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Enhancing grammatical proficiency in online EMI: The impact of instructional videos on error reduction

 **Milagros Torrado-Cespón**

Universidad Internacional de La Rioja, Spain
milagros.torrado@unir.net

 **Sidoní López-Pérez**

Universidad Internacional de La Rioja, Spain
sidoni.lopez@unir.net

 **Cristina Castillo-Rodríguez**

Universidad de Málaga, Spain
cristina.castillo@uma.es

This study examines the effectiveness of instructional videos in addressing common grammatical errors in online English as a Medium of Instruction (EMI) contexts. The experiment involved 134 pre-service primary school teachers, divided into two groups: a group receiving explicit grammar correction through questionnaires, and a group exposed to instructional videos. Using AntConc, the study analysed errors in grammatical areas such as the definite article, collocations, and verb patterns. Results revealed mixed outcomes: while improvements were observed in adverb usage and inversion structures, persistent difficulties remained with collocations and the use of the definite article. New errors, particularly with verbs like “agree” and “to be born,” emerged after the intervention, potentially due to cognitive overload. The findings suggest that while instructional videos can enhance specific aspects of grammatical understanding, differentiated instruction is necessary to address persistent and newly introduced challenges. The study highlights the need for targeted, multimedia-based interventions to mitigate the impact of student alienation and promote language accuracy in online learning environments.

Keywords: EMI, pre-service primary school teachers, instructional videos, language accuracy

Introduction

The rise of online learning, particularly during the pandemic-induced shift to remote education, has underscored both the opportunities and challenges inherent in virtual learning environments. One key issue that has emerged is the sense of alienation experienced by students in online education, which often leads to a breakdown in communication between students and instructors (Chyr et al., 2017; Rasheed et al., 2020). This alienation can have significant consequences on student performance, particularly in language learning contexts where clear guidance and corrective feedback are crucial to prevent the fossilisation of errors.

In response to this challenge, the present study seeks to evaluate the efficacy of instructional videos in addressing common grammatical errors within an online learning environment. The study focuses on English as a Medium of Instruction (EMI), where students often face difficulties related to linguistic accuracy in a context where a B1 level of English is desirable. Still, it is not compulsory to present a certification at the time of enrolment, as that level should have been achieved by the time students finish secondary school. The experiment contrasts two groups of pre-service primary school teachers: one group received explicit error correction through a grammar test, while the other group was exposed to instructional videos explaining frequent errors. The videos, designed to enhance students' self-awareness of common mistakes, aim to improve error recognition and correction, potentially reducing fossilisation in an online context.

The online environment adds a unique variable to the experiment, as certain limitations, such as diminished direct interaction and a higher degree of student isolation, characterise it. These factors may negatively impact student engagement and communication. The current study aims to test the hypothesis that instructional videos, as a form of multimedia learning, can compensate for these drawbacks by providing accessible, focused content on common errors. The null hypothesis to be rejected is that explicit error teaching in online EMI subjects does not influence error correction. As a result, the following research question is posed:

- To what extent does the sole use of instructional videos reduce grammatical errors in online EMI courses among Spanish pre-service primary school teachers?

Literature review

The circumstances arising from the 2020 pandemic were a severe blow to traditional education. This situation necessitated a hasty adaptation to virtual platforms, allowing students to continue advancing in their studies rather than being hindered by the lack of teacher preparation and the well-known digital divide (Koutská, 2023; Torrado Cespón, 2021). From this situation, labels such as “emergency remote teaching” (Bozkurt & Sharma, 2020; Hodges et al., 2020) or “emergency e-learning” (Aguilera-Hermida, 2020; Murphy, 2020) have emerged. Countering the digital divide is a task that requires the involvement

of administrations to prevent inequality and inequity in access to Information and Communication Technologies (ICT) for all students, regardless of their educational level. However, once this obstacle is overcome, the lack of material built on the needs of its users represents a step backwards in the progress of a teaching model increasingly based on distance methodologies. Thus, providing didactic resources is the duty of professionals in this field.

Audiovisuals for teaching: CleverCookie

Considering previous needs, the research group that leads this investigation has created a series of instructional videos based on the most frequent errors committed by students who use EMI. CleverCookie is a tool specifically designed to cater to the needs of online users whose first or second language is Spanish. The novelty of this tool lies in an audiovisual section, where CleverCookie, a Spanish speaker who occasionally struggles with English grammar, explains in a short video how to address these issues. This tool, CleverCookie, already beta tested in Torrado Cespón and López Pérez (2023), tries to follow the development of key competencies for lifelong learning according to the guidelines of the European Community (OJ L 394, 30.12.2006), namely:

- Communication in a Foreign Language (English), by facilitating their learning and solving possible linguistic misunderstandings.
- Digital competence, providing an appropriate use of ICT.
- Learning to learn, promoting the independent use of its contents without the need for an expert.

