactics and plurilingual tools/resources.	Strongly agree Somewhat agree Somewhat disagree Strongly disagree
I think there is a lack of information on plurilingual didactics and plurilingual tools/resources.	Strongly agree Somewhat agree Somewhat disagree Strongly disagree
I would like to use technology more in my classes.	Strongly agree Somewhat agree Somewhat disagree Strongly disagree
I would like to learn how to make my teaching more effective with the use of technology	Strongly agree Somewhat agree Somewhat disagree Strongly disagree
I would like to learn how to better integrate technology in my classes.	Strongly agree Somewhat agree Somewhat disagree Strongly disagree

Q25 - Please, feel free to add comments on any sort of need/expectation that you have from this project. What would you like to learn on plurilingual didactics and technology-mediated teaching?

• _____ [open-ended response]

REFERENCES

Alhinty, M. (2015). English-Language Learning at their Fingertips: How Can Teachers Use Tablets to Teach EFL Children. *International Journal of Mobile and Blended Learning*, *7*(2), 45–63. https://doi.org/10.4018/ijmbl.2015040104

Anjos-Santos, L. M., & Cristovão, V. L. L. (2016). Challenges and Opportunities for Developing Sustainable Digitally Based Language Pedagogies in English Teacher Education Programs. In A. Gimeno, M. Levy, F. Blin, & D. Barr (Eds.), *WorldCALL Sustainability and Computer-Assisted Language Learning* (pp. 23–38). London: Bloomsbury.

Busse, V., Cenoz, J., Dalmann, N., & Rogge, F. (2019). Addressing linguistic diversity in the language classroom in a resource-oriented way: An intervention study with primary school children. *Language Learning*, *70*(2), 382–419. https://doi.org/10.1111/lang.12382

Caena, F., & Redecker, C. (2019). Aligning teacher competence frameworks to 21st century challenges: The case for the European Digital Competence Framework for Educators (Digcompedu). *European Journal of Education*, *54*(3), 356–369. https://doi.org/10.1111/ejed.12345

CE. (2020). *Common European Framework of Reference for Languages: Learning, teaching, assessment – Companion volume.* Strasbourg: Council of Europe Publishing. Retrieved from https://www.coe.int/lang-cefr

Cenoz, J., & Gorter, D. (2015). Towards a holistic approach in the study of multilingual education. In J. Cenoz & D. Gorter (Eds.), *Multilingual Education. Between language learning and translanguaging* (pp. 1–15). Cambridge: Cambridge University Press. https://doi.org/10.1017/9781009024655.002

Cenoz, J., & Gorter, D. (2022). *Pedagogical Translanguaging.* Cambridge: Cambridge University Press. https://doi.org/10.1017/9781009029384

Chen, C. (2021). Using Scaffolding Materials to Facilitate Autonomous Online Chinese as a Foreign Language Learning: A Study During the COVID-19 Pandemic. *SAGE Open*, *11*(3), 1–12. https://doi.org/10.1177/21582440211040131

Ciaramita, G., & Fortanet-Gómez, I. (2023). Teachers' attitude towards the use and teaching of mediation in language classes. *Rassegna Italiana Di Linguistica Applicata (RILA)*, *1*, 85–108.

Cutrim-Schmid, E. (2018). Developing Plurilingual Competence in the EFL Primary Classroom through Telecollaboration. In J. Buendgens-Kosten & D. Elsner (Eds.), *Multilingual Computer Assisted Language Learning* (pp. 171–190). Bristol: Multilingual Matters.

Cutrim-Schmid, E. (2022). 'I think it's boring if you only speak English': Enhancing learner investment in EFL learning through the use of plurilingual tasks. *Innovation in Language Learning and Teaching*, *16*, 67–81. https://doi.org/10.1080/17501229.2020.1868476

Cutrim-Schmid, E., Cvetkovic-Kienle, A., & Şahin, H. (2023). Virtual exchanges as authentic scenarios for integrating a plurilingual perspective into EFL teaching and learning. *Language Learning Journal*, *51*(4), 544–558. https://doi.org/10.1080/09571736.2023.2227854

Cutrim-Schmid, E., & E. (2021). Validating young learners' plurilingual repertoires as legitimate linguistic and cultural resources in the EFL classroom. *Applied Linguistics Review*, *14*(4), 945–966. https://doi.org/10.1515/applirev-2020-0117

Cutrim-Schmid, E., & Hegelheimer, E. (2014). Collaborative research projects in the technology-enhanced language classroom: Pre-service and in-service teachers exchange knowledge about technology. *ReCALL*, *26*(3), 315–332.

Cutrim-Schmid, E., & Whyte, S. (2014). A task-based approach to video communication with the IWB: a French-German primary EFL class exchange. In E. Cutrim-Schmid & S. Whyte (Eds.), *Teaching languages with technology: communicative approaches to interactive whiteboard use. A resource book for teacher development* (pp. 50–85). London (U.K.): Bloosmbury.

