





WhatsApp for the development of oral and written communication skills in Peruvian adolescents

WhatsApp para el desarrollo de habilidades comunicativas orales y escritas en adolescentes peruanos

 Dr. Fortunato Escobar-Mamani, Research Professor, Graduate School, National University of the Altiplano, Puno (Peru) (fescobar@unap.edu.pe) (<https://orcid.org/0000-0002-3922-4621>)
 Dr. Indira Gómez-Arteta, Assistant Professor, Faculty of Educational Sciences, National University of the Altiplano, Puno (Peru) (indigoar1@hotmail.com) (<https://orcid.org/0000-0001-6489-2261>)

ABSTRACT

In Puno, a region of Peru, the development of oral and written communication skills in basic education students displays weaknesses which could be overcome with the application of technological tools. The objective of the study was to determine the effectiveness of WhatsApp as a mobile learning resource in the development of oral and written communication skills of secondary level students at the 'José Carlos Mariátegui' educational institution (Puno-Peru). The population was comprised of 343 students and a non-probabilistic, convenience sampling was applied to include two fourth-level sections of 36 and 34 students, respectively. The first was the experimental group and the second, the control group. The selection was made considering that fourth-level students are the most appropriate age to use WhatsApp in order to assess the evolution of their skills through rubrics, in a participatory way. Statistical analysis was based on the difference in means with a Z distribution, with a 95% confidence level. The results show that WhatsApp develops significant oral and written communication skills, as those skills rose by 3.5 points on average, on a twenty-point scale, after the experiment. Thus, WhatsApp is a mobile learning technology resource available to develop skills and strengthen knowledge in students.

RESUMEN

En Puno, una de las regiones del Perú, las habilidades comunicativas orales y escritas de estudiantes de educación básica muestran debilidades en su desarrollo, que podrían ser superadas con la aplicación de herramientas tecnológicas. El objetivo del estudio fue explorar la eficacia del uso del WhatsApp, como recurso de aprendizaje móvil, en el desarrollo de habilidades comunicativas orales y escritas en estudiantes del nivel secundario de la Institución Educativa 'José Carlos Mariátegui' (Puno-Perú). La población fue de 343 estudiantes y el muestreo no probabilístico, inducido por conveniencia, fue de dos secciones de cuarto grado, de 36 y 34 estudiantes, respectivamente. La selección se hizo considerando que los estudiantes de cuarto grado tienen la edad más adecuada para usar el WhatsApp y poder evaluar la evolución de sus habilidades a través de rúbricas, de manera participativa. El análisis estadístico se basó en la diferencia de medias con distribución Z, con un nivel de confianza del 95%. Los resultados muestran que el WhatsApp desarrolla habilidades comunicativas orales y escritas de modo significativo, en el caso estudiado, ya que esas habilidades se elevaron en 3,5 puntos, como promedio en una escala vigesimal, después del experimento. Por lo descrito, WhatsApp es un recurso tecnológico de aprendizaje móvil disponible para desarrollar habilidades y fortalecer saberes en los estudiantes.

KEYWORDS | PALABRAS CLAVE

WhatsApp, mobile learning, digital technology, communication skills, ICT in education, social networks, secondary education, multimedia resources.

WhatsApp, aprendizaje móvil, tecnología digital, habilidades comunicativas, TIC en educación, redes sociales, educación secundaria, recursos multimedia.

1. Introduction and state of the art

The National Curriculum for Regular Basic Education in Peru considers, within the curricular area of Communication, three competencies: oral communication, plus reading and writing various types of texts (Ministry of Education, 2016). However, in spite of policies aimed at developing these competencies, the expected results have not been achieved, and deficiencies have been found in the development of communication skills, since students do not yet demonstrate optimal speaking, listening, reading, and writing skills. This situation prompts the quest for resources and strategies to help overcome these weaknesses. One alternative is the use of information and communication technologies (ICTs), which attract attention, motivate and make students feel part of the globalized world, trying to strengthen the positive use of technology and reducing one or more problems, such as the risk of addiction to social networking sites due to their inadequate use (Nie et al., 2019). When used rationally, ICTs enable us to access a range of resources to develop various types of learning. For this reason, it is necessary to adapt to them, considering that "the appropriation of technologies is conceived as a process that takes place in a certain socio-historical space, through which subjects develop an active and participatory position around them" (Angeriz, 2019: 98).

