A digital tool designed to support secondary education teachers' professional development and to develop students' oral language competence

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Abstract

Digital tools can guide and support teachers in professional development programmes. The aim of this study was four-fold: (1) to explore changes introduced in classroom methodology by secondary school teachers during their participation in a professional development programme, using the digital tool EVALOE-DSS, based on conversational methodology; (2) to analyse the impact of introducing conversational methodology in the development of students' oral competence; (3) to determine the relation between students' self-perception of oral competence and self-perceived emotional competence; and (4) to find out the teachers' opinion about their experience in the programme. The instruments used were the digital tool EVALOE-DSS, the Test of Self-Perceived Oral Competence, the Self-Report of Emotional Intelligence, the Trait Meta-Mood Scale, and a satisfaction questionnaire. The study was developed in four phases: initial intensive training, intervention using the digital tool for four months, students' assessments and teachers' evaluations. The results of teachers' self-assessments using the EVALOE-DSS showed that their self-assessment of classes significantly improved throughout their participation in the programme. In addition, students whose teachers participated in the programme were self-perceived as more competent at oral language, and this had a positive influence on their self-perception of emotional competence. Finally, teachers were positive about their participation in the training process using the EVALOE-DSS. In conclusion, this study seems to suggest that a professional development programme using a Computer Assisted Language Learning (CALL) tool could provide an important strategy for increasing teachers' oral language teaching quality and improving student learning.

Keywords: oral language competence, digital tool, emotional competence, professional development, secondary school

Introduction

Recent CALL pieces of research focus on adolescent learners' language development using technology or on the needs to be addressed by teacher preparation for the use of technology, but little is known about teachers' use of technology to self-reflect on teaching practices for helping secondary students to develop oral language skills. For example, some studies (Carhill-Poza & Chen, 2020; Hennessy, 2011; Pitura & Terlecka-Pacut, 2018; Tai et al., 2022) explored language development in technology-enhanced classrooms related to language proficiency across the four language domains (listening, reading, writing and speaking), to specific language abilities, such as speaking to the acquisition of vocabulary with a virtual reality app or even to the use of technology to assist gamification among others.

On the other hand, although some studies (Balchin & Wild, 2022) show that technology use has become normalised in language classes in secondary schools, particularly with respect to ESL and foreign language classrooms, some studies (Kessler, 2021; Tseng et al., 2022) underscore the need for a critical reflection on the pedagogical practices in the CALL field in order to face the challenges posed (e.g., difficulties encountered by some teachers in using digital technology appropriately or in managing their classes in order to maintain their students' attention and keep them focused on the linguistic activity) after the COVID-19 pandemic and the opportunities that are emerging, and, consequently, the need for pondering changes in teacher preparation.

Moreover, some studies (Carhill-Poza & Chen, 2020) bring to light that language development is best supported by the alignment of technology-enhanced classrooms with student-centered and strengths-based teaching, as a way of applying the principles of positive psychology to education (Noble & McGrath, 2015), which encourages student engagement and learning across a wide range of teaching strategies and styles, including multi-turn interactions between peers and with the teachers, scaffolding student participations, provisioning feedback during discussion and collaborative experiential learning. According to Major et al. (2018), research into the interactions between classroom dialogue, dialogic pedagogies and digital technologies constitute a new area of research. In their scoping review, they outline how digital technology impacts favourably on classroom atmosphere, increases levels of interaction and greater open questioning by teachers, contributes to the development of interpersonal relationships (particularly between teacher and students), and fosters learner motivation and engagement, among other benefits (Major et al., 2018). Indeed, other studies (Karatay & Hegelheimer, 2021; Lomicka & Lord, 2019) call for integrating CALL teacher preparation with general language teacher preparation.

The need for a reflection on teachers' use of technology for enhancing language development also meets the need for reflection on student-centered instructional practices for promoting language development. Although many qualified people have stressed the importance of quality talk and dialogic teaching in engaging secondary students in learning (Cui & Teo, 2020; Jay et al., 2017), there is limited empirical evidence about how secondary school teachers manage their classes and use their language to promote students' oral language competence (OLC) and other competences (Davies et al., 2017). Also, little is known about the influence of OLC on emotional competence in secondary learners (Beck et al., 2012).

This paper aims to fill these gaps in our knowledge. It discusses the potential of a CALL digital tool to support teachers' professional development as a means for promoting secondary school teachers' self-reflection to improve and support dialogic spaces in the classroom, and thus contribute to students' OLC and its potential impact on emotional competence.

Literature Review

Oral language competence (OLC)

OLC is included under the Schola Europaea's concept of "Literacy competence", one of the eight basic competences that students must achieve at the end of secondary education. The seven others are: multilingual competence; mathematical competence and competence in science, technology and engineering; digital competence; personal, social and learning to learn competence; citizenship competence; entrepreneurship competence; and cultural awareness and expression competence (Schola Europaea, 2018). For students to gain solid OLC, it is essential that OL is considered by all teachers as a transversal competence whose development is made possible, fundamentally, through the creation of rich environments where learners engage in quality, varied language interactions (Allen et al., 2013; Hafen et al., 2015).

It is generally accepted that OLC has a positive influence on emotional competence (EC) (Beck et al., 2012), although OLC and EC are both complex and multifaceted constructs consisting of several components. Several empirical studies (Astington & Filippova, 2005; Fivush, 2007; Laible & Song, 2006; Widen & Russell, 2008) have investigated some of the subcomponents of OLC in relation to EC that influence children's emotional development, namely early discourse with caregivers and the frequency, style, and content of parent–child discourse (Fivush, 2007; Laible & Song, 2006). Children's emerging acquisition of mental verbs increases their understanding of others' minds (Astington & Filippova, 2005), and the learning of new emotion words was shown to boost children's recognition of other people's facial emotions (Widen & Russell, 2008).

Furthermore, students who are competent in using emotion-related language are more socially efficacious than others with average emotional language development (Beck et al., 2012). Self-perception of emotional intelligence in adolescents have been explored with instruments such as the Trait Meta-Mood Scale (TMMS) (Gorostiaga et al., 2011); however, no research has been undertaken to link the self-perceived emotional intelligence with self-perception of OLC in adolescents.

Classroom dialogue implies "a specific focus on sharing and evaluating ideas, building ideas collectively, reasoning, providing justifications and elaborations, and using evidence to support arguments" (Major & Warwick, 2019, p. 2). Several theoretical models have been proposed to account for the relationship between oral language use and learning, among which we find: i) dialogic teaching (Alexander, 2018; Hennessy, 2011), ii) productive classroom dialogue (van der Veen et al., 2017), iii) communicative approach (Mortimer & Scott, 2003) and iv) conversational methodology (Gràcia et al., 2019, 2021b).

Conversational methodology (CM) arises within the framework of the eco-functional perspective (Bornstein, 1989; Snow, 1972) and emphasizes the use of language in everyday situations when interacting with others. CM proposes, firstly, a framework from which to locate the learning objectives of the OLC in a transversal way, that is, in all the subjects of the curriculum and, secondly, a procedure that combines the teaching and learning of distinct oral texts with the functions they should serve beyond the design and implementation of oral language activities. The aim is to systematize a work methodology where oral discourse is the object and mediator in the teaching and learning process (Gràcia et al., 2017). In fact, in addition to proposing changes in the dynamics of the class and in the structure of oral exchanges, CM aims to create a climate in which oral communication flows naturally between teacher and student and between students themselves; conversation is conceptualized as the ideal space where the teachers' management and the use of strategies in interactions with students contribute to developing OLC and promoting the development of other curricular competences (Gràcia et al., 2022a, 2022b, 2021b). For this reason, it is essential to design activities where students have to describe, narrate, discuss, argue or ask questions in the classroom. The objectives and contents of the syllabus must be linked to the ability to listen, speak and converse; the functional objectives to be achieved must be defined, as well as the tools for assessing and monitoring the teaching and learning (Gràcia et al., 2017).

Bossér and Lindahl (2020) showed how teachers used various communicative approaches to facilitate students' decision-making and promote complexity in their reasoning in socio-scientific

teaching. The authors stressed how teachers can promote "cumulativity" by recognising student's contributions to discussions (Alexander, 2018). In addition, Iqbal et al. (2021) highlighted the positive impacts of dialogic teaching in English Language on creativity, thinking ability, confidence building and other social impacts.