Likewise, these instructional videos will favour the use of digital environments that facilitate lifelong learning, collaboration, innovation, and the acquisition of information in line with what is stated in the Common Framework of Reference for Language Learning (Council of Europe, 2020) and the Digital Competence Framework for Citizens (DigComp 2.2) (Vuorikari et al., 2022).

From a more linguistic and pragmatic perspective, CleverCookie videos consider the differences between oral and written language and the influence of the Internet and audiovisual media on the way university students express themselves (Torrado Cespón, 2021; Torrado Cespón & Díaz Lage, 2022). As they face a structural composition of messages of a certain vagueness in such an environment and include the variable of the use of a foreign language, it is convenient to provide the user with easy and quick ways to remember structures and rules. The development of the videos has taken into account the type of target audience (i.e., users of social networks for the exchange of information), and the need for shorter formats for the transmission of information that allow sustained attention in a multitasking environment (Baron, 2017; Cilliers, 2017; Llorca Abad, 2015). Thus, the application of these videos in a controlled environment serves to observe their usefulness in non-linguistic subjects, providing the students with some extra help they can access whenever they need it.

Clever Cookie's videos also correlate with Mayer's Cognitive Theory of Multimedia Learning (CTML) (2002), which suggests that the learning process is

more efficient when learners can process information from multiple modalities (text, audio, and visuals). To do so, it is essential that they be properly integrated. In this case, the tool has been consciously designed to avoid overstimulation.

Audiovisuals and attention span

The use of audiovisuals in education is frequent. There are numerous educational videos available on various online platforms that teachers use daily, either as support during sessions or to review content at home. In this last instance, they are to be considered as a great resource for the challenging flipped classroom methods (Tourón, 2021).

Since videos were first employed in the 1980s in language sessions as a support (Allan, 1985; Cooper et al., 1991), the integration of more complex audiovisual materials in language teaching has been widely recognised as both motivating and beneficial for learners (Krivoshlykova et al., 2018; Nicolau, Matsiola, & Kalliris, 2019, Teng, 2025). These resources offer a dynamic and engaging way to present information, often enhancing comprehension and retention. Moreover, the videos used include text underlining the areas where users must focus on when visualising them. Pattemore and Muñoz (2022) observed that highlighted subtitles (or screen text, in this case) tend to yield better long-term retention and, consequently, increased durability of learning.

However, a critical factor that significantly influences their effectiveness is the duration of the audiovisual content. Research indicates that the longer an audiovisual resource lasts, the higher the probability that learners will lose interest or disengage from the material. This observation highlights a concerning trend: the attention span of students has noticeably decreased in recent years, which has direct implications for their ability to sustain focus on a single task for extended periods.

Several previous studies (Guo et al., 2014; Kim et al., 2014; Lagerstrom et al., 2015) have provided evidence suggesting that the optimal attention span for learners engaging with audiovisual content may be as short as six minutes. Videos exceeding this length are more likely to be skipped or receive diminished attention, especially if they lack interactive elements (Geri et al., 2017). This phenomenon underscores the importance of brevity and interactivity in educational materials. As learners' attention spans continue to shrink, likely due to increased exposure to fast-paced digital content and multitasking, educators face the challenge of designing resources that maintain engagement without overwhelming students.

In the past decade, growing concern has emerged regarding the limited attention span of students, with many experts identifying certain forms of technology as primary culprits for distraction (Zimmerman et al., 2023). This issue is compounded by the pervasive societal pressure to complete tasks quickly and move on to the next challenge, a trend that has been exacerbated by the rapid pace of modern life and technological advancements (Subramanian, 2018; Mark, 2023). The constant availability of digital tools and the expectation

for immediate results contribute to a fragmented focus, making it more difficult for learners to concentrate on extended learning activities.

Given these findings, the indiscriminate use of additional audiovisual tools in already demanding learning environments – such as online education – may prove counterproductive or even ineffective. This is particularly true when students are inundated with an overwhelming amount of information.

Medvesdkaya (2022) found that adult learners exhibit higher levels of sustained attention when their use of the Internet is limited. However, given that the majority of the population today relies heavily on digital resources, reducing Internet use is neither practical nor feasible as a solution. Instead, it is crucial to focus on the careful design and implementation of educational materials that address and mitigate the challenges associated with reduced attention spans.

To optimise learning outcomes, audiovisual resources must be thoughtfully structured to align with students' cognitive capacities. This involves creating concise, engaging content that incorporates interactive elements to sustain interest and promote active participation. By tailoring resources to the realities of contemporary learners' attention spans, educators can enhance the effectiveness of audiovisual tools and foster more meaningful learning experiences in both online and traditional settings.

Error analysis in learner corpora as a source of material for intervention

The construction of the tool analysed in this article is the result of a thorough analysis of a learner corpus. The use of learner corpora has been considered as an excellent tool for error analysis in the last two decades (Gilquin et al., 2007), providing EFL researchers with sufficient material to analyse the main areas of conflict between the languages in contact. However, it is necessary to point out that corpus linguistics does not provide an infallible solution for detecting all linguistic conflicts (Arppe et al. 2010), as the materials provided for this corpus were computer-mediated and typing errors must also be considered. However, the existence of these learner corpora also supposes a representation of the current use of the language made by students.