In this context, educational institutions have had to strive to use these resources for the benefit of their students. "The incorporation of the mobile phone into teaching-learning processes (m-learning) is becoming increasingly important, sometimes initiated by the teacher and sometimes as part of the personal or group learning processes of the students themselves" (Gómez, 2017: 62). Previous studies related to the use of ICTs by teachers, show "a scenario where students perceive themselves as self-sufficient and capable of obtaining solutions, but without attributing it to the use of ICTs in the educational institution" (León-Pérez et al., 2020: 99).

However, the use of ICTs also has some disadvantages, especially when it is separated from academic purposes. Previous studies state that social networks have a negative impact on physical and social dynamics, since adolescents spend several hours online, leaving aside their physical and social activities, which can lead to behavioral and health problems (Hernández et al., 2017). Additionally, "students who make more problematic use of mobile phones tend to have a higher degree of FoMO (Fear of Missing Out)" (Santana-Vega et al., 2019). In Latin America, problematic use of the Internet has been related to aspects such as: distraction during study hours, obstruction of daily activities, poor social skills, altered sleep quality, impulsive behavior, neuroticism, aggressiveness, anxiety, insomnia and depression (Araujo, 2016); the frequency of problematic Internet use amounts to 13.84% in medical students and 24.18% in students in other health careers (Muñoz-Dueñas et al., 2017).

1.1. WhatsApp in education

WhatsApp is an evolved form of written communication that can enrich expressions with iconic and audiovisual elements (Cremades et al., 2016). It is an eye-catching, entertaining and useful resource in the educational process, as it allows the student to feel that he or she is part of a technological saga, and to learn spontaneously through its multiple text and multimedia functionalities. In addition, "WhatsApp use has become ingrained among teenagers, with the mobile phone now being the most widely used" (Del-Barrio & Ruíz, 2017: 29). Overall, the pedagogical possibilities of WhatsApp have been explored from different areas: in formal, informal, face-to-face and distance education (Suárez, 2018). Studies such as the one conducted by Bottentuit et al. (2016) state that the greatest pedagogical use of WhatsApp takes place at the university level. This is explained by the fact that "in many secondary school classrooms students are not allowed to use their mobile phones" (Suárez, 2018: 126).

WhatsApp can be used as one of the most productive and feasible pedagogical resources for creating a rich, interactive learning environment in the classroom compared to computer and CALL labs (Singh et al., 2020). WhatsApp also establishes a more personalized relationship with the teacher, motivates students to learn by maintaining a positive attitude toward their educational use, promotes participation, even among the most withdrawn or shy students and develops written and oral communication (Suárez, 2018). Also, the time dedicated to WhatsApp has a positive influence on the psychological well-being of students (Bano et al., 2019). Likewise, it is important to consider that communication through WhatsApp "is no

longer exclusively textual, and increasingly the exchange of information, opinions or feelings becomes more expressive, rich and varied with other communicative elements through images, videos, audios, stickers” (Gómez, 2017: 62).

In addition, WhatsApp provides users with information beyond the published message, such as: viewing the status of the recipient, knowing whether the recipient is writing, or checking whether the message was read (König, 2019). Additionally, among the advantages that WhatsApp provides in student-teacher communication, it is worth noting that it allows teachers to be highly available for their students’ questions and requests, allowing the entire group to learn from answers given to a student who requested clarification (Rosenberg & Asterhan, 2018). Because of these advantages, the viability of using WhatsApp as a support group for graduates in remote and marginalized spaces has been demonstrated (Pimmer et al., 2019).

However, the use of WhatsApp has also shown disadvantages and even dangers, ranging from use that only leads to information overload (Matthes et al., 2020) to cyberbullying, which generally occurs in WhatsApp groups (Chan et al., 2020) and which, in Israel, affects 56% of students (Kashy & Aizenkot, 2020). There is also evidence of a high rate of adolescent use of WhatsApp, with negative use linked to personality and anxiety problems (Tresáncoras et al., 2017).