Although the literature emphasises the benefits of quality talk and dialogic teaching, dialogic-type classroom talk has still not become a common teaching practice among secondary teachers (Aksoy & Ceylan, 2021; Davies et al., 2017). The reasons for this "failure of dialogue" include discouragement of open participation, crowded classrooms, test-driven instruction, physical structure of the classroom and seating arrangement, incompatibility between the curriculum and the course time, and resistance to accept a shift from teacher-centeredness to student-centeredness, where students are required to take responsibility for co-constructing their own learning. Several studies (Lehesvuori, 2013; Pimentel & McNeill, 2013) note that dialogic discourse is more demanding and requires classroom management abilities and a certain noise level acceptance.

Assessing OLC in the classroom

Assessment is an important challenge for a teacher, since it implies planning in advance its content, tools and timing. It is an even more important challenge when a teacher must think about how to assess OLC. Assessing students' OLC in their mother tongue has not been a priority. Listening, expression and interaction skills take a backseat in school instruction and assessment (Corpas & Romero, 2021), and are assessed more in primary than in secondary schools. These skills are evaluated in second or foreign languages to check to what extent students use their "second language" in a way similar to their native language (Iqbal et al., 2021).

There are classroom observation tools that do not focus specifically on evaluating students' OLC, but on assessing the quality of teacher–student interactions. The Classroom Assessment Scoring System – Secondary (CLASS-S) has been adapted from the original primary education version and validated to be used in secondary education (Pianta et al., 2012).

Corpas and Romero (2021) developed and validated a questionnaire for students to assess their own self-perceived OLC (Self-assessment questionnaire on students' oral communication skills, DCOA) and a questionnaire for teachers to assess their students' OLC and to reflect on oral language performance in the classroom (Questionnaire on oral communication skills of students for teachers, DCOP).

The Test of Self-Perceived Oral Competence (Gràcia et al., 2021a) shares some aspects with the

cited tools. It is a digital self-assessed questionnaire in which the student is presented with a list of 30 situations or reflections that exemplify natural events associated with the classroom. The main differences between the Test of Self-Perceived Oral Competence and the DCOA are that the Test of Self-Perceived Oral Competence Likert's scale has 7 values, which allows a wider range of responses, and Test of Self-Perceived Oral Competence includes a larger range of aspects related to OLC, which do not focus on monologue orality or oral presentations, but on interactive natural situations in the classroom.

Information and Communication Technologies (ICT) are key tools that are being used ever more frequently to assess students' OLC. However, in the next section we focus on the ways in which the use of certain digital tools and of ICT in general can contribute to the professional development of secondary education teachers.

Information and communication technology (ICT) for professional development of secondary education teachers

ICT and CALL studies (Akpabio & Ogiriki, 2017; Pădurean, 2017) show that teachers create activities to work on language and that students show more interest when teachers use materials that are appealing. The use of ICT creates a better learning environment, increases the possibility of a much wider range of language teaching methods, promotes motivation and learner autonomy, connects classrooms with the real world, increases achievement and collaboration, among others (Richards, 2015).

On the other hand, ICT and CALL can become, as well, tools for supporting teachers' professional development. Although the traditional users of ICT for learning have usually been considered the pupils, some research (Khaliq & Baig, 2018) has been developed on teachers' use of ICT for their own self-regulated learning, self-evaluation and reflective practice as tools to update and enhance teachers' knowledge and skills to perform their work in a better way. The literature review by Hrastinski (2021) identifies six themes concerning digital tools to support professional development in lesson studies: analysing videos from the teachers' classrooms, analysing external video resources, fictional animations as complement to videos, structured digital lessons study word, hybrid teacher collaboration and digital teacher collaboration.

Other professional development programmes have been aimed at secondary teachers to enhance, specifically, OLC, quality talk or dialogic teaching in the classroom (Kiemer et al., 2018; Osborne et al., 2013; Pehmer et al., 2015). However, in these programmes, the use of ICT is limited and usually restricted to mediating technology or supporting technology for video or

audio analysis of classroom interaction (Sherin & van Es, 2005). Most professional development programmes use lessons with video and audio recordings of interviews with individual teachers (Sedova et al., 2016). Davies et al. (2017) report on the use of video and audio analysis to assess teachers' observable behaviours during discussions before and after the professional development programme. These programmes are intended to promote dialogic teaching and focus on dialogic indicators, such as how to formulate authentic questions, to update what the student expresses, or to share the floor with students in group discussions. Liaw and Wu (2021) examine how mixed-reality simulations, which integrate a combination of augmented reality/virtual reality and the physical world, are used to promote reflection on teachers' teaching practices.

On the other hand, a large body of studies has focused on professional development programmes in CALL teacher education (Giannikas et al., 2019; Son, 2018; Tafazoli, 2021; Torsani, 2016). Some of them (Chao, 2015; Schmid, 2011) are designed to build connections between teaching practice and CALL based on a socio-cognitive pedagogical approach to this form of learning. In their systematic review, Gönen & Aşık (2019) found that, out of 45 studies on professional development programmes, 11 focused on a specific training of a new tool, platform, online environment and resource; in their conclusions the authors stress the need for "incorporating more informal reflective opportunities in CALL teacher preparation" (p. 356). They advocate a reformulation of CALL training to reconcile various language teaching approaches (e.g., socio-constructivist, task-based, project-based approaches) with the CALL ideals.

The development of digital applications that are designed to enhance secondary teachers' practices for improving students OLC constitute an almost virgin research area. One exception to this trend is the previous research by Gràcia and colleagues. Recently, the EVALOE-DSS, developed, validated, and implemented in kindergarten and primary school by Gràcia et al. (2019, 2022b) to help teachers self-reflect on their practices with respect to their own and their students' OLC, make decisions and improve their classes, has been adapted to secondary education (Gràcia et al., 2021a, 2022a).

The objective of this study is four-fold: (1) to explore the changes introduced in the classroom methodology by secondary school teachers during their participation in a professional development programme using the EVALOE-DSS, based on conversational methodology; (2) to analyse the impact that the introduction of conversational methodology has had on the development of students' OLC; (3) to determine the relation between students' self-perception

of oral competence (SOC) and self-perceived emotional competence (SEI); and (4) to find out the teachers' opinion about their experience in the professional development programme with the EVALOE-DSS.

The following research questions guided our research:

(1) Does EVALOE-DSS as a learning resource for teachers facilitate the introduction of conversational methodology into the classroom? If so, what is the pace of learning?

(2) Is the self-perception of oral competence of intervention group students higher than in the control group students?

(3) Does students' self-perceived emotional intelligence (SEI) relate to their self-perception of oral competence (SOC)?

(4) How do teachers evaluate their participation in the programme with the EVALOE-DSS?

Method

Participants

The sample was selected through non-probabilistic sampling for convenience. The researchers contacted secondary education centres and later, in an informative meeting at the centre, the study was described to the teachers. The teachers in both groups (intervention and control) participated voluntarily in the study.

Five secondary education centres in two regions of Spain (Catalonia and Madrid) participated. The participants were 30 teachers who taught different subjects. The groups of teachers who voluntarily decided to take part in the research constituted the intervention group (14), the other group from the same schools and level were the control group (16). In Table 1 we present the characteristics of the teachers such as gender, region, subject taught, centre (five public centres) and grade of secondary education (from 1st, 12 years old, to 4th, 16 years old). The 16 teachers in the control group taught at the same schools and in the same grades as those in the intervention group.

Table 1. Characteristics of the participants in the intervention group.

Teacher	Gender	Region	Subject	Centre	Grade
T1	F	CAT	Spanish	1	1rst
T2	F	CAT	Catalan	1	1rst
T3	F	CAT	German	1	3rd
T4	M	CAT	Sciences	2	1rst
T5	F	CAT	Spanish	2	3rd
T6	F	CAT	Sciences	2	3rd

T7	F	CAT	Catalan	2	1rst
T8	F	CAT	Spanish	3	1rst
T9	F	CAT	Sciences	3	4th
T10	F	MAD	English	4	1rst
T11	F	MAD	French	4	2nd
T12	M	MAD	English	4	3rd
T13	F	MAD	French	5	3rd
T14	F	MAD	English	5	3rd

Note: CAT (Catalonia), MAD (Madrid), F (Female), M (Male).