While the use of learner corpora is relatively new, error analysis has been in use since the 1960s. Error Analysis (EA) was initially proposed by Corder in the late 1960s (Corder, 1967) and has since been defined in various ways by different researchers and scholars. For instance, James (1998) described EA as a process that serves to identify the occurrence, origin, causes, and effects of ineffective language use. Similarly, Crystal (1999) defined EA as the study of erroneous forms produced by learners of a foreign language. Ubol (1998) offered a more specific perspective, characterising EA as a structured analysis and interpretation of mistakes made by learners or users in their spoken or written use of the target language. In contrast, Richards and Schmidt (2010) provided a broader definition just by stating that EA is the study of those errors committed by additional language learners. This conceptual diversity has led to numerous studies focusing on EA to examine errors produced by EFL and ESL.

learners, viewing these errors as evidence of the creative processes learners employ through various strategies and hypothesis testing (Gilquin & Granger, 2015; Jabeen et al., 2015).

Before the introduction of EA in the late 1960s, second language learning was mainly interpreted through behaviourist theories, which suggested that acquiring a new language involved developing new linguistic habits. Consequently, errors were typically seen as resulting from the influence of established patterns from the learners' first language (Corder, 1981; Erdogan, 2005). This perspective led researchers to attribute most mistakes to interference or transfer from the native language (NL) to the target language (TL). During this period, applied linguistics focused on comparing the NL and TL to predict or explain errors, a method known as Contrastive Analysis (Corder, 1981). However, this approach had limitations, as it failed to account for errors that could not be linked to NL interference, often overlooking them (Corder, 1981; Erdogan, 2005). EA was developed to address these gaps, revealing that not all errors are caused by NL interference and highlighting other factors that influence them. Brown (2000) identified two main types of errors: interlingual and intralingual transfer. Interlingual errors occur when the native language's impact hinders the acquisition of target language (TL) rules, as existing linguistic habits interfere with the learning process (Corder, 1981). In contrast, intralingual errors occur within the target language itself (Brown, 2000) and can be further classified, according to Richards (1971), into overgeneralisation, rule restriction, ignorance, incomplete rule application, and false hypotheses.

EA has received criticism, particularly concerning the tendency of learners to avoid structures they consider error-prone, focusing only on those they believe to be correct (Castillo Rodríguez et al., 2020). Despite these criticisms, EA remains one of the most widely used approaches for examining learner errors in second language acquisition. It is considered crucial for effectively analysing learner corpora (Castillo Rodríguez et al., 2020). Moreover, EA continues to be an essential tool for gaining deeper insights into the processes involved in learning an additional language.

In the case of the learner corpus for this study, the languages in contact with English were all Romance languages, which can entail certain language transfer into the students' use of the foreign language (Torrado Cespón & Díaz Lage, 2017). Those errors (see *Instruments used and their validation* below) could be extrapolated to situations with the same languages in contact, thus providing the researchers with clear patterns for remedial work and, as is the case with this tool, an innovative resource to apply in the classroom.

Method

Participants

This research involved 134 online pre-service primary school teachers. All the participants were undergraduate students from the Degree of Primary Education at a Spanish University. Participants belonged to different academic

periods, with ages ranging from 22 to 40 years old, with a variable non-certified level of English proficiency (B1–C1), mostly female. EG1 belonged to the first period, and EG2 belonged to the second.

- Experimental group 1 (EG1): 65 online pre-service primary school teachers. Female $n = 45$, male $n = 20$.
- Experimental group 2 (EG2): 69 online pre-service primary school teachers. Female $n = 52$, male $n = 17$.

All the participants were enrolled in subjects from the English section of the aforementioned degree; therefore, they are recommended to have the level of English B2 according to the Common European Framework of Reference for Languages.

The convenience sample was recruited primarily because participants were available in the subjects the authors taught.

Instruments

All the participants' contributions were collected from four online forums (two per group) and then codified in a learned corpus for later analysis.

In the case of EG1, they filled in a questionnaire which included seven of the most frequent errors found in online forums of EMI subjects at their university: verb plus verb sequences (Benali Taouis & López Pérez, 2019), inversion in indirect questions (Castillo Rodríguez & Díaz Lage, 2018), uses of verb to be (Castillo Rodríguez & López Pérez, 2019), collocations (López Pérez & Benali Taouis, 2019), uses of definite article (López Pérez & Benali Taouis, 2018), adverbs of frequency (Bobkina & Stefanova, 2018), and capitalisation (Torrado Cespón & Font Paz, 2016). A second part of the questionnaire asked them whether they were aware of these problematic areas and what resources they typically used to resolve their doubts. The questionnaire consisted of simple sentences with these critical items, and participants had to identify their misuses.