Specifically, WhatsApp has been linked to the development of communication skills, which are defined as groups of verbal and non-verbal strategies that people perform with certain communication objectives aimed at developing communication competence (Ministry of Education, 2013). Communication skills are indispensable for people to relate to others effectively since they allow people to understand and produce relevant messages. However, these skills have been found to be poorly developed in some contexts. For example, it is known that 54.5% of higher education students at the Universidad Nacional del Altiplano (UNA) in Puno, Peru, demonstrate a fair level; 42.9% have a deficient level and only 2.6% demonstrate a good level in the use of their communication skills (García et al., 2018). That is why it is important to promote the use of ICTs in educational processes, particularly WhatsApp, which facilitates interactive discourse, with rapid exchanges of text, images, audio, video (Rosenberg & Asterhan, 2018) and can be used as a strengthening tool for pedagogy in general and for language and literature teaching specifically (Singh et al., 2020). In addition, the multiple resources provided by WhatsApp allow students to understand and produce text by using both verbal and iconic code, which is easy and fun for them to do. In this regard, WhatsApp chats have been known to allow users to use “laugh” particles to demonstrate how they understood a publication or how they want their publication to be understood (König, 2019).

Therefore, the study focused on the use of WhatsApp’s textual and multimedia resources to develop communication skills in high school students, so that they can listen, speak, read, and write freely, when their curiosity demands it, developing their critical thinking to have effective communication processes. Therefore, the objective of the research, implemented by the National University of the Altiplano in 2019, was to determine the effectiveness of using WhatsApp as a mobile learning resource, in the development of oral and written communication skills in students from the “José Carlos Mariátegui” Secondary School.

2. Material and methods

The design corresponds to a quasi-experimental case study, with pre and post-test and control group, to determine the effects of WhatsApp use as a mobile learning resource in the development of oral and written communication skills.

2.1. Participants

The study was developed in 2019 in the city of Puno-Peru, which is located 3,823 meters above sea level. This city is home to a secondary school population of 147,654 students (Ministry of Education, 2017), who live in a multicultural and multilingual context. The population in the present study was comprised of students from this secondary school in Puno (Table 1). It is located on the university campus, and one of its objectives is to promote the implementation of new strategies and resources proposed by teachers and students of the Professional School of Secondary Education from the Faculty of Educational Sciences at UNA in order to achieve better learning.

Level	Section		Total
	A	B	
1°	35	35	70
2°	34	35	69
3°	35	34	69
4°	36	34	70
5°	32	33	65
Total	172	171	343

Note. 2019 enrolment lists for 'José Carlos Mariátegui' Secondary School in Puno (Peru).

The sample was selected through a non-probabilistic convenience sampling approach, selecting students from the two sections of the fourth year of secondary education (A and B), whose ages fluctuate between 15 and 16 years, considering that the older the teenagers are, the more they use the cell phone to send messages through WhatsApp. Moreover, this application reaches its peak in the fourth year of Compulsory Secondary Education (Del-Barrio & Ruiz, 2017). Additionally, it was verified that all students had a cell phone with WhatsApp installed and considering that this application is free, there were no issues in its use. Of the two sections, the first was the experimental group (36 students) and the second was the control group (34 students).

2.2. Instruments

Data were collected using the convenience-based participant observation technique, with rubrics to assess oral and written communication skills: speaking, listening, reading, and writing.

The rubric was chosen considering that it is "an instrument of educational evaluation that contemplates a progressive scale of performance levels that correspond to ranges of task execution, enabling the establishment of quality judgments regarding the work of students" (Bruna et al., 2019: 19). Additionally, the main advantages of this instrument have been identified as: a) Its formative (versus summative) and training value; b) The possibility of guiding a process (versus valuing a product); c) The value of building it (versus consuming it) (Cano, 2015).

Criteria	Abilities evaluated	Qualitative scale	Numeric value
Speaking skills	Expressing an opinion and making a case for it Expressing feelings and emotions Transmitting information objectively Interpreting the meaning of symbolic language	Poor Regular Good Excellent	2 3 4 5
Listening skills	Understanding the content of speech Understanding the communicative purpose Distinguishing relevant from irrelevant information Inferring the message contained in the discourse.		
Reading skills	Identifying the main and secondary ideas Extracting the overall meaning of the text Inferring information Critically discussing the content of the text		
Writing skills	Writing with clarity and logical order Writing with correct spelling and grammar. Using language shared with the reader Writing complete narratives Demonstrating a clear communicative purpose		