Egbert, J., Preuss, C., Huff, L., Sellen, J., & Mcneil, L. (2009). Pedagogy, Process, and Classroom Context: Integrating Teacher Voice and Experience into Research on Technology-Enhanced Language Learning. *The Modern Language Journal*, *93*, 754–768. Retrieved from https://www.jstor.org/stable/25612272

Elsner, D. (2011). Developing multiliteracies, plurilingual awareness & critical thinking in the primary language classroom with multilingual virtual talking books. *Revista de Investigación e Innovación en la Clase de Idiomas*, *20*, 27–38. https://doi.org/10.37536/ej.2011.20

Ertmer, P. A., Ottenbreit-Leftwich, A. T., Sadik, O., Sendurur, E., & Sendurur, P. (2012). Teacher beliefs and technology integration practices: A critical relationship. *Computers & Education*, *59*(2), 423–435. https://doi.org/10.1016/j.compedu.2012.02.001

European-Commission. (2013). *Survey of Schools: ICT in Education. Benchmarking Access, Use and Attitudes to Technology in Europe's Schools.* Retrieved from https://data.europa.eu/doi/10.2759/94499

European-Commission. (2019). *2nd Survey of Schools: ICT in Education. Benchmark Progress in*

ICT in Schools. Final Report. Retrieved from https://data.europa.eu/doi/10.2759/23401

Fortanet-Gómez, I., & Ruiz-Madrid, N. (2023). Online English Language Teaching and Multimodal Teaching Genres during the Coronavirus Crisis. In M. M. Suárez-Vilagran & W. El-Henawy (Eds.), *Optimizing Online English Language Learning and Teaching* (pp. 11–31). Springer: Switzerland. ttps://doi.org/10.1007/978-3-031-27825-9_2

Gümüş, M. M., & Kukul, V. (2022). Developing a digital competence scale for teachers: validity and reliability study. *Education and Information Technologies*, *28*, 2747–2765. https://doi.org/10.1007/s10639-022-11213-2

Hanell, F. (2018). What is the 'problem' that digital competence in Swedish teacher education is meant to solve? *Nordic Journal of Digital Literacy*, *13*(3), 137–151. https://doi.org/10.18261/issn.1891-943x-2018-03-02

Hopp, H., Jakisch, J., Sturm, S., Becker, C., & Thoma, D. (2019). Integrating multilingualism into the early foreign language classroom: Empirical and teaching perspectives. *International Multilingual Research*, *14*(2), 146–162. https://doi.org/10.1080/19313152.2019.1669519

Kessler, G. (2010). When They Talk About CALL: Discourse in a Required CALL Class. *CALICO Journal*, *27*(2), 376–392. Retrieved from http://www.jstor.org/stable/calicojournal.27.2.376

Lai, C. (2019). Learning beliefs and autonomous language learning with technology beyond the classroom. *Language Awareness*, *28*(4), 291–309. https://doi.org/10.1080/09658416.2019.1675679

Lee, S. M. (2021). Factors affecting the quality of online learning in a task-based college course. *Foreign Language Annals*, *55*(1), 116–134. https://doi.org/10.1007/s40299-021-00571-z

Lian, J., Chai, C. S., Zheng, C., & Liang, J. C. (2021). Modelling the Relationship Between Chinese University Students' Authentic Language Learning and Their English Self-efficacy During the COVID-19 Pandemic. *The Asia-Pacific Education Researcher*, *30*(3), 217–228. https://doi.org/10.1007/s40299-021-00571-z

Lohe, V., & Elsner, D. (2019). Developing Language Awareness in Primary School Children with Multilingual Virtual Talking Books: First Results of the Pilot Study. In Information-Resources-Management-Association (Ed.), *Computer-Assisted Language Learning: Concepts, Methodologies, Tools, and Applications* (pp. 194–212). Hershey, PA, USA: IGI Global. https://doi.org/10.4018/978-1-5225-7663-1.ch009

Luzón, M. J., Ruiz-Madrid, M. N., & Villanueva, M. L. (2010). *Digital Genres, New Literacies and Autonomy in Language Learning.* New Castle: Cambridge Scholars Publishing.

O'Dowd, R. (2023). *Internationalising Higher Education and the Role of Virtual Exchange.* New York: Routledge.

Redecker, C., & Punie, Y. (2017). *European Framework for the Digital Competence of Educators: DigCompEdu.* https://dx.doi.org/10.2760/159770

Rosca, A., & Sevilla-Pavón, A. (Eds.). (2021). *Building up Telecollaborative Networks for Intercultural Learning in the Digital Age.* Editorial Comares: Granada.

Schmid, E. C., & Kienle, A. C. (2022). Challenging the Monolingual Bias in Tellecollaboration: Intermediate Findings of the European project TEMPLATE. *EUROCALL 2022*.

Séror, J. (2021). Plurilingualism in Digital Spaces. In E. Piccardo, A. Germain-Rutherford, & G. Lawrence (Eds.), *The Routledge Handbook of Plurilingual Language Education* (pp. 449–464). New York: Routledge.

Sosa-Díaz, M. J., & Valverde-Berrocoso, J. (2020). Perfiles docentes en el contexto de la transformación digital de la escuela. *Bordón. Revista de Pedagogía*, *72*(1), 151–173. https://doi.org/10.13042/Bordon.2020.72965

Starkey, L. (2020). A review of research exploring teacher preparation for the digital age. *Cambridge Journal of Education*, *50*(1), 37–56. https://doi.org/10.1080/0305764X.2019.1625867

Tondeur, J., Roblin, N. P., Van Braak, J., Voogt, J., & Prestridge, S. (2016). Preparing beginning

teachers for technology integration in education: ready for take-off? Technology, Pedagogy and Education. *Technology, Pedagogy and Education*, *26*, 157–177. https://doi.org/10.1080/1475939x.2016.1193556

Williams, L., Abraham, L. B., & Bostelmann, E. D. (2014). A Discourse-Based Approach to CALL Training and Professional Development. *Foreign Language Annals*, *47*(4), 614–629. https://doi.org/10.1111/flan.12119

Winter, E., Costello, A., O'brien, M., & Hickey, G. (2021). Teachers' use of technology and the impact of COVID-19. *Irish Educational Studies*, *40*(2), 235–246.

Yazar, T., & Keskin, I. (2016). Examination of prospective teachers' digital competence in the context of lifelong learning. *International Journal of Curriculum and Instructional Studies (IJOCIS)*, *6*(12), 133–150. Retrieved from https://www.ijocis.com/index.php/ijocis/article/view/161