The student sample consisted of 600 students (control group = 322, intervention group = 278; female = 57.05%, male = 42.94%), from compulsory secondary education (first year = 49.00%, second year = 26.60%, third year = 24.40%), with an average age of 13.75 and a standard deviation of 0.96. Families and students in both groups signed an online informed consent form before the data were recorded.

Instruments

The EVALOE-DSS was developed based on the observation scale EVALOE. This is a validated instrument for teacher reflection (Gràcia et al., 2022b) in kindergarten and primary education with a high reliability between evaluators (Cohen's Kappa coefficient $\kappa = .87$). The EVALOE-DSS was designed to improve students' OLC. It comprises digital resources of a varied nature, for instance, a tutorial with information about its purpose, use, the type of resources involved, and the recommended steps to follow, or a section for teachers to describe the class under evaluation, with examples and guides to elaborate on this description, etc. However, the main resource is a set of 30 items of three levels of complexity, with three qualitative response options (green, orange, and red face emojis) for teachers to evaluate systematically their classes in relation to five dimensions according to content: (1) *Instructional design*; (2) *Conversation management by the teacher*; (3) *Conversation management by the students*; (4) *Teacher communication strategies*; and (5) *Student communicative functions* (see Appendix with the 30 items of the EVALOE-DSS grouped in the five dimensions). 16 items are linked exclusively to the teachers' actions, 10 to the students' actions and 4 refer to both. Teachers may consult additional digital resources of two types: questions that generate reflection about the item/action, and videoclips of a real class situation that illustrates the action/item with an explanation.

Once the questionnaire has been answered according to the specific characteristics of the class, a summary table is drawn up with the 30 items and ratings. Then, six cards linked to six items

appear. Teachers must choose three of them and try to introduce them in their next classes. They must make the decision freely and reflectively, based on their expectations and the specific conditions of their subject and group of students. Finally, there appears a space to write notes that they considered useful to review later or discuss with other teachers or students.

The second instrument used was the digital Test of Self-Perceived Oral Competence (Gràcia et al., 2021a). It was designed to detect how new methodologies for conversation, assessment, and reflection on OLC by teachers had an impact on students' self-perception of their own OLC. It consisted of 30 questions grouped in 5 dimensions: (1) *Interaction Management*, (2) *Multimodality and prosody*, (3) *Textual coherence and cohesion*, (4) *Argumentative strategies* and (5) *Lexicon and terminology*, which were evaluated in previous teamwork (Gràcia et al., 2021a, 2022a). Its reliability, estimated using the alpha coefficient, was 0.85.

A third instrument used was the Trait Meta-Mood Scale-24 (TMMS-24), designed by Salovey et al. (1995) to self-assess how people reflect on their moods and the extent to which they pay attention to their feelings (attention), can distinguish their feelings (clarity) and can self-regulate their feelings to avoid or correct negative moods (repair). The scale is scored using a 5-point Likert scale, with response options ranging from 1 (strongly disagree) to 5 (strongly agree). In this study, we used an online digital adaptation of the Spanish short version (Fernández-Berrocal et al., 2004), which contains 24 items and has shown acceptable construct validity and high internal consistency (Cronbach's alpha for attention = 0.90, clarity = 0.90 and repair = 0.86) and satisfactory test-retest reliability, obtaining values ranging from 0.60 to 0.83.

A fourth instrument used was a satisfaction questionnaire, consisting of a digital set of 19 open-ended and 20 closed-ended questions to explore teachers' view on their experience with the EVALOE-DSS implementation and their participation in the programme (Gràcia et al., 2022a).

Procedure

The research, which was approved by the ethics committees of the two universities involved, was conducted during the second and third terms of the 2020-21 academic year. At the beginning of the second term, informed consent forms were sent to be signed by the families and students of the intervention and control groups. Then, the following phases were developed:

- Phase 1. At the beginning of the second term, the intervention group teachers participated in two two-hour online training sessions in which the use and objectives of

the EVALOE-DSS were explained.

- Phase 2. The 14 intervention teachers used the EVALOE-DSS for 4 months. Specifically, the teachers self-assessed each of the instrument items approximately every week or every two weeks, assigning a colour (red= 10, orange= 20 or green= 30 points) to each of the items based on what had happened in the class they were self-assessing.
- Phase 3. Students from all participating groups completed the Test of Self-Perceived Oral Competence and the TMSS-24 at the end of the third term.
- Phase 4. Participating teachers answered the satisfaction questionnaire at the end of the third term.

Data analysis

We analysed the data from teachers' self-assessments with the EVALOE-DSS, data from students' self-perception of communicative skills and their moods, and data from teachers' satisfaction questionnaire. The statistical packages used were the SPSS programme and the R Psych package.

The data related to the open-ended questions in the satisfaction questionnaire were analysed qualitatively based on a system of categories and codes developed from an inductive process using Atlas.ti software. To validate the category system, two judges independently analysed the data and calculated the interobserver reliability, with Cohen's Kappa coefficient $\kappa = .89$.

Results

In this section we present the results according to the specific research objectives and questions. First, we focus on whether EVALOE-DSS, as a learning resource for teachers, facilitates the introduction of conversational methodology into the classroom, and also focus on the pace of learning. Second, we present the results related to changes in students' self-perception of their oral language competence (OLC) after their teacher's participation in the programme. Third, we address the relation between students' self-perceived emotional intelligence (SEI) and their self-perception of oral competence (SOC). Finally, we present the teachers' evaluation of their participation in the programme using EVALOE-DSS.

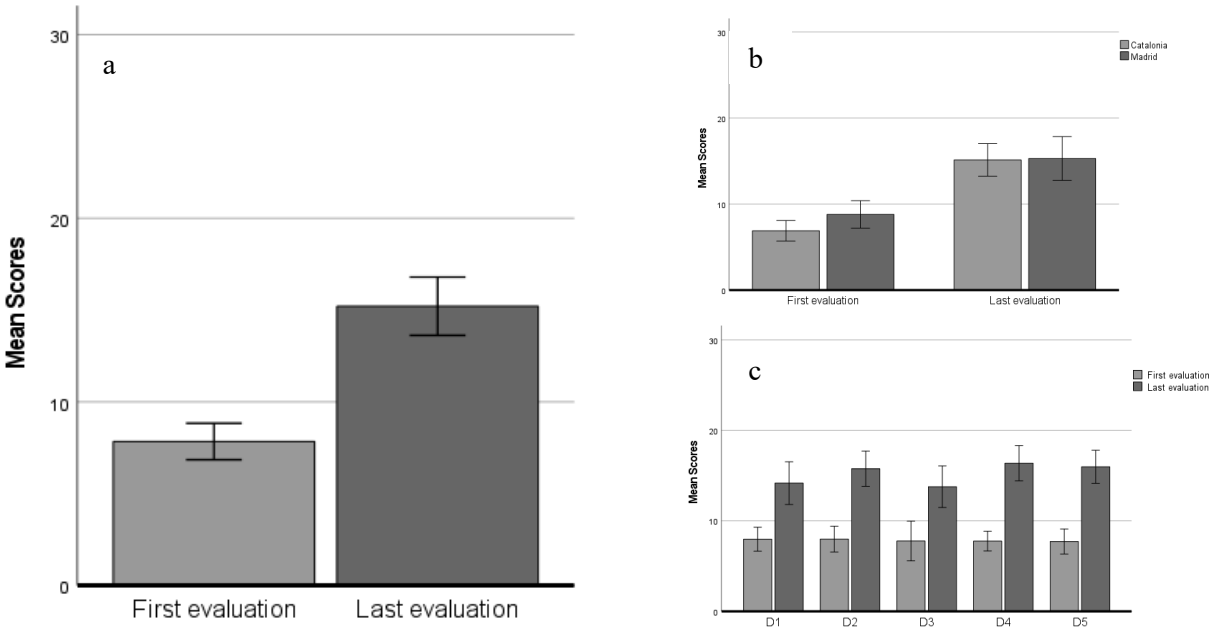
Introduction of conversational methodology in the classes with the use of the EVALOE-DSS

To answer the first research question, the difference between the average of the first and the last teachers' self-assessment was analysed. Figure 1a shows a statistically significant difference between the evaluation of the first and last session that did not depend on the region in which

the intervention was performed (Catalonia or Madrid) or dimensions. The ANOVA showed a significant main effect between evaluations F (1,12) = 96.21, p <0.001, η2 = 0.889. Neither the region F (1,12) = 1.17, p = 0.300, η2 = 0.089 nor dimensions F (4,48) = 1.37, p = 0.259, η2 = 0.102, were significant. No significant interactions were observed between evaluations and the other variables: Evaluation x region F (1,12) = 1.35, p = 0.268, η2 = 0.101 (Figure 1b), Evaluation x dimensions F (4,48) = 1.94, p = 0.119, η2 = 0.139 (Figure 1c) (see Appendix with the 30 items of the EVALOE-DSS grouped in the five dimensions).