EG2 completed a questionnaire that included CleverCookie videos embedded (see Figure 1). These videos were based on the same errors explained in the questionnaire offered to EG1 (see Appendix A). Each video included an after-question where students answered questions about the video's content, primarily to ensure they had watched and understood it.

Eight experts on online teaching and EFL validated these questionnaires as part of the project where this study was located. No modification was suggested.

The assignment of each questionnaire to either EG1 or EG2 was based solely on the availability and timing of the experiment design. One of the videos to be used for the experiment was still in process during the first term when EG1 was available. Consequently, the researchers decided to begin with the questionnaire without embedded videos.



Note. (CleverCookie, 2021). Available at www.youtube.com/@clevercookieENTELEARN

Figure 1. One of the videos used

Procedure

This research was carried out using a quantitative model and experimental research, in which two groups were exposed to error correction differently. These differences allowed this experiment to explore the research questions stated in the introduction above.

Two EMI subjects were employed for this experiment. These subjects are about teaching EFL in the primary school classroom. The first deals with teaching practice and methodologies, and the second is about the use of ICT tools in the EFL primary classroom. Both subjects included a forum as part of the continuous assessment. This forum was not simultaneous, so the experiment was designed on purpose to consider how the two groups performed at each forum, considering the variable of explicit/non-explicit exposition to the error.

- EG1 was offered an explicit questionnaire on the grammatical issues to be analysed.
- EG2 group was offered the educational videos created by the researchers, in which the target errors were presented.

Data collection

To analyse the different errors in the resultant corpus (VILEO corpus), we utilised the concordance tool of AntConc (version 4.2.4) (Anthony, 2023). This is a freeware program widely used in linguistics and text analysis, containing various tools that analyse large collections of texts in terms of different aspects, such as word frequency, collocations of specific words and phrases, linguistic patterns, and keywords in context. Two independent scholars oversaw the construction of the corpus from the data collected. Both researchers are experienced in applied linguistics and familiar with EMI contexts, and participated in the coding of the errors extracted from the learner corpus. Prior to full coding, both coders collaboratively analysed a random 10% sample of the data to

establish shared coding criteria and resolve any ambiguities regarding error categorisation.

The researchers located all the occurrences of the different terms in the corpus, which were divided into the following categories: use of “the” as a definite article, verbs followed by to-infinitive and gerund, collocations with “do”, the structure of the verbs to “agree” and “to be born”, capitalisation of different terms, sentence inversion, and adverbs of frequency. To this end, they made use of the search box of the “Concordance Tool” by typing the different terms in question (sometimes the whole term was included, and other times an asterisk was needed) into the search box. At the same time, depending on the term searched, different levels were assigned to the left and/or the right to generate lines in Key Word in Context (KWIC) through the “sorting options” available in the program. This allowed us to extract the different terms with collocates up to three positions to the right or left of the nodes. After this, they carefully read the concordance lines to eliminate irrelevant cases that fall outside the scope of this research, and then manually extracted all sentences that contained the different terms. Finally, they revised and examined all the lines very carefully to locate all types of errors made with the different terms indicated above.

Results

Results for EG1

Table 1 below includes the representative error examples from EG1.

Table 1. Representative error examples from EG1

Error type	Representative error	Correct form
Definite article “the” with mass/non-count nouns	I think that *the ICT in class is very important Some aspects where these ITC [sic] create benefits are in *the motivation and *the interest	I think that ICT in class is very important Some aspects where these ICTs create benefits are in motivation and interest
Verbs + to-infinitive/gerund	I don't want *that my future pupils will have a similar experience If we want *that our students to be attracted to [sic] English subject	I don't want my future pupils to have a similar experience If we want our students to be attracted to the English subject
Collocations with “do”	I have had many motivations to *do This doesn't mean that one of them have [sic] to *do all the effort	I have had many motivations This doesn't mean that one of them has to make all the effort
Verbs “agree” / “to be born”	Something that we *are agree with We *do not born with a special gen	Something that we agree with We are not born with a special gene
Capitalisation errors	What I used to like about my *english teacher german [sic] language has more in common with *english than *spanish with *English	What I used to like about my English teacher The German language has more in common with English than Spanish does
Inversion with “where,” “how,” “what”	We all agree in [sic] how important *is motivation When we notice that teacher loves what *is teaching	We all agree on how important motivation is When we notice that the teacher loves what he/she is teaching
Adverbs of frequency	Motivation will be *always required Because *never you will obtain the best one	Motivation will always be required Because you will never obtain the best one

In the use of “the” as a definite article, most of the errors were produced with mass or non-countable nouns (e.g. *I think that *the ICT in class is very important; Some aspects where these ITC [sic] create benefits are in *the motivation and *the interest*). The initial error count stood at 38, affecting 20 students.

Post-intervention, this error count slightly decreased to 34, and the number of students affected decreased to 14. In total, 72 errors were recorded across 34 students, with 10 students consistently repeating the same error. This outcome indicates some improvement in error frequency but suggests a widening impact of the issue among students, pointing to the need for additional targeted reinforcement.