Each skill was evaluated considering specific descriptors, which respond directly to the competencies and abilities for the area of communication, embodied in the National Basic Education Curriculum in Peru, so that they make it possible to catalogue the execution of the task or activity at a level of the qualitative scale and numerical value proposed (Table 2). Although the qualitative scale is the same for assessing all skills, the quantitative scale varies according to the number of skills assessed. Thus, in each of the first three criteria, four skills were evaluated, with a score ranging from 2 to 5. Moreover, in the fourth criterion, five skills were evaluated, with a score ranging from 1 to 4. It is important to consider that the rating was made on a twenty-point scale. These aspects allowed for an objective collection of data, ensuring that the instruments have content and construct validity, which was achieved through the review of their correspondence with the theory used and the evaluation of eight experts from UNA Puno, both in terms

of form and substance. Of these experts, seven have degrees in education, specializing in language and literature, and one has a degree in linguistics and literature. All of them hold a PhD degree. The results show an Aiken's V coefficient of 0.9, which implies that the instruments had content validity, verifying the item-construct relevance (Galicia et al., 2017).

The reliability of the instruments was measured through Cronbach's alpha coefficient, using SPSS 23 software. This coefficient was 0.731 for the headings measuring speaking, listening and reading skills, which is an acceptable internal consistency value. For the rubric used to measure writing ability, the Cronbach's coefficient was 0.902, which shows an excellent internal consistency.

2.3. Procedure

The research was carried out during the third quarter of 2019, previously releasing a protocol for the rational use of WhatsApp, inside and outside the institution. This protocol for the use of WhatsApp received the consent and approval of the students and parents in the experimental group. In order to guarantee healthy conditions in its application, the protocol considered the following points: time of use (no more than three hours a day, under the supervision of the teacher or parents), location of use (one hour at school and two hours at home), rules concerning respect in communications (polite use of language, respect for the opinions of others and use of chats only for academic purposes) and sanctions for offenders (individual calls for attention or expulsion from the group). To execute the experiment, the following resources available in WhatsApp were used: text messages, emojis, voice messages, calls, video calls and attached files (audios, videos or documents), both to order and to receive activities; encouraging actions of oral expression, listening, reading and writing. The experiment was carried out during 20 learning sessions in the area of communication, in the following sequence:

- To develop written communication skills, 10 literary texts (Peruvian stories) and 5 non-literary texts (informative) were shared.
- In order to develop oral communication skills, 10 motivational audios and 5 personal development videos were shared.

Each file was accompanied by pertinent indications to evidence that the students are reading, writing, listening and speaking including oral reading, open questions, analogies, comments and practical exercises. These were all oriented to verify the specific skills considered in the rubrics. These activities were carried out through individual and group chats in order to promote self-learning and inter-learning. The students' communication skills were measured before and after the experiment, both in the experimental group and in the control group, in order to be able to compare these results. It should be noted that the control group worked with the same texts, audios and videos; but the activities were carried out directly in the classroom, without promoting the use of WhatsApp or other virtual media.

2.4. Data analysis

Considering that we sought to compare the means of two independent groups with known variances, the final statistical analysis was based on the difference of means with Z distribution, with a confidence level of 95.0%.

3. Analysis and results

The results obtained (Table 3) show that WhatsApp develops oral and written communication skills in a significant way, according to the following scale: Qualitative/quantitative scale: Poor [0-10>; Fair [11-13>; Good [14-17>; Excellent [18-20].

Communicative Skills	Pre-test				Post-test			
	Experimental group		Control group		Experimental group		Control group	
	Fi	%	Fi	%	Fi	%	Fi	%
Poor	10	28	9	26	0	0	10	29
Regular	23	64	22	65	12	33	23	68
Good	3	8	3	9	22	61	1	3
Excellent	0	0	0	0	2	6	0	0
Total	36	100	34	100.0	36	100.0	34	100.0

Before the experimental treatment, more than 60% of the students in both groups had a regular level in the use of communication skills, with an average of 11.4 in the experimental group and 11.8 in the control group, showing weaknesses in the comprehension and production of texts, both oral and written. Statistical analysis based on the difference in means with a Z distribution, with a confidence level of 95.0%, shows the value of $Z_c=0.8960 < Z_t=1.9599$; therefore, there is no significant difference between the results of the pre-tests of the two groups.