The assumptions of the ANOVA regarding the normality and equality of variances were evaluated and accepted. Normality was evaluated with the Shapiro-Wilks test, with a statistical value of 0.88, p= 0.06 in the two evaluations. Homoscedasticity was evaluated with the Levene test, with a statistical value of 1.17, p=0.735.

Figure 1. Mean scores in the first and last teachers' self-assessment with the EVALOE-DSS. Error Bars 95% CI



The learning and use pattern of EVALOE-DSS was evaluated during the first six sessions of its use, for which a curvilinear estimate was made by testing the models (Table 2).

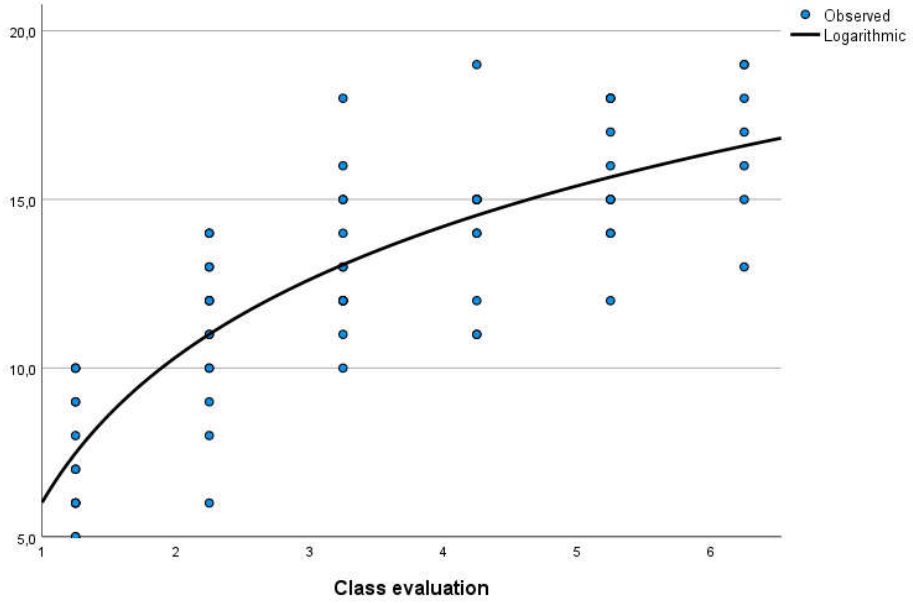
Table 2. Regression models, goodness of fit and parameters of the evaluated models

	Model summary				Parameter estimates			
Models	R^2	F	gl1	gl2	Constant	b1	b2	b3
Linear	0.646*	129.389	1	71	6.766	1.824		
Logarithmic	0.693*	160.150	1	71	7.479	5.086		
Invers	0.657*	136.023	1	71	17.054	-10.095		
Quadratic	0.686*	76.446	2	70	4.135	3.875	-0.307	
Cubic	0.693*	51.997	3	69	1.836	6.817	-1.303	0.097
Compound	0.605*	108.968	1	71	7.140	1.176		
Power	0.690*	158.326	1	71	7.500	0.466		
S	0.692*	159.163	1	71	2.903	-0.950		
Growth	0.605*	108.968	1	71	1.966	0.162		
Exponential	0.605*	108.968	1	71	7.140	0.162		

* p<0.001

Table 2 shows that the goodness of fit evaluated by explained variance or R^2 square is excellent for the models. Although the linear model shows a good fit, the models that best represented the progression of teachers' assessments in relation to the introduction of conversational methodology in their classes were the cubic and logarithmic models. We selected the logarithm model for its greater parsimony (Figure 2).

Figure 2. Logarithmic model of the change process in relation to class evaluation with EVALOE-DSS



The logarithmic representation of Figure 2 reveals a faster increase in teacher scores during the first weeks, which slowed down as progress was made in the digital professional development programme and in the introduction of conversational methodology in the classroom.

Effect of the intervention on self-perceived oral competence (SOC) and self-perceived emotional intelligence (SEI)

The second research question focused on verifying whether the students' self-perception of OLC in the intervention group was higher than that of the control group. An affirmative answer would confirm the initial hypothesis that the introduction of conversational methodology in their classes favoured the development of SOC (second research question) and this in turn would mobilise emotional aspects (third research question). However, if the SEI influences the SOC, greater use of conversational methodology could be expected in students with a higher SEI.

To test the relationship between SEI and SOC, and the effect of the introduction of conversational methodology in the classroom, a regression analysis was performed on the Test of Self-Perceived Oral Competence scores, which were designed to measure students' SOC. The variables were predictors of the level of SEI measured by TMMS-24 and the group (control group vs. intervention group) (see Table 3).

Table 3. Coefficients of the regression model in the pretest and the posttest (TMMS-24)

	PRETEST				POSTTEST			
VARIABLES	B	Se	β	t	B	Se	β	t
(Constant)	47.624	4.462		10.674**	38.026	4.602		8.263**
GROUP	2.412	1.855	0.058	1.300	4.536	1.920	0.100	2.362*
attention	0.571	0.141	0.203	4.041**	1.058	0.144	0.330	7.327**
clarity	0.601	0.165	0.200	3.650**	0.705	0.159	0.221	4.432**
repair	0.560	0.162	0.183	3.453**	0.435	0.165	0.131	2.639**

* p<0.05 ** P<0.001

The regression analysis was performed with the pretest before the intervention measures and with the posttest measures at the end of the intervention. Note that the explained variance of the Test of Self-Perceived Oral Competence scores rose from 22.1% in the pretest to 29.2% in the posttest.

An evaluation of the effect of predictive variables on regression analysis performed with pretest and posttest scores showed that the three emotional factors measured by TMMS-24 contributed to statistically significantly predicted Test of Self-Perceived Oral Competence scores ($p < 0.001$), although the weight of the attention factor increased its predictive value after the intervention (it rose from $\beta = 0.203$ to $\beta = 0.330$). In the pretest, the variable group included as a dummy variable (control group = 0 and intervention group = 1) did not have a statistically significant effect. However, in the posttest the group contributed in a statistically significant way

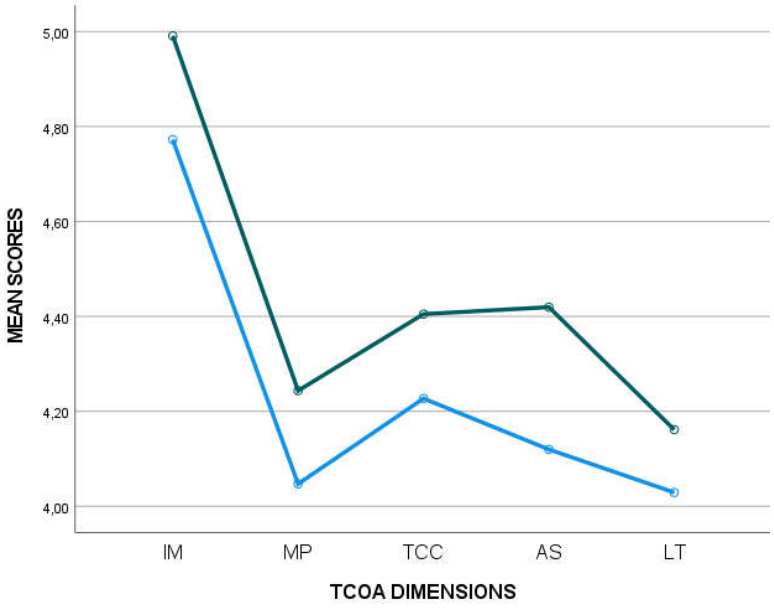
(p = 0.019) to the regression model. This means that in the intervention group the [TOOL.NAME] scores improved significantly.