With verbs followed by the to-infinitive or gerund form, only two errors were initially observed. These referred to the verb “want” in which the students used a different structure that is not correct in English (e.g. *I don't want *that my future pupils will have a similar experience; If we want *that our students to be attracted to [sic] English subject*). However, post-intervention, no errors were found, which indicates that instruction helped students improve the use of these verb structures in English.

For collocations with “do”, 11 errors were recorded initially among seven

students, who made use of “do” with words and expressions that usually require other grammar structures or collocate with other verbs (e.g. *I have had many motivations to *do; This doesn't mean that one of them have [sic] to *do all the effort*). These errors decreased to just one error among a single student after the intervention. In total, the EG1 group registered 12 errors from eight students, showing that targeted instructional interventions likely contributed to the significant reduction in errors. This improvement may indicate effective comprehension of collocations for most students.

In terms of errors with the verbs “agree” and “to be born,” five errors were noted initially, involving two students. In the case of “agree”, most of the errors were produced because the students used the verb “to be” before the verb “agree” whereas in the case of “to be born” students did not use the verb “to be”, which is required in English (e.g. *Something that we *are agree with; We *do not born with a special gen*). Post-intervention, this count reduced to four errors, affecting three students, with a cumulative total of eight errors from two students. The persistence of errors here suggests new difficulties or emerging confusions with these specific verbs, potentially tied to an expansion of material or new contextual applications.

Capitalisation errors were mostly produced because the students did not capitalise terms that need capitalisation in English (e.g. *What I used to like about my *english teacher; german [sic] language has more in common with *english than *spanish with *english*). This number of errors initially amounted to 21 and affected 11 students, decreased to four errors across four students after the intervention. In total, 25 capitalisation errors occurred among 15 students. This substantial reduction signifies a positive outcome in capitalisation comprehension, although a handful of students continue to face challenges in this area.

The use of inversion with “where,” “how,” and “what” showed notable variability, with 13 errors and 10 students affected initially. In most of these sentences, the students made different errors because they did not invert the verb and the subject in declarative sentences (e.g. *We all agree in [sic] how important *is motivation; When we notice that teacher loves what *is teaching*). After intervention, these errors dropped slightly to 11, with nine students impacted. A total of 24 errors occurred across 16 students, with three students repeating the same mistake. While some improvement is visible, the persistence of errors suggests that inversion rules may benefit from further clarification or practice.

Finally, in the use of adverbs of frequency, the students made some errors because they did not place the adverbs in the correct position (e.g. *Motivation will be *always required; Because *never you will obtain the best one*). However, it needs to be pointed out that errors reduced slightly from five initially to three post-intervention, with the same three students affected in both cases. A total of eight errors were recorded among four students, with two students consistently repeating their errors. This steady improvement highlights positive gains in understanding, though continued focus in this area could further reinforce accuracy.

It can be observed that, while improvements are evident in categories such as collocations with “do” and capitalisation, the data shows that areas like the

definite article, inversion, and certain verb forms continue to present challenges. The presence of recurring errors across multiple students underscores the need for differentiated instructional strategies and regular feedback to support students in achieving greater grammatical proficiency. The total number of errors encountered in EG1, both before and after the experiments, is listed in Table 2.

Table 2. Errors committed by the EG1 (N = 65)

Error category	EG1 before (errors)	No. of students before	EG1 after (errors)	No. of students after	Total errors	Total students	Students same error
Use of THE as a definite article	38	20	34	14	72	34	10
Use of verbs followed by to-infinitive or -ing	2	2	0	0	2	2	0
Use of collocations with DO	11	7	1	1	12	8	0
Verbs AGREE and TO BE BORN	5	2	4	3	8	2	0
Capitalisation	21	11	4	4	25	15	0
Use of inversion with WHERE, HOW, and WHAT	13	10	11	9	24	16	3
Use of adverbs of frequency	5	3	3	3	8	4	2

Results for EG2

Regarding EG2, Table 3 below includes the representative error examples from EG2.

Table 3. Representative error examples from EG2

Error type	Representative error	Correct form
Definite article “the” with mass/non-count nouns	*The motivation is a topic very interesting [sic] Students have to be the center of *the learning	Motivation is a very interesting topic [sic] Students have to be the center of learning
Verbs + to-infinitive/ gerund	I also want *comment a video They need *that they relate the EFL lesson with pleasuring [sic] experiences	I also want to comment on a video They need to relate the EFL lesson to pleasurable experiences
Collocations with “do”	I *do some online games to review all the contents In my opinion, to *do motivating classes to learn a foreign language...	I create some online games to review all the contents In my opinion, giving motivating classes to learn a foreign language...
Verbs “agree” / “to be born”	But also, I *am agree with the use of ICT The new generations are called digital natives because they have *born with the [sic] technologies under their arms	But also, I agree with the use of ICT The new generations are called digital natives because they are born with the [sic] technologies under their arms
Capitalisation errors	There are many advantages of using *ict in class I do not see any advantages to using *ict tools	There are many advantages of using ICT in class I do not see any advantages to using ICT tools
Inversion with “where,” “how,” “what”	I just want to remind [sic] how important *is the [sic] motivation for the kids That's why first of all we have to get to know them. Where *do they come from, what *do they like or dislike most...	I just want to remind [sic] how important motivation is for the kids That's why, first of all, we have to get to know them. Where they come from, what they like or dislike most...
Adverbs of frequency	We have *always a plan B	We always have a plan B

