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Microlearning via social media & digital platforms

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Abstract

This study examines the effect of microlearning delivered via private Instagram groups on the retention of B2-level grammatical structures by English as a foreign language (EFL) learners compared to standard grammar teaching classes in the classroom setting. Based on the assumptions of the Cognitive Load Theory and Nudge Theory, the teaching strategy involved microlearning video clips ranging from 30 to 60 seconds that were dedicated to addressing complex grammatical structures up to five times per week. Sixty Italian undergraduate EFL learners from two intact classroom groups participated in the study; one group was assigned to the experimental condition (n = 30) and the other to the control condition (n = 30). Both groups underwent a pre-test and post-test evaluation of the level of grammatical structures retention, measured through the Grammar Retention Test. A mixed-design ANOVA test showed a statistically significant interaction effect between time and groups, $F(1, 58) = 15033.17$, $p < .001$, partial $\eta^2 = .996$. Namely, the control group exhibited better results, increasing from M = 55.63 (SD = 3.69) to M = 73.90 (SD = 3.97). In contrast, the experimental group showed higher scores, moving from M = 56.63 (SD = 3.69) to M = 62.73 (SD = 3.59). To summarise, while both teaching methods resulted in the acquisition of knowledge, the results obtained under the control group conditions significantly outperformed those under the experimental group conditions. Therefore, it can be suggested that passive perception of microlearning videos lacks essential interactions, corrective feedback, and cognitive processing required for grammar learning.

Introduction

The rapid development of modern technologies has changed language learning environments radically. The incorporation of mobile devices and online platforms into language instruction is now considered Computer-Assisted Language Learning (CALL), its more recent extension – mobile-assisted language learning (MALL). Mobile technologies allow for anytime and anywhere access to language materials, giving learners freedom to access language input beyond the limits of classroom settings (Geddes, 2004; Kukulska-Hulme, 2013). Research shows that mobile-assisted learning improves learner autonomy and motivation, enhances engagement, and allows learners to develop multiple skills and abilities (Stockwell & Hubbard, 2013; Reinders & Pegrum, 2017). Multiple studies demonstrate the potential of mobile technologies for second and foreign language instruction and learning. The empirical findings prove that mobile technologies assist vocabulary acquisition (Liu, 2016; Li & Cummins, 2019), help develop grammatical skills (Moghari & Marandi, 2017; Andújar, 2020), and promote the development of communicative competence (Hwang et al., 2016; Sun et al., 2017). Furthermore, learners usually hold a positive attitude towards MALL, find it motivating, and consider it a convenient and engaging way to learn (Chen et al., 2017; Lai & Zheng, 2018; Zhonggen et al., 2019). Even though the effectiveness of mobile learning and mobile applications have been thoroughly researched, few studies have addressed the issue of microlearning in MALL. Meanwhile, the use of popular social media platforms for microlearning has yet to be investigated empirically.

Recently, the popularity of microlearning has been steadily growing. Microlearning is a training method based on the delivery of learning materials in very small pieces that take no longer than several seconds or minutes (Swartling & Wijkman, 2018). From the theoretical standpoint, this form of training is consistent with Cognitive Load Theory and Cognitive Theory of Multimedia Learning since it delivers information in chunks and provides the learners with integrated verbal and visual cues (Mayer, 2009; Sweller, 2011). It can be assumed that microlearning via short-form videos is an especially efficient method since it can help avoid information overload and facilitate processing and memorising. At the same time, the repetitive delivery of learning materials through short-form videos aligns with the principles of spacing and strengthens long-term memory storage.

Nowadays, social media is an important part of people's lives with multiple platforms such as Instagram and TikTok being especially prominent. They provide opportunities to deliver learning materials in a convenient and easily consumable form while encouraging users to watch them frequently due to their interactive nature and notifications (Zhang, 2019). From a theoretical point of view, this feature of social media can be explained using Nudge Theory that suggests that the usage of subtle stimuli can help learners maintain consistent engagement. However, even though social media platforms are widely used in learners' everyday lives, there is no evidence on the effectiveness of MALL via social media platforms. Meanwhile, the topic of developing grammatical skills among EFL stu-

dents is crucial. In fact, many learners experience difficulties mastering grammatical structures. Although there is evidence that mobile technologies can help learners develop their grammatical skills, microlearning in MALL remains understudied (Andújar, 2020). Thus, it becomes relevant to examine the impact of social media on the development of grammatical skills via microlearning videos.