Dimensions of the Test of Self-Perceived Oral Competence in relation to the SEI

To assess more accurately the effect of conversational methodology on the SEI for the various factors included in the SOC (third research question), an ANOVA of repeated measures was performed on the five oral skills that Test of Self-Perceived Oral Competence assesses. The three emotional factors measured by TMMS-24 were included as covariates.

The results of the ANOVA show that there was a significant main effect of SOC skills F (4, 1624) = 10.90, p <0.001, η^2_p = 0.026 as of Group F (1, 406) = 5.77, p = 0.17, η^2_p = 0.014. The interaction of SOC skills x Group F was not statistically significant (4, 1624) = 0.485, p = 0.747, η^2_p= 0.002. As shown in Figure 3, in the five skills evaluated there was a similar increase in the control group and in the intervention group. Interaction management was the ability that students had the most proficiency in, according to their reports. In the intervention group, scores for this skill were five points on average out of the maximum of seven on the scale.

Figure 3. Mean scores on the five dimensions of the Test of Self-Perceived Oral Competence. Control group light blue line and intervention group dark blue line



Note: IM = interaction management, MP= multimodality and prosody, TCC = textual cohesion and coherence, AS= argumentative strategies, LT = lexicon and terminology

As shown by the regression analysis, all three emotional factor covariates had a statistically significant effect, although the attention factor had the largest effect size: Attention F (1, 406) =

52.86, p <0.001, η^2_p= 0.115, Clarity F (1, 406) = 20.28, p <0.001, η^2_p= 0.048 and Repair F (1, 406) = 6.84, p = 0.009, η^2_p= 0.014. This result indicates that the intervention helped to increase students' attention to their emotions (see Table 1 in the Supplementary material for an analysis of statistically significant effects in the interactions between Test of Self-Perceived Oral Competence dimensions and emotional factors).

Teachers' opinion on the experience

Concerning the fourth research question, the results were obtained from the analysis of answers provided by 11 out of the 14 teachers to the satisfaction questionnaire. Three of the teachers did not answer the questionnaire in the given period.

Regarding the closed-ended questions about the usefulness of the tutorial, the 11 teachers stated that it had been useful. With respect to the dimensions and items wording, 9 teachers replied that they would not make any changes. They all considered that aids in written format (reflection questions) were useful.

The qualitative analysis of the answers to the open-ended questions based on the category system developed indicates that, out of the 181 statements identified, 6 are related to the tool use frequency, 6 revolve around the aids usefulness (e.g. "To know what I was being asked to do more specifically"), 10 referred to written aids (e.g. "They have been useful to me as a guide to use new strategies and to be more conscious of others that I have not used yet"), 9 to the video aids (e.g. "Videos have helped me to see myself from the outside and to change some things [ask more questions]"), and 1 to the images aids (e.g. "I find it easier to see steps or strategies with images than with an explanatory text").

In the assessment of the EVALOE-DSS use, 8 statements are related to the items wording (e.g. "They are quite clear statements. They do not lead to misunderstanding the content"); 11 statements are related to the fact that the first questionnaire that the teachers have to answer has only 15 items (e.g. "The 15-item format at the beginning is correct; it is really a tool that includes many aspects…"); 14 statements explore the frequency of use (weekly) (e.g. "I find it a very powerful tool, but it takes a lot of time to use it properly. I would go more slowly to try to use the selected items and work on them well"); 2 statements revolve around the period during which they use the digital tool (4 months) (e.g. "I think I need more time to work with the tool"); 6 are linked to the number of items (e.g. "I would add an item, perhaps one related to the need for the gesture to accompany the words, which would also have to be fluid, not rigid"); 3 statements are on strategies to become familiar with the tool (e.g. "It would speed up the

response process not having to open the aids box every time an item is answered"); 11 related to decision-making (e.g. "It is useful to be more aware of applying what I decided to change and, at the same time, to prepare the class from a different point of view); 19 statements are on the usefulness of the final summary (e.g. "It is useful to see the summary because it clarify the points that can be improved and for making-decisions for the next class"), and 12 statements are related with observations (e.g. "The possibility of entering observations is very useful since their self-review helps a lot when you write the script for the next class") (see Table 2 in the Supplementary material for a summary).

The reasons for the difficulty of introducing new items/actions in class have also been explored. Two statements are related to the difficulty of introducing new actions in class (e.g. "Making changes is sometimes difficult due to the students' profiles and characteristics").

Regarding the comments about the digital tool or suggestions to improve it, 5 statements relate to changes in the items wording and/or written aids (e.g. "The description of each item have to be shorter"), a statement on the quality and quantity of aids in video format (e.g. "The videos were useful, but the quality of the sound of two of them was poor and it was difficult to understand participants"), one on the complexity of items (purple tones) ("I think that some items that are classified as simple are complex and contribute to language teacher preparation"), and 12 statements are related to extending conversational methodology to all teachers (e.g. "[…] I think it should be made clear that it is not a tool for language teachers only, but it is a useful tool for teachers of all areas").

As for the general comments and evaluation of the digital tool, one statement highlights its usefulness (e.g. "I think it is very useful. It is an attractive tool that can support training and it can be effective for students to acquire relevant linguistic skills"). We also have found 8 reflections on teaching practices (e.g. "It is a very powerful tool for self-regulation of teaching practice that allows us to think about certain aspects that until now were mechanically applied in the class, without thinking about it's possible improvement"); 8 statements refer to changes in the teaching action (e.g. "The tool has allowed me to improve aspects that I didn't be aware such are listening to others, turn taking, let students to participate"), and 13 statements are related to students' progress (e.g. "They have understood that they can improve their talk, that their opinions are important, and that not all the linguistic productions have the same grade of quality").

The last two dimensions included 10 statements about the continuity of the participation in the project (e.g. "I would like to continue with the tool with the same group of students who started

this year. I think I still have to be able to work with them on aspects that due to time constraints I have not been able to work on"), and 2 statements in relation to a students' formative proposal (e.g. "It might be possible to show a video with a sample of communication to students to analyse or comment on them together").

Discussion

Our study has shown how a specific digital tool can contribute to the reflection on student-centered instructional practices for promoting language development in the sense pointed out by Major et al. (2018). The first research question was whether EVALOE-DSS as a learning resource for teachers would facilitate the introduction of conversational methodology in the classroom, and if the findings suggested that this was the case, what the pace of learning or progress was. The results clearly indicate that secondary education teachers' self-assessment of the classes significantly improved throughout their participation in the programme. These findings coincide with previous research in which a similar version of the tool was used (Gràcia et al., 2019, 2022b) by kindergarten and primary education teachers. Also, there are in line with other studies conducted in secondary education in which teachers make use of distinct communication approaches to facilitate students' decision-making while promoting complexity in their reasoning in socio-scientific teaching (Bossér & Lindahl, 2020) or in which teachers recognise students' improvements to contributions to discussions and thus promote the ability to refer back to discussion contents in ways that encourage genuine contribution of ideas by the same or different learners (Alexander, 2018).

The main contribution of our study focuses on the fact that the use of the digital tool EVALOE-DSS is a process that is both evaluative and formative. Teachers manage their own process of self-learning and self-reflection, and adapt it to the pace of learning, profile and needs of their students, and the characteristics of the subject they teach. In addition, significant improvement includes actions related to several dimensions, some of which are pragmatic, such as conversation management, communicative functions (asking questions and sharing information with peers, regulating their actions, using social formulas, etc.), whereas other actions are related to the arrangement of students and teachers in the classroom (for example, in the form of a circle), which helps to generate network interactions, or assessment (by teachers) and self-assessment (by students) of OLC during classes.

As for the pace of learning, the results indicate that teachers managed to introduce changes in their classes in a relatively short time (between 6 and 8 weeks), in relation to their actions and those of their students. However, they kept using the digital tool for 4 months to consolidate

the changes introduced, make decisions, and incorporate other actions.