The analysis of grammatical errors following the intervention in EG2 provides insight into both advancements and ongoing challenges in student comprehension. Initially, students made 38 errors in using “the” as a definite article. The majority of these errors occurred in relation to mass or non-countable nouns (e.g. ***The motivation is a topic very interesting [sic]; Students have to be the center of *the learning**). After the intervention, this number decreased slightly to 34, indicating a modest improvement. While this reduction reflects some progress, the persistence of errors underscores the need for continued focus in this area.

In the case of verbs requiring the to-infinitive or gerund, students displayed confusion that increased slightly, with errors rising from one with the verb “want” (e.g. *I also want *comment a video*) before the intervention to two with “need” and “want” (*They need *that they relate the EFL lesson with pleasuring [sic] experiences; What is really important[sic]is how you want *students work*) afterward. This trend points to lingering misunderstandings, suggesting that further reinforcement may be essential to solidify understanding and correct usage.

The use of collocations involving “do” also presented difficulties as the

students used the verb “do” with words and expressions that generally require different grammatical structures or collocate with other verbs (e.g. *I *do some online games to review all the contents; In my opinion, to *do motivating classes to learn a foreign language...*). In this case, errors increased slightly from nine to 10 after the intervention. Despite targeted instruction, this minimal rise reveals the ongoing complexity of collocations for students, highlighting an area where additional or novel approaches could be beneficial.

An unexpected development was noted with the verbs “agree” and “to be born”. Initially error-free, these verbs saw three errors post-intervention – two with “agree” and one with “to be born” (e.g. *But also, I *am agree with the use of ICT; The new generations are called digital natives because they have *born with the [sic] technologies under their arms*). This emergence of new difficulties may indicate an introduction of new material or possibly a cognitive overload, which could be affecting retention and accurate application.

A growing challenge was also observed in capitalisation, particularly with term “ICT”. Errors in this category rose from 24 to 28, suggesting either an intensification of difficulties or the appearance of new types of errors (e.g. *There are many advantages of using *ict in class; I do not see any advantages to using *ict tools*). This increase points to a need for focused attention on capitalisation conventions for academic and technical vocabulary. However, in this case, the results are to be carefully analysed, as the term “ICT” was the topic in the second forum while it did not appear in the first.

Encouragingly, the intervention led to significant improvements in the use of inversion with “where,” “how,” and “what”. In these sentences, the students made various errors by failing to invert the verb and subject in declarative statements. (e.g. *I just want to remind [sic] how important *is the [sic] motivation for the kids; That's why first of all we have to get to know them. Where *do they come from, what *do they like or dislike most...*), errors decreasing from 10 to just four. This reduction signals effective learning and application, suggesting that the instructional approach was particularly successful in clarifying this rule. In a similarly positive outcome, errors involving adverbs of frequency dropped significantly, from an initial count of seven to only one post-intervention (e.g. *We have *always a plan B*). This marked improvement indicates an enhanced understanding and application of these adverbs, demonstrating the effectiveness of the instructional strategies employed.

Overall, while the intervention yielded promising results in areas such as inversion and adverbs of frequency, challenges with definite articles, verb forms, and collocations remain. The emergence of new errors and the persistence of certain difficulties highlight the complexity of grammar acquisition and underscore the need for differentiated instructional approaches. Regular assessment and tailored feedback will be essential to address these challenges and support sustained improvements in students’ grammatical proficiency.

Table 4 summarises the errors before and after the experiment.

Table 4. Errors committed by the EG2 (N = 69)

Error category	EG2 before (errors)	No. of EG2 students after before (errors)	No. of students after	Total errors	Total students	Students same error
Use of THE as a definite article	38	19	34	15	72	25
Use of verbs followed by to-infinitive or -ing	1	1	2	2	3	2
Use of collocations with DO	9	8	10	8	19	13
Verbs AGREE and TO BE BORN	0	0	3	3	3	0
Capitalisation	24	16	28	25	52	31
Use of inversion with WHERE, HOW, and WHAT	10	9	4	3	14	11
Use of adverbs of frequency	7	7	1	1	8	7
						1

Considering the performance of both EG1 and EG2, Table 5 offers an overview of the results to be discussed in the next section.