The aim of the present paper is to assess the effectiveness of microlearning via a social media platform in helping EFL students develop their grammar skills. This goal was addressed using a quasi-experimental pre-test–post-test design in which two intact groups of EFL students received either traditional face-to-face grammar instruction or microlearning videos delivered through social media.

Literature Review

mobile-assisted language learning

Mobile-assisted language learning is defined as CALL applied to mobile devices and technology that allows continuous, autonomous, and context-sensitive learning (Kukulska-Hulme & Shield, 2008; Palalas, 2016). The use of mobile devices and applications helps overcome barriers of time and space, creating new conditions for engaging with language materials in a flexible, personalised, and convenient manner (Geddes, 2004; Kukulska-Hulme, 2013; Traxler, 2009). There are several distinctive features of MALL that differ it significantly from CALL. In contrast to computer-based learning, MALL implies mobility and continuity and provides unique affordances to learners. MALL allows for continuous and spontaneous engagement with language resources and interaction regardless of location and time (Pegrum, 2016). The affordances that characterise MALL include immediate feedback, interaction with authentic language materials, and possibilities to communicate and collaborate with others (Stockwell, 2016; Reinders & Pegrum, 2017; Kukulska-Hulme, 2020; Loewen et al., 2020). Studies in the field of MALL focus on different affordances of mobile devices in improving language acquisition and enhancing motivation. The first papers devoted to this topic showed the potential of mobile technology and their positive impact on language learning (Burston, 2014, 2015). Later research examined how particular devices, applications, and platforms affect language learning. For instance, mobile application with the concept-mapping approach helped in developing students' vocabulary (Liu, 2016), and text messaging facilitated grammatical skills acquisition (Moghari & Marandi, 2017). In addition, mobile devices allowed developing vocabulary through text messages (Li & Cummins, 2019) and writing skills by completing writing tasks (Eubanks et al., 2018).

Several comparative studies also discussed how mobile devices could enhance learners' language skills compared to traditional instruction in the classroom setting. For example, Hwang et al. (2016) demonstrated the advantage of mobile game-based learning over conventional instruction regarding the development of listening and speaking skills. Similar results were obtained by Ko (2017) who found that mobile devices had distinct effects on learner engagement as opposed to PCs. Andújar

and Salaberri-Ramiro (2019) pointed out that mobile-mediated communication encouraged interaction and participation among learners. Other studies proved that mobile-supported task-based language teaching improved language skills (vocabulary, grammar, and speaking performance) more than traditional instruction did (Fang et al., 2020).

Empirical research related to the use of mobile applications in second and foreign language learning is another prevalent direction in MALL. Numerous works are dedicated to studying the effectiveness of specific applications. For instance, several studies discussed Duolingo as an application helping in the development of various language skills (Loewen et al., 2019; Rachels & Rockinson-Szapkiw, 2018). Another popular application is WeChat with its wide array of educational affordances for language learners (Jia & Hew, 2019; Xu & Peng, 2017). In addition, WhatsApp was also found useful for the development of language skills (Andújar, 2020). Some researchers have analysed the benefits of different game and interactive applications (Castaneda & Cho, 2016; Cheng & Chen, 2019). These applications allowed learners to acquire language skills and knowledge, improved their vocabulary and grammar, promoted the development of pronunciation and speaking skills, increased motivation, and lowered anxiety level (Grimshaw & Cardoso, 2018; Cheng & Chen, 2019). Speaking about different aspects of language learning, vocabulary appears to be the most extensively researched topic, followed by grammar, speaking, and other linguistic skills (Liu, 2016; Li & Cummins, 2019; Fang et al., 2020; Seibert Hanson & Brown, 2020). Grammatical skills have also been found to benefit significantly from mobile devices and applications. According to Moghari and Marandi (2017) and Andújar (2020), the acquisition of grammar skills through mobile-assisted instruction proves highly effective when the input is frequent and contextualised. Speaking and pronunciation were also found to benefit from mobile technologies: mobile applications offered good opportunities for practicing speaking and pronunciation (Sun et al., 2017; Xu & Peng, 2017; Grimshaw & Cardoso, 2018).