These findings are consistent with the results obtained by Major & Warwick (2019) who stated that classroom dialogue implies "a specific focus on sharing and evaluating ideas, building ideas collectively, reasoning, providing justifications and elaborations, and using evidence to support arguments" (p. 2). They are also in line with the theoretical models that have been proposed to account for the relationship between oral language use and learning (Alexander, 2018; Cui & Teo, 2020; Jay et al., 2017; Lehesvuori, 2013; van der Veen et al., 2017).

The teachers' assessment of their practice related to teaching strategies learning through the digital tool could lead to an improvement in the overall teaching quality if we agree with the approach of the Council of Ministers of Education of Canada (2013), according to which OLC is one of the teachers' characteristics that most contributes to teaching quality.

The second research question focused on whether the SOC of the intervention group students was higher than that of the control group students. The results are interpreted according to whether changes in the teaching methodology to promote greater students' participation, and thus more opportunities to improve their OLC, contributed to teachers detecting these improvements, and whether students were also perceived as more competent.

The Test of Self-Perceived Oral Competence had already been used in a previous study (Gràcia et al., 2021a), and has many similarities with other OLC self-assessment instruments (Corpas & Romero, 2021; Demir, 2017). Their design and assessment for secondary school students confirm the need to give them a voice on oral competence self-assessment, since the process of reading the questions and answering already involves reflection on their own abilities.

This improvement in students' self-perception is reflected in results related to the third research question, which explores the relationship between self-perceived oral competence and self-perceived emotional intelligence. The evaluation of the effect of predictive variables on the regression analyses indicates that the three emotional factors measured by the test on SEI contribute to statistically significant predictions of Test of Self-Perceived Oral Competence scores. It seems that participating in classes in which dialogue and conversation were valued and promoted as a resource to improve OLC, and to learn contents, helped to improve the way students are perceived as speakers, and the degree to which they are aware of their and others' feelings, emotions and mood.

These results confirm that OLC has a positive influence on emotional competence (Beck et al., 2012). The introduction in classes of a more participatory methodology has contributed to

create meaning, build relationships, develop self-understanding, express and regulate emotional states and behaviour, and engage properly with the world around us (Bisquerra & Pérez, 2007). Little literature has explored the EI self-perception in adolescents and their relation to the OLC self-perception, so the results of our study can be considered pioneering, but they should be interpreted with caution.

Finally, the last research question focused on exploring the teachers' opinion about their experience in the professional development programme using the EVALOE-DSS, based on answers to a satisfaction questionnaire completed at the end of their participation. The results clearly indicate that teachers became familiar with the tool and were able to make assessments about each of the elements and the digital resources provided (items, videos and reflection questions linked to each item, dimensions, etc.), the way they used it and contributed to their reflection and their decisions, and the changes in their teaching practice. In addition, their answers reveal a good ability to detect changes in their students' participation in class in line with the conversational methodology principles. Their opinions and their improvement proposals showed a high degree of reflection on their practice.

The reviewed studies on professional development programmes for secondary teachers aimed at enhancing OLC, quality talk or dialogic teaching (Davies et al., 2017; Fang et al., 2021; Osborne et al., 2013; Pehmer et al., 2015; Sedova et al., 2016), with greater or lesser digital technology use, do not incorporate teachers' assessments of their learning and of the change process in which they were involved. Moreover, the digital tool EVALOE-DSS contributes to the adoption of a perspective focused on the teacher and not exclusively on the researcher or advisor. The adoption of this perspective in which teachers explain their needs, the barriers they run into, and the impact of their intervention is considered a key element in professional development processes and in their evaluation for improvement (Badri et al., 2016). Our findings seem to indicate that professional development using digital resources should provide a crucial strategy for improving schools, increasing teaching quality and promoting student learning.

In agreement with Mahmoudi & Özkan (2015), in our study we observe that the intensity of participation in professional development activities, some of them using digital tools, is partly dependent on the kind of support that teachers receive and the type of barriers they encounter. Although there were differences between teachers in terms of their professional profile and school characteristics, the results seem to indicate that they could adjust the teacher development proposal to their needs and those of their students.

Conclusions

Overall, the research in this paper has contributed to expand the CALL field in the sense that, complementing Major et al. (2018)'s descriptions, it has been shown that technology assists teachers to support self-reflection on their teaching practices for promoting OLC across the curriculum. Our proposal meets the call for integrating CALL teacher preparation with general language teacher preparation (Karatay & Hegelheimer, 2021; Lomicka & Lord, 2019), and with the integration of technology in language education professional development (Tafazoli, 2021). Adolescents' use of technology has become normalised in language classes, but it needs to be aligned with student-centered and strengths-based teaching (Carhill-Poza & Chen, 2020).

The EVALOE-DSS opens new ways to professional development of secondary education teachers, not just as a video-based resource for lesson study, video conferencing or shared documents (Hrastinski, 2021), but as a digital tool, conceived to help teachers to self-reflect on their own language teaching practice provided with several aids (text and videos) that support in a sustainable and insightful way, and it seems to be as effective as face-to-face professional development programme. In this context, the term "sustainable" refers to the fact that the professional programme is designed to contribute to in-service teachers' practice, using fewer resources (in terms of time, human resources, etc.) than traditional one-to-one psycho-pedagogical support, as carried out in Gràcia et al. (2017). In the programme implemented in this study teachers reflect on their practices for teaching oral language competence, as well as other competences, try to answer fundamental and reflective questions and use situated resources such as videos of classes and explanations related to them.

However, we are aware that it is necessary to carry out more studies with a larger number of teachers to confirm the potential of teacher development programmes that include teacher self-reflection on their use of computers to learn about oral language, on how oral language teaching can be improved, and how students' language learning can be encouraged.

Limitations of the study include the small number of teachers who participated, which does not allow the results to be generalized. However, the heterogeneity of the subjects taught and the ages of the students, as well as the high degree of satisfaction of the teachers with the development program, are a good basis for continuing to design and develop further studies. These new studies should involve a greater number of teachers and a greater diversity of subjects, use of technology in class, and types of secondary schools.

A second limitation is that all the results are based on self-assessments, perceptions and

valuations of the teachers, without any external observations against which they could be contrasted as in previous studies with early childhood and primary education teachers (Gràcia et al., 2022b). This is fundamentally due to the restrictions imposed by COVID19. In future studies, we hope to be able to carry out observations of the classes, not only to contrast the perceptions of the teachers, but also to be able to discuss their classes with them as part of the process of professional development.

The final limitation is that the teachers were not able to reflect together with their colleagues (either at their own secondary school or elsewhere) on the development process. We are currently engaged on a study that includes monthly meetings among teachers of secondary education as part of the training process, so that they can reflect together on their use of the digital tool as a self-assessment resource for the introduction of conversational methodology in their classes, and on students' progress in OLC.

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Institutional Review Board Statement

The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Institutional Review Board of University of Barcelona (protocol code IRB00003099 and 21st December 2020) and Deontological Committee of Faculty of Psychology, Complutense University of Madrid (2020/21-007, 29th October 2020).

Informed Consent Statement: Informed consent was obtained from all subjects and/or tutors - when minors were concerned- involved in the study.

Disclosure statement

The authors report there are no competing interests to declare.

References

Aksoy, M., & Ceylan, T. (2021). An Action Research on Improving Classroom Communication and Interaction in Social Studies Teaching. *Education Research International,* Article ID 9943194, 1-19. https://doi.org/10.1155/2021/9943194

Akpabio, E. & Ogiriki, I. B. (2017). Teachers use of Information and Communication Technology (ICT) in Teaching English Language in Senior Secondary Schools in Akwa Ibom State. *Equatorial Journal of Education and Curriculum Studies, 2*(2), 28-33. https://ssrn.com/abstract=2971531

Alexander, R. (2018). Developing dialogic teaching: genesis, process, trial. *Research Papers in Education, 33*(5), 561-598. https://doi.org/10.1080/02671522.2018.1481140

Allen, J., Gregory, A., Mikami, A., Lun, J., Hamre, B., & Pianta, R. (2013). Observations of Effective Teacher-Student Interactions in Secondary School Classrooms: Predicting Student Achievement With the Classroom Assessment Scoring System-Secondary. *School Psychology Review, 42*(1), 76-98. https://doi.org/10.1080/02796015.2013.12087492

Astington, J. W., & Filippova, E. (2005). Language as the route into other minds. In B. F. Malle & S. D. Hodges (Eds.), *Other minds: How humans bridge the divide between self and others* (pp. 209-222). The Guilford press.