Table 5. Summary table: comparison of outcomes across EG1 and EG2

Error category	EG1 before	EG1 after	Change (EG1)	EG2 before	EG2 after	Change (EG2)
Definite article “the”	38	34	↓ 4	38	34	↓ 4
Verbs + to-infinitive/-ing	2	0	↓ 2	1	2	↑ 1
Collocations with “do”	11	1	↓ 10	9	10	↑ 1
“Agree” / “to be born” verbs	5	4	↓ 1	0	3	↑ 3
Capitalisation	21	4	↓ 17	24	28	↑ 4
Inversion (where, how, what)	13	11	↓ 2	10	4	↓ 6
Adverbs of frequency	5	3	↓ 2	7	1	↓ 6

As can be seen, the comparison across EG1 and EG2 reveals distinct patterns. Both groups showed similar reductions in the use of the definite article “the”, although the issue persisted overall. Whereas EG1 demonstrated complete improvement in verb + to-infinitive/-ing structures, EG2 saw a slight increase, suggesting a differing impact of the intervention. In collocations with “do”,

EG1 displayed a significant reduction, whereas EG2 experienced a minor increase. For the verbs “agree” and “to be born”, EG1 showed a minor reduction, whereas EG2 developed new errors. Capitalisation improved considerably in EG1, in contrast to EG2’s increase, which may be linked to the specific topic focus. Regarding inversion, EG2 exhibited stronger improvement compared to EG1’s modest reduction. Finally, EG2 outperformed EG1 by correcting errors with adverbs of frequency, demonstrating stronger gains in this category.

Discussion

The experiment’s results reveal a nuanced picture of student performance, highlighting both the potential of multimedia learning tools and the inherent complexities of using foreign languages in an online context.

The data shows varied outcomes in the error categories examined. For instance, while the use of the definite article “the” saw slight improvement post-intervention, the persistence of errors suggests that students still face considerable challenges in mastering this fundamental rule. This aligns with previous research (Chyr et al., 2017; Rasheed et al., 2020), which underscores the importance of clear, corrective feedback in preventing fossilisation of errors in online learning environments. The fact that errors persisted despite targeted intervention implies that instructional videos, although effective in some areas, may not fully replace more interactive and personalised feedback mechanisms. This finding suggests that future research should explore how hybrid approaches, combining both explicit correction and multimedia instruction, can address persistent error patterns.

A particularly interesting observation is the increase in errors related to the verbs “agree” and “to be born” post-intervention in EG2. Prior to the intervention, no errors were recorded in these categories, suggesting that the introduction of new material may have caused confusion or cognitive overload. This finding aligns with existing literature (Zimmerman et al., 2023) on the effects of multitasking and rapid information consumption in digital environments, particularly among adult learners who are heavily reliant on the Internet (Medvesdkaya, 2022). The rise in errors could also indicate a broader issue with cognitive load theory (e.g. Evans et al., 2024), where students struggle to balance new and existing knowledge when confronted with dense, multimedia content. These findings suggest the need for instructional designers to consider more segmented and scaffolded learning materials to minimise overload.

On a positive note, the significant reduction in errors related to adverbs of frequency and inversion structures, such as “where,” “how,” and “what,” demonstrates the efficacy of the videos in improving student performance in these areas. The improvements observed here suggest that the videos were successful in providing targeted, clear explanations that facilitated better understanding and application of grammatical rules. These results are consistent with findings from previous studies (Geri et al., 2017; Guo et al., 2014; Kim et al., 2014) that suggest multimedia tools can be effective in sustaining attention and improving retention when the content is concise and well-structured.

However, the increase in errors related to capitalisation suggests that students may be struggling to apply grammatical rules in areas where they are less familiar, perhaps due to the nature of digital discourse, which often encourages informal language use. This raises important questions about the impact of internet-based communication on language accuracy, particularly in formal writing contexts. As noted by Baron (2017) and Cilliers (2017), the shift towards shorter, less formal communication modes in digital environments can blur the lines between formal and informal usage, making it difficult for students to consistently apply grammatical conventions, such as capitalisation.

The findings also resonate with Bakla and Demiröz's (2024) exploration of interactive videos in EFL listening. Their participants reported that embedded questions, discussion prompts, and immediate feedback enhanced motivation and listening comprehension, yet they also warned that too many interactive elements could become distracting, which takes us yet again to the CTML (Mayer, 2002). These results align with the mixed outcomes observed here, suggesting that while videos can successfully engage learners and support accuracy, careful design is required to avoid cognitive overload and ensure that input remains accessible.

The overall variability in student performance across error categories underscores the need for differentiated instruction. The fact that students improved significantly in some areas but not in others suggests that a one-size-fits-all approach to online language instruction may be insufficient. Tailoring teaching methods to address specific challenges faced by students, such as targeted feedback for persistent errors and scaffolding to prevent cognitive overload, could yield more consistent improvements. This echoes the findings of previous research (Bozkurt & Sharma, 2020; Hodges et al., 2020), which emphasise the need for adaptable, student-centred approaches in online education.