Another major direction in research is the perception of learners toward MALL. The positive attitude of students to mobile applications for learning has also been confirmed in numerous works (Hwang et al., 2016; Chen et al., 2017; Lai & Zheng, 2018; Zhonggen et al., 2019). Mobile devices and applications appeared to enhance the level of motivation, self-directedness, and overall learner satisfaction (Cheng & Chen, 2019; Chen et al., 2019). However, some papers have raised the problem of increased cognitive load resulting from insufficient task variation and thus reducing motivation (Jia & Hew, 2019). Thus, it can be concluded that MALL improves language learning outcomes positively and boosts learners' motivation and engagement. However, little attention has been paid to the effectiveness of microlearning in social media and other applications that are widely used nowadays. Therefore, this study seeks to answer the following questions.

Research questions

1. *To what extent does microlearning delivered through social media platforms affect EFL learners' grammar retention compared to traditional instruction?*
2. *Is there a statistically significant difference between pre-test and post-test grammar scores of EFL learners exposed to microlearning via social media and those receiving traditional instruction?*

Method

Research design

A quasi-experimental design with one factor between-subjects variable and one factor within-subjects variable was used in this research project. Specifically, two groups of participants were examined using pre-test and post-test measurements. Such an experimental design allowed conducting a statistical analysis using a repeated measures ANOVA test. A quasi-experimental design was applied in the current investigation because random assignment of participants to groups was not possible due to constraints in the higher education system in Italy, where students are divided into classrooms based on schedules of institutions. Using intact groups, it became possible to examine students in a natural context without compromising ecological validity. Baseline equivalence between groups based on pre-test scores strengthened internal validity; however, differences observed after the intervention should be interpreted cautiously because participants were not individually randomised. As such, no statistically significant differences were observed between pre-test scores in the control and experimental groups.

Theory

Cognitive theory of multimedia learning and cognitive load theory were used as theoretical frameworks. According to multimedia theory, people learn better when information is presented to them in small parts. The use of brief videos can be explained by the idea that such videos are easy to process for students, allowing them to benefit from learning activities. Cognitive load theory also supports the application of videos because it emphasises that learning takes place most effectively if extraneous cognitive load is minimised. Furthermore, the study is based on nudge theory, and the use of notifications ensures students' frequent involvement in studying microlearning videos.

Participants

This study includes 60 undergraduate students attending an English language course in northern Italy. The mean age of students is 20.4 years (SD = 1.2), and all participants are native Italian speakers, who study English as a foreign language at the B2 (intermediate) level. Students were recruited using purposive sampling technique. Participants had to be currently enrolled in an English language course at a particular university, use short-form social media platforms, and own a smartphone with

internet access to be selected as participants. The selection procedure ensured that all selected participants were able to meaningfully interact with instructional materials. Experimental and control conditions were created using two existing classroom groups that were assigned to the intervention and comparison conditions respectively. Specifically, each condition included 30 participants. Equivalency in the selected groups was ensured using pre-test results.