Badri, M., Alnuaimi, A., Mohaidat, J., Yang, G., & Al Rashedi, A. (2016). Perception of Teachers' Professional Development Needs, Impacts, and Barriers: The Abu Dhabi Case. *SAGE Open*, 6(3), 1-15. https://doi.org/10.1177/2158244016662901

Balchin, K., & Wild, C. (2022). Exploring the role of context and collaboration in normalising technology use in English language teaching in secondary schools in Malaysia. *Computer Assisted Language Learning*, *35*(7), 1437-1457. https://doi.org/10.1080/09588221.2020.1803360

Beck, L., Kumschick, I. R., Eid, M., & Klann-Delius, G. (2012). Relationship between language competence and emotional competence in middle childhood. *Emotion*, *12*(3), 503-514. https://doi.org/10.1037/a0026320

Bisquerra, R., & Pérez, N. (2007). Las competencias emocionales [Emotional competences]. *Educación XXI*, 10, 61–82.

Bornstein, M. H. (1989). *Maternal responsiveness: Characteristics and consequences*. Jessey Bass.

Bossér, U., & Lindahl, M. (2020). Teachers' Coordination of Dialogic and Authoritative Discourses Promoting Specific Goals in Socioscientific Issue-Based Teaching. *International Journal of Science and Mathematics Education*, *19*(3), 461-482. https://doi.org/10.1007/s10763-020-10061-1

Carhill-Poza, A., & Chen, J. (2020). Adolescent English learners' language development in technology-enhanced classrooms. *Language Learning & Technology*, *24*(3), 52-69. https://hdl.handle.net/10125/44738

Chao, C. (2015). Rethinking transfer: Learning from CALL teacher education as consequential transition. *Language Learning and Technology, 9*(1), 102-118.

Corpas, A., & Romero, M. (2021). Técnicas e instrumentos para la evaluación de la comunicación oral: diseño y validación [Techniques and instruments for the evaluation of oral communication: design and validation]. *Hachetetepé. Revista científica de Educación y Comunicación, 22*, 1-36. https://doi.org/10.25267/Hachetetepe.2021.i22.1205

Council of Ministers of Education of Canada. (2013). *Speaking for Excellence: Language Competencies for Effective Teaching Practic*e. Government of Canada's Foreign Credential Recognition Program. https:///www.cmec.ca

Cui, R., & Teo, P. (2020). Dialogic education for classroom teaching: a critical review. *Language and Education, 35*(3), 187-203. https://doi.org/10.1080/09500782.2020.1837859

Davies, M., Kiemer, K., & Meissel, K. (2017). Quality Talk and Dialogic Teaching — An Examination of a Professional Development Programme on Secondary Teachers' facilitation of student talk. *British Educational Research Journal, 43*(5), 968-987. https://doi.org/10.1002/berj.3293

Demir, S. (2017). An Evaluation of Oral Language: The Relationship between Listening, Speaking and Self-Efficacy. *Universal Journal of Educational Research*, *5*(9), 1457-1467. https://doi.org/10.13189/ujer.2017.050903

Fang, G., Chan, P., & Kalogeropoulos, P. (2021). Secondary School Teachers' Professional Development in Australia and Shanghai: Needs, Support, and Barriers. *SAGE Open, 11*(3). https://doi.org/10.1177/21582440211026951

Fernández-Berrocal, P., Extremera, N. & Ramos, N. (2004). Validity and Reliability of the Spanish Modified Version of the Trait Meta-Mood Scale. *Psychological Reports, 94,* 751-755. https://doi.org/10.2466/pr0.94.3.751-755

Fivush, R. (2007). Maternal reminiscing style and children's developing understanding of self and emotion. *Clinical Social Work Journal, 35*(1), 37-46. https://doi.org/10.1007/s10615-006-0065-1

Giannikas, C. N., Constantinou, E. K., & Papadima-Sophocleous, S. (Eds.). (2019). *Professional development in CALL: A selection of papers*. Research-publishing.net.

Gorostiaga, A., Balluerka, N., Aritzeta, A., Haranburu, M., & Alonso-Arbiol, I. (2011). Measuring perceived emotional intelligence in adolescent population: Validation of the Short Trait Meta-Mood Scale (TMMS-23). *International Journal of Clinical and Health Psychology, 11*(3),

523-537. https://www.redalyc.org/pdf/560/56019881007.pdf

Gràcia, M., Alvarado, J. & Nieva, S. (2021a). Assessment of Oral Skills in Adolescents. *Children*, *8*(12), 1136. https://doi.org/10.3390/children8121136

Gràcia, M., Alvarado, J., & Nieva, S. (2022a). Autoevaluación y Toma de Decisiones para Mejorar la Competencia Oral en Educación Secundaria [Self-Assessment and Decision-Making for the Improvement of Oral Competence in Secondary Education]. *Revista Iberoamericana de Diagnóstico y Evaluación, RIDEP, 62*(1), 83-99. https://doi.org/10.21865/RIDEP62.1.07

Gràcia, M., Amado, L., Jarque, S., Bitencourt, D., Vega, F., & Riba, C. (2019). EVALOE-DSS as a self-assessment and decision-making tool on the teaching of oral language in a school context: results of a pilot study. *Multidisciplinary Journal of School Education*, *15*, 55-78. https://doi.org/10.14632/mjse.2019.15.55

Gràcia, M., Casanovas, J., Riba, C., Sancho, M. R., Jarque, M. J., Casanovas, J., & Vega, F. (2022b). Developing a digital application (EVALOE-DSS) for the professional development of teachers aiming to improve their students' linguistic competence. *Computer Assisted Language Learning, 35*(3), 492-517. https://doi.org/10.1080/09588221.2019.1707690

Gràcia, M., Galván-Bovaira, M. J., & Sánchez-Cano, M. (2017). Análisis de las líneas de investigación y actuación en la enseñanza y el aprendizaje del lenguaje oral en contexto escolar [Analysis of the lines of research and action in the teaching and learning of oral language in a school context]. *Revista Española de Lingüística Aplicada, 30*(1), 188-209. https://doi.org/10.1075/resla.30.1.08gra

Gràcia, M., Vega, F., Jarque, S., Adam, A. L., & Jarque, M. J. (2021b). Teaching practices for developing oral language skills in Catalan schools. *Cogent Education*, *8*(1), 1935647. https://doi.org/10.1080/2331186X.2021.1935647

Gönen, S. I. K., & Aşık, A. (2019). A review of studies on CALL teacher education: Trends and issues. In G. Y. Ekşi, L. Guerra, D. Werbinska, & Y. Bayyurt (Eds.), *Research Trends in English Language Teacher Education and English Language Teaching* (pp. 343-362). University of Évora.