Considering the aforementioned, while the use of instructional videos shows promise in addressing certain grammatical errors, such as inversion structures and adverbs of frequency, the persistence of errors in other areas highlights the limitations of relying solely on multimedia instruction. These findings suggest that a blended approach, incorporating both multimedia resources and direct, explicit feedback, may be necessary to fully support students in mastering grammatical concepts in an EMI context. Further research with larger sample sizes and more varied instructional methods is needed to validate these findings and explore their broader applicability. At the same time, considering the specific context of online teaching, a key limitation of this study is related to the profile of the participants, who, as online pre-service teachers, often juggle employment, family, and academic responsibilities. This triple pressure may have influenced the degree of engagement with the instructional materials and thus the outcomes of the interventions. Moreover, the alienation frequently reported in online teaching environments (see Torrado Cespón & Díaz Lage, 2022) may have reduced interaction and hindered the consistency of learning gains. These factors complicate the interpretation of results, as improvements or persistent difficulties in grammatical

accuracy might not solely reflect the efficacy of the interventions, but also the broader challenges inherent in online EMI contexts.

In addition, the implications of these results extend beyond the immediate sample as they can be applied to other contexts and languages. In the case of Spanish in Spain, the conclusions can yield parallel results in different countries, considering that this language is spoken in many countries in America. Consequently, the needs of Spanish-speaking countries are similar in terms of improving proficiency in an EFL setting. Likewise, speakers of other co-official Romance languages in Spain, such as Galician, Asturian, and Catalan, may also benefit from the tool, since the most frequent errors analysed in this study can also emerge as interlingual influences in these linguistic contexts.

Conclusions

This study underscores the potential and limitations of multimedia instructional tools in enhancing grammatical accuracy within an EMI context. By comparing the results from two experimental groups, EG1 and EG2, it becomes evident that while video-based interventions can yield positive outcomes in certain grammatical areas, such as adverbs of frequency and inversion structures, these tools alone may not suffice in addressing more persistent and complex error patterns.

Considering the research question (To what extent does the sole use of instructional videos reduce grammatical errors in online EMI courses among Spanish pre-service primary school teachers?), the results ultimately highlight that a blended instructional approach (combining multimedia resources with personalised, interactive feedback) holds the most promise for effective grammar instruction in an online EMI context. While videos are well-suited to conveying structured rules and principles, they may benefit from supplementary interaction, such as forum-based discussions, quizzes, or live feedback sessions, to address persistent errors and adapt to individual learning needs. By implementing such hybrid methods, instructors can better support students' understanding, prevent fossilisation, and facilitate long-term retention of grammatical concepts.

Regarding the construction of the learner corpus, it is worth noting that a handwritten text may be more desirable, as it involves a nuanced production process compared to keyboard typing, which can impact the accuracy and the relationship between input and output (Magen, 2020; Mangen & Velay, 2014). It should be added that the collection of these data would not only provide linguistic information but would also encompass an analysis of the circumstances that involve the construction of the texts for the corpus. Classroom process would also be an added value observation, aiming to gather information on how language is used in social behaviours and events in that context (Nunan, 1992; Vold & Brkan, 2020).

To conclude, we can state that, while multimedia tools present an effective means of engaging students and delivering clear grammatical instruction, this study reaffirms that differentiated and responsive teaching methods remain

essential to achieving consistent proficiency gains. Future research should explore the optimal balance of multimedia and interactive components, ideally across larger and more diverse student samples, to validate these findings and refine instructional strategies for online language education. This balanced approach could ultimately lead to more robust, adaptable, and student-centred language instruction that maximises the strengths of digital learning environments while addressing their limitations.

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Appendix A

Questionnaire offered to EG1

1. What is wrong with this sentence? Mary and i learnt english. Now, we work at the university of Leicester.
 Nothing.
 Capitalisation: I, English.
 Capitalisation: I, English, and University.
2. What is wrong with this sentence? "I have born in Málaga, a truly beautiful city!" "Oh, yes, I'm agree."
 Nothing.
 Verb to be: I was born.
 Verb to be: I was born, I agree.

3. What is wrong with this sentence? I forgot to do my homework for tomorrow's class.

Nothing.

Collocation: I forgot to make my homework for tomorrow's class.

Collocation: I forgot to accomplish my homework for tomorrow's class.

4. What is wrong with this sentence? I wonder why is everybody wearing masks

Nothing.

Subject – verb order: I wonder why everybody is wearing masks.

Question mark: I wonder why is everybody wearing masks?

5. What is wrong with this sentence? He often reads books.

Nothing.

Adverb position: He reads books often.

Adverb position: He reads often books.

6. What is wrong with this sentence? Julia stopped to think about which way she should take, and she chose the left path.

Nothing.

The use of a to infinitive: Julia stopped thinking.

The use of a to infinitive: she should to take.

7. What is wrong with this sentence? We visited USA and Czech Republic

Nothing.

The use of “the”: the Czech Republic.

The use of “the”: the USA; the Czech Republic.