Materials and Instruments

An original Grammar Retention Assessment (GRA) was used to measure grammatical proficiency. GRA included two parallel versions, which were used as pre-test and post-test tools. Both tests consist of 40 items, including 30 multiple choice questions and 10 sentence transformations. Tests focus on difficult grammatical structures for Italian learners, including conditional forms, verb tense consistency, and sentence construction. Scores range from 0 to 100. Content validity was established through expert review by two experienced lecturers specialising in EFL instruction, and revisions were implemented based on their feedback. Alignment with descriptors of B2 level was achieved. The internal consistency was estimated as .82 based on pilot testing results. Microlearning instructional materials included a set of short videos stored in a private Instagram account. A repository of video clips containing grammar instructions was created. The duration of each video clip was 30–60 seconds, and each video covered a specific grammar structure. Videos included information about forms, visual highlight of forms, examples, and captions. Design of video clips conformed to multimedia learning theory. The videos were designed in a way that visual and verbal information was combined, minimising cognitive overload. Control condition students learned grammar structures through traditional instruction, including textbooks, explanations from an instructor, and writing tasks. The same grammatical topics were covered for both groups. Instructional materials were identical, and instruction time was equivalent for control and experimental groups.

Procedure

The study took place during one academic semester and consisted of a 13-week instructional period and three consecutive stages: pre-test, intervention and post-test. Before commencing the research process, ethical approval was obtained from the institutional review board, and all participants gave their written informed consent. Participants were told that participating in the study was entirely voluntary; that they could withdraw at any point in time without any consequences for their academic progress; and that all personal information gathered during the course of the study would be kept confidential and used exclusively for research purposes.

During week 1, students were required to take the Grammar Retention Assessment (GRA) test under standardised testing conditions in order to estimate their current levels of grammatical knowledge. Both groups took the same test in equal testing conditions and identical time and with identical

instructions from their instructor. Pre-test scores were analysed in order to ensure baseline equivalence and to rule out any existing statistically significant differences between the groups before starting the study.

Once the pre-test was conducted, students moved into the intervention phase lasting 13 consecutive weeks. In the duration of the experiment, both groups learned identical grammatical constructions according to the institutional curriculum, and the two groups were exposed to the same content, lessons and assessments in class. The two groups studied the same material in class at the same pace in order to minimise confounding variables affecting the learning outcome. Students allocated to the experimental condition undertook the microlearning intervention by way of an Instagram account, which was created specially for educational purposes. Short video clips containing explanations of the targeted grammatical constructs were used as instructional materials during the study period. Videos lasted from 30 to 60 seconds and were prepared based on the principles of multimedia learning and cognitive load theories. Each video included concise explanation of grammatical forms, highlighted visual elements, worked examples and captions. In order to facilitate structured usage of instructional materials, participants of the experimental condition received notifications about newly released videos several times per week. Notification was given three to five times per week according to the preset schedule. The aim of the intervention was to motivate the participants to visit the site immediately after receiving notifications and rewatch previous video clips whenever necessary. Participation in the online training session was monitored through platform activity indicators to confirm access to instructional videos; however, complete equivalence in engagement across participants could not be guaranteed.

The control group undertook grammar instruction in the traditional way in class through teacher's explanations, guided textbook activity, written and individual assignments. Both groups studied the same material, had similar lesson plans and learning objectives. During the experiment period, the control group was deprived of accessing microlearning videos to ensure isolation of treatment effects. Instructional objectives, grammar topics, and planned instructional exposure were kept equivalent across conditions to strengthen implementation fidelity. Lesson plan and video clip release schedule were developed before conducting the intervention, and implementation of the intervention was closely observed to guarantee compliance with the plan. Upon completion of the experimental period, students undertook a post-test which was presented by the GRA parallel test in the same conditions as during the pre-test. The same testing conditions and procedure were used to minimise testing bias and ensure comparability of the outcome. The obtained results were analysed in order to detect changes in grammar performance and the effectiveness of microlearning intervention in

comparison with the traditional instruction. In order to provide fair play and ethical conduct, participants in the control condition were given full access to the online grammar videos after data collection.

Ethical considerations

Ethics approval was obtained from the institutional review board at a university located in Italy. Participants were notified about the purpose and procedures of this study before participation. Written informed consent was obtained from all participants. Students could voluntarily choose whether to participate in the study. Moreover, they were notified about the possibility to withdraw from the experiment without negative implications for academic performance. Participants' anonymity was preserved by collecting anonymised data only. Since the experiment utilised social media platforms, additional steps were performed to preserve participants' privacy. First, the Instagram page used in the experiment was private. Secondly, participants were notified about appropriate privacy settings on Instagram. To ensure fairness, all control-group participants received access to microlearning materials after the study.