Hafen, C. A., Hamre, B., Allen, J., Bell, C., Gitomer, D., & Pianta, R. (2015). Teaching through interactions in secondary school classrooms: Revisiting the factor structure and practical application of the classroom assessment scoring system–secondary. *The Journal of Early Adolescence, 35*(5-6), 651-680. https://doi.org/10.1177/0272431614537117

Hennessy, S. (2011). The role of digital artefacts on the interactive whiteboard in supporting classroom dialogue. *Journal of Computer Assisted Learning, 27*(6), 463-489. https://doi: 10.1111/j.1365-2729.2011.00416.x

Hrastinski, S. (2021). Digital tools to support teacher professional development in lesson studies:

a systematic literature review. *International Journal for Lesson and Learning Studies, 10*(2), 138-149. https://doi.org/10.1108/IJLLS-09-2020-0062

Iqbal, L., Aurangzeb, S., & Shah, F. (2021). Implications of Dialogic Teaching: Practices of and Reflections from English Language Teachers. *Research Journal of Social Sciences and Economics Review, 2*(1), 375-381. https://doi.org/10.36902/rjsser-vol2-iss1-2021(375-381)

Jay, T., Willis, B., Thomas, P., Taylor, R., Moore, N., Burnett, C., Merchant, G., & Stevens, A. (2017). *Dialogic Teaching: Evaluation Report and Executive Summary*. Education Endowment Foundation. https://shura.shu.ac.uk/id/eprint/17014

Karatay, Y., & Hegelheimer, V. (2021). CALL Teacher Training Considerations for Low-Resource Environments: Overview of CALL Teacher Training. *CALICO Journal*, *38*(3), 271–295. https://doi.org/10.1558/cj.20159

Kessler, G. (2021). Current Realities and Future Challenges for CALL Teacher Preparation. *CALICO Journal*, *38*(3), i-xx. https://doi.org/10.1558/cj.21231

Khaliq, A., & Baig, I. (2018). Importance of ICT in teachers' professional development. *Journal of ISOSS, 4*(2), 113-127. https://www.joi.isoss.net/PDFs/Vol-4-no-2-2018/04%20J-ISOSS-4-2.pdf

Kiemer, K., Gröschner, A., Kunter, M., & Seidel, T. (2018). Instructional and motivational classroom discourse and their relationship with teacher autonomy and competence support—findings from teacher professional development. *European Journal of Psychology of Education*, *33*(2), 377-402. https://www.jstor.org/stable/44951960

Laible, D., & Song, J. (2006). Constructing emotional and relational understanding: The role of affect and mother-child discourse. *Merrill-Palmer Quarterly, 52*(1), 44-69. https://doi.org/10.1353/mpq.2006.0006

Lehesvuori, S. (2013). *Towards Dialogic Teaching in Science: Challenging Classroom Realities through Teacher Education*. *Studies in Education, Psychology and Social Research, 465*. https://jyx.jyu.fi/handle/123456789/41268

Liaw, M., & Wu, S. (2021). Exploring L2 Teacher Identities in an Intercultural Telecollaborative Mixed-Reality Teaching Environment. *CALICO Journal*, *38*(3), 296-318. https://doi.org/10.1558/cj.20169

Lomicka, L., & Lord, G. (2019). Reframing Technology's Role in Language Teaching: A Retrospective Report. A*nnual Review of Applied Linguistics, 39,* 8-23. https://doi.org/10.1017/S0267190519000011

Mahmoudi, F., & Özkan, Y. (2015). Exploring experienced and novice teachers' perceptions about professional development activities. *Procedia - Social and Behavioral Sciences*, *199*, 57-64. https://doi.org/10.1016/j.sbspro.2015.07.487

Major, L., Warwick, P., Rasmussen, I., Ludvigsen, S., & Cook, V. (2018). Classroom dialogue and digital technologies: A scoping review. *Education and Information Technologies, 23*(5), 1995-2028. https://doi.org/10.1007/s10639-018-9701-y

Major, L., & Warwick, P**.** (2019). 'Affordances for dialogue': the role of digital technology in supporting productive classroom talk. In N. Mercer, R. Wegerif & L. Major (Eds), *The Routledge International Handbook of Research on Dialogic Education* (pp. 394-410). Routledge. https://doi.org/10.4324/9780429441677

Mortimer, E., & Scott, P. (2003). *Meaning Making in Secondary Science Classrooms*. Open University Press.

Noble, T., & McGrath, H. (2015). PROSPER: A new framework for positive education. *Psychology of WellBeing, 5*(1), 2. http://dx.doi.org/10.1186/s13612-015-0030-2

Osborne, J., Simon, S., Christodoulou, A., Howell-Richardson, C., & Richardson, K. (2013). Learning to argue: A study of four schools and their attempt to develop the use of argumentation as a common instructional practice and its impact on students. *Journal of Research in Science Teaching*, *50*(3), 315-347. https://doi.org/10.1002/tea.21073

Pădurean, A. (2017). The use of ICT and CALL with high school students. *Journal Plus Education, 17*(1), 233-239. https://www.uav.ro/jour/index.php/jpe/article/download/773/837

Pehmer, A. K., Gröschner, A., & Seidel, T. (2015). Fostering and scaffolding student engagement in productive classroom discourse: Teachers' practice changes and reflections in light of teacher professional development. *Learning, Culture and Social Interaction, 7*, 12-27. https://doi.org/10.1016/J.LCSI.2015.05.001

Pianta, R., Hamre, B., & Mintz, S. (2012). *Classroom Assessment Scoring System (CLASS). Secondary Manual*. Teachstone.

Pimentel, S., & McNeill, K. (2013). Conducting talk in secondary science classrooms: Investigating instructional moves and teachers' beliefs. *Science Education, 97*(3), 367-394. https://doi.org/10.1002/sce.21061

Pitura, J., & Terlecka-Pacut, E. (2018). Action research on the application of technology assisted urban gaming in language education in a Polish upper-secondary school. *Computer Assisted Language Learning*, *31*(7), 734-763. https://doi.org/10.1080/09588221.2018.1447490

Richards, J. (2015). The changing face of language learning: Learning beyond the classroom. *RELC Journal, 46*(1), 5-22. https://doi.org/10.1177/0033688214561621

Salovey, P., Mayer, J. D., Goldman, S., Turvey, C., & Palfai, T. (1995). Emotional attention, clarity, and repair: Exploring emotional intelligence using the Trait Meta-Mood Scale. In J. W. Pennebaker (Ed.), *Emotion, Disclosure and Health* (pp. 125-151). American Psychological Association. https://doi.org/10.1037/10182-006

Schola Europaea. (2018). *Key Competences for Lifelong Learning in the European Schools.* Office of the Secretary-General of the European Schools, Pedagogical Development Unit. https://europeanschooluxembourg2.eu/wp-content/uploads/Key-Competences-for-Lifelong-Learning-in-the-European-Schools.pdf

Sedova, K., Sedlacek, M., & Švaříček, R. (2016). Teacher professional development as a means of transforming student classroom talk. *Teaching and Teacher Education, 57*, 14-25. https://doi.org/10.1016/j.tate.2016.03.005

Sherin, M., & van Es, E. (2005). Using video to support teachers' ability to notice classroom interactions. *Journal of Technology and Teacher Education, 13*(3), 475-491. https://www.learntechlib.org/primary/p/4824/

Schmid, E. C. (2011). Video-stimulated reflection as a professional development tool in interactive whiteboard. *ReCALL, 23*(3), 252-270. https://doi.org/10.1017/S0958344011000176

Snow, C. E. (1972). Mothers' speech to children learning language. *Child Development, 43(2)*, 549– 565. https://doi.org/10.2307/1127555

Son, J. B. (2018). CALL Teacher Development. In *Teacher Development in Technology-Enhanced Language Teaching*. Palgrave Macmillan. https://doi.org/10.1007/978-3-319-75711-7_4

Tai, T., Chen, H., & Todd, G. (2022). The impact of a virtual reality app on adolescent EFL learners' vocabulary learning. *Computer Assisted Language Learning, 35*(4), 892-917. https://doi.org/10.1080/09588221.2020.1752735

Tafazoli, D. (2021). CALL Teachers' Professional Development Amid the COVID-19 Outbreak: A Qualitative Study. *Computer Assisted Language Learning Electronic Journal, 22*(2), 4-13. https://callej.org/journal/22-2/Tafazoli2021.pdf

Torsani, S. (2016). *CALL teacher education: Language teachers and technology integration*. Springer.Tseng, J. J., Chai, C. S., Tan, L., & Park, M. (2022). A critical review of research on technological pedagogical and content knowledge (TPACK) in language teaching. *Computer Assisted Language Learning*, *35*(4), 948-971. https://doi.org/10.1080/09588221.2020.1750429

van der Veen, C., de Mey, L., van Kruistum, C., & van Oers, B. (2017). The effect of productive classroom talk and metacommunication on young children's oral communicative competence and subject matter knowledge: An intervention study in early childhood education. *Learning and instruction*, *48*(1), 14-22. https://doi.org/10.1016/j.learninstruc.2016.06.001

Widen, S. C., & Russell, J. A. (2008). Children acquire emotion categories gradually. *Cognitive development, 23*(2), 291-312. https://doi.org/10.1016/j.cogdev.2008.01.002