After the treatment, 61% of students in the experimental group showed a good level in the use of oral and written communication skills, raising their average from 11.4 to 14.9, with an improvement of 3.5 points. This improvement includes the use of verbal strategies that allow them to achieve communication objectives to listen, speak, read and write better, using WhatsApp's text and multimedia resources in an entertaining way and encouraging autonomous learning. In the control group, 68% maintained a regular level in the use of communication skills, with an average of 12.1 points. This result is also ratified by the statistical analysis based on the difference of means with Z distribution, with a confidence level of 95.0%. The value of $Z_c=6.4788 > Z_t=1.9599$ shows that there is a significant difference between the results of the post-tests for both groups.

It is important to highlight that in the experimental group; the most developed skills were oral: listening and speaking (Table 4). With WhatsApp, students could better understand an oral text since they could listen to it more than once and do it at a convenient time within the parameters established in the protocol. Moreover, they could deliver oral messages more naturally, overcoming the insecurities and fears generated by speaking in front of their peers and teachers, expressing themselves freely with more confidence, criticism and relevance.

	Pre-test average	Post-test average
Oral skills	11.2	15.9
Written skills	11.6	14.0

In oral expression, the skills developed included the expression of feelings and the articulation of opinions; while the less developed ones were the interpretation of figurative language and the objective transmission of information. In oral comprehension, the most developed skills were understanding the content and purpose of the discourse, developing less skills related to the discrimination of relevant and irrelevant ideas and inference of the message (Table 5).

Criteria	Assessed Skills	Pre-test*	Average Pre-test*	Post-test*	Average Post-test*
Speaking Skills	Expressing an opinion and articulating it	11.8	11.3	16.8	16.2
	Expressing feelings and emotions	11.5		17.9	
	Transmitting information objectively	11.5		15.6	
	Interpreting the meaning of figurative language	10.5		14.6	
Listening skills	Understanding the content of discourse	11.5	11.1	16.6	15.5
	Understanding the communicative purpose	11.0		16.0	
	Discriminating relevant from irrelevant information	10.9		15.0	
	Inferring the message of the discourse.	11.1		14.3	
Reading skills	Identifying the main and secondary ideas	11.0	11.4	13.4	13.8
	Extracting the overall meaning of the text	11.6		14.5	
	Inferring information	10.9		12.8	
	Critically commenting on the content of the text	12.1		14.5	
Writing skills	Writing with clarity and logical order	12.6	11.7	14.8	14.2
	Writing with correct spelling and grammar	10.1		12.8	
	Using a language shared with the reader	11.8		13.2	
	Writing complete narratives	12.5		15.7	
	Demonstrating a clear communicative purpose	11.7		14.3	

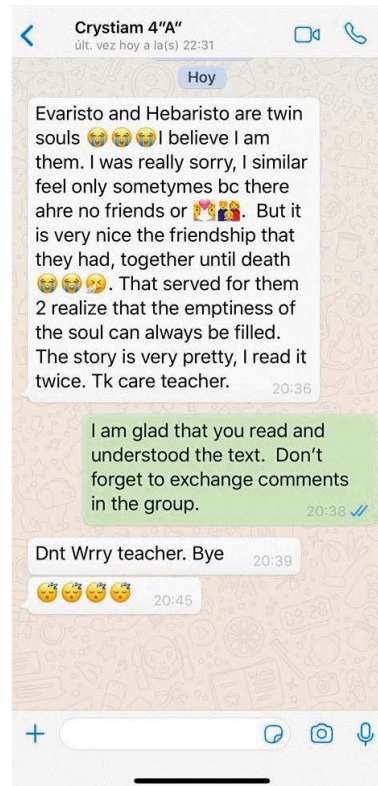
*Qualifier on a twenty-point scale.

Written skills, reading and writing, advanced with certain particularities. Regarding reading comprehension skills, the most developed ones were critical commentary and identification of the overall meaning of the text; those that were least developed included making inferences and identifying main and secondary ideas. In relation to written production, although it improved, it did so in terms of substance rather than form as each text is understandable, but the cohesive mechanisms have almost been forgotten;

there are spelling errors in 95% of the texts and the use