Results

A mixed-design analysis of variance (ANOVA) was conducted to examine the effect of instructional method (microlearning via social media vs traditional instruction) on EFL learners' grammar retention over time (pre-test vs post-test). The descriptive statistics indicate that both groups improved from pre-test to post-test, with the experimental group increasing from $M = 56.63$ ($SD = 3.69$) to $M = 62.73$ ($SD = 3.59$), and the control group improving from $M = 55.63$ ($SD = 3.69$) to $M = 73.90$ ($SD = 3.97$), suggesting a greater gain for the control group. Levene's test was non-significant for both pre-test, $F(1, 58) = 0.00$, $p = 1.00$, and post-test, $F(1, 58) = 0.29$, $p = .595$, indicating that the assumption of homogeneity of variance was met, and with only two time points, the assumption of sphericity was not violated. Table 1 reveals a statistically significant main effect of time, $F(1, 58) = 60297.55$, $p < .001$, $\eta^2 = .999$, indicating overall improvement in grammar scores, as well as a significant main effect of group, $F(1, 58) = 27.82$, $p < .001$, $\eta^2 = .324$, indicating differences between groups. Most importantly, Table 1 reveals a statistically significant interaction between time and group, $F(1, 58) = 15033.17$, $p < .001$, $\eta^2 = .996$, indicating that the magnitude of improvement differed significantly between the two groups, with the control group demonstrating substantially greater gains than the experimental group; overall, these findings suggest that while both instructional approaches improved grammar retention, traditional instruction was more effective than microlearning delivered via social media in this study.

Table 1
Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	Sphericity Assumed	4453.008	1	4453.008	60297.545	.000	.999
	Greenhouse-Geisser	4453.008	1.000	4453.008	60297.545	.000	.999
	Huynh-Feldt	4453.008	1.000	4453.008	60297.545	.000	.999
	Lower-bound	4453.008	1.000	4453.008	60297.545	.000	.999
time * Group	Sphericity Assumed	1110.208	1	1110.208	15033.171	.000	.996
	Greenhouse-Geisser	1110.208	1.000	1110.208	15033.171	.000	.996
	Huynh-Feldt	1110.208	1.000	1110.208	15033.171	.000	.996
	Lower-bound	1110.208	1.000	1110.208	15033.171	.000	.996
Error(time)	Sphericity Assumed	4.283	58	.074			
	Greenhouse-Geisser	4.283	58.000	.074			
	Huynh-Feldt	4.283	58.000	.074			
	Lower-bound	4.283	58.000	.074			

Discussion

This study investigated whether grammar instruction using Instagram-based microlearning would result in better outcomes in grammar knowledge acquisition and retention among EFL learners compared to classroom-based instruction. The statistical findings indicate that the null hypothesis was rejected., since there was a significant difference in the means before and after the intervention, suggesting that learning occurred under both conditions. Nonetheless, the results also indicate that classroom instruction led to far greater improvement in terms of absolute score changes. The interaction effect between time and group is extremely large, which is consistent with the marked differences in final scores. Specifically, the control condition scored significantly higher than the experimental one, advancing from an initial mean of 55.63 to a final mean of 73.90, whereas the experi-

mental group rose from 56.63 to 62.73. Overall, while the Instagram-based intervention was beneficial for grammar acquisition to some degree, its effectiveness was significantly inferior to that of classroom-based instruction.

These findings are inconsistent with a considerable body of literature indicating positive outcomes associated with mobile-assisted language learning (MALL) interventions for various linguistic domains. Research focusing on vocabulary acquisition (Liu, 2016; Li & Cummins, 2019), grammar instruction (Moghari & Marandi, 2017; Andújar, 2020), and communicative competence (Hwang et al., 2016; Sun et al., 2017) has emphasised the role that mobile devices play in promoting learning. However, upon closer analysis, it becomes apparent that many positive outcomes have been reported with respect to specific applications tailored for learning purposes that provide interactive opportunities, immediate feedback, and adaptive content. For instance, the tasks used by Moghari and Marandi (2017) involved text-message production of grammatical constructions, while Andújar (2020) utilised WhatsApp for communication and grammar practice with corrective feedback. In the present study, microlearning materials were primarily represented by instructional videos, accompanied only by low-cognitive-load follow-up exercises. Despite careful application of multimedia learning principles—namely, segmenting, signalling, and presenting information in the dual channel—in the context of grammar instruction, these activities may have been insufficient to foster generative processing, which is crucial for the acquisition of grammatical knowledge. Grammar learning, especially at the B2 level, implies both recognition and production of complex constructions, which cannot be accomplished with passive listening alone. Conversely, in classroom settings, grammar instruction involves not only teacher explanations and oral drills but also written exercises that require repeated retrieval and manipulation of grammatical rules. Consequently, the control group's superior performance appears consistent with previous evidence that explicit instruction paired with extensive practice opportunities can lead to significant improvement in L2 grammatical knowledge (Norris & Ortega, 2000).

The substantial discrepancy between the scores obtained by the two groups also calls for reappraisal of the theoretical assumptions underlying the experiment. According to both CLT and CMLT, learning occurs more effectively when information is segmented into manageable chunks and extraneous cognitive load is minimised (Mayer, 2009; Sweller, 2011). The short videos utilised in the experiment were created with this principle in mind, yet low cognitive load during the perception phase may be insufficient for ensuring robust long-term retention if the learning materials fail to engage learners in generative processing. According to Mayer's taxonomy, learning is considered meaningful when learners select information, organise it into coherent mental models, and integrate it with prior knowledge. Despite fostering selection and, to some extent, organization through signalling and visual cues, Instagram-based videos may not offer sufficient opportunities for integration. In the

classroom environment, students are prompted to manipulate grammatical information and produce sentences, thus integrating it with their schema. By contrast, the microlearning condition may have provided mere exposure to grammatical forms without sufficient opportunities for generating new connections, ultimately hindering deep processing.

Furthermore, the use of Instagram as a learning platform may have imposed additional extraneous cognitive load. As mentioned above, Instagram is primarily an entertainment app designed to encourage rapid scrolling through posts, reels, and stories. Even though the experimental group had access to content in a private account, participants engaged in the task in the context of the digital world saturated with notifications, entertaining content, and recommendations, which competed for their attention. Thus, the cognitive resources allocated to grammar learning may have been dispersed, thereby offsetting the goal of reducing extraneous load achieved through the utilisation of short videos. According to Nudge Theory, notifications informing about the arrival of new learning materials were expected to serve as subtle triggers that would prompt learners to engage with the content on a regular basis throughout the semester. In reality, the constant influx of notifications associated with the usage of Instagram can make them ineffective prompts and distract learners from the learning task. Consequently, the minimal improvement obtained by the experimental group may be attributed to shallow cognitive processing, characterised by grazing on grammar materials without engaging in deep learning.

The highly significant interaction effect, with a partial eta squared equal to .996, emphasises the extent to which the two learning modes differ in terms of learning trajectories. While the main effect of time indicates gains in both conditions, the interaction term demonstrates that time alone is insufficient to explain the results. Indeed, learners in the control condition performed better even though they started with identical baselines. Several factors may have contributed to the cumulative advantages enjoyed by learners in the classroom setting, such as receiving immediate feedback on their progress from the instructor, observing peers' performance, and feeling socially accountable for meeting the learning objectives. The microlearning condition lacked these aspects since learners worked independently, without social or instructional support. One possible explanation is that learners may have engaged less consistently with the instructional videos over time; however, engagement was not directly measured and this interpretation remains speculative. Unfortunately, the absence of quantitative measures of learners' participation (e.g., number of views, duration of watching each video, completion of follow-up exercises) precludes verification of this conjecture, although it appears to be a plausible explanation of the discrepancy between the scores obtained by the two groups.

Implications for theory and practice

Overall, the current experiment raises some important issues related to the efficacy of microlearning via Instagram for the development of grammatical knowledge. At first glance, the findings suggest that CLT and CMLT cannot be readily transferred to Instagram videos since the latter did not contribute to greater gains in comparison to traditional classroom instruction. This conclusion implies that merely splitting information into manageable chunks and reducing extraneous cognitive load is insufficient for promoting learning. Instead, the benefits of segmenting and spacing need to be integrated with other elements of instructional design, such as engaging the learner, providing opportunities for manipulation, and offering feedback. Additionally, as language learning increasingly moves online and into social media environments, attention should be paid to how multimedia learning theories can be extended to account for the characteristics of the consumption context. In this regard, the current study contributes to the existing literature by shedding light on the pitfalls of applying principles of multimedia learning to entertainment-oriented social media sites without accounting for their features. In this respect, the current experiment provides an interesting contrast to previous positive results associated with MALL, demonstrating that the same strategies may be less efficacious when applied in entertainment contexts.

On the other hand, the findings cannot be generalised to dismiss microlearning via Instagram for language development altogether since the experimental group still demonstrated a statistically significant improvement. Therefore, this method may be appropriate for the acquisition of certain linguistic phenomena, such as vocabulary or pragmatic formulas, which require repeated exposure. Moreover, Instagram can complement traditional classroom instruction by reinforcing the acquired knowledge rather than replacing it as the sole mode of learning. The current study's unique contribution is a direct comparison between a multimodal learning strategy and traditional classroom instruction. However, the experimental condition represents a very different learning ecology compared to the control condition. Real-world applications of microlearning via social media might involve blended designs in which microlearning serves as retrieval practice or preparation for in-class lessons. Future research may focus on exploring the optimal design of microlearning materials and methods to maximise their impact on learning.

Study limitations

Despite providing valuable insights into the relationship between microlearning via Instagram and the development of grammatical knowledge, the current study suffered from several limitations. First, the quasi-experimental design, which was dictated by the institutional context, prevented the researcher from randomising learners at the individual level. Although pre-test equivalence was established, this does not eliminate possible pre-existing differences between intact groups. Second,

the sample size was relatively small, and participants were recruited from a single institution, implying that the results cannot be generalised to other cultures and education systems. Third, it should be noted that the post-test included multiple choice questions and sentence transformations. These tasks were consistent with the instructional approach used in the control condition, which involved writing exercises. Therefore, the experimental group had fewer opportunities to practice them compared to the control group. While parallel versions of the test were administered, some practice effects associated with the instructional mode cannot be completely ruled out. Fourth, the experiment did not measure engagement with Instagram-based content, such as the number of views, duration, or completion of follow-up exercises. This limitation prevents the researcher from isolating the impact of design on learning from participation variability. The extremely large effect size found in the present study may be explained by the intense nature of classroom instruction, rather than a flaw in the microlearning approach.

Conclusion

The aim of this research was to explore the less frequently addressed issue of the use of social media as a means of integrating microlearning into language education, particularly regarding EFL grammar retention. What is more interesting is that this study has yielded quite disappointing results. Indeed, even though the proposed Instagram-based approach to microlearning has led to an observable improvement in students' scores on a grammar test, the effect was still overshadowed by classroom instruction. From this perspective, it becomes clear that under the conditions of this study, breaking down content and distributing learning materials through notifications alone appeared less effective than classroom instruction. as much as it is often thought. In order to learn languages effectively, be it digital or classical instruction, one needs more than carefully elaborated input – one needs an opportunity to practice, receive feedback, and engage in critical thinking. Thus, although there have been numerous attempts at exploring the potential educational benefits of social media, perhaps the real question is not whether they are capable of promoting learning but rather how to design instruction that would maximise the opportunities provided by social media without being too distracting.

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Conflict of interest

The researcher confirms that there is no conflict of interest associated with this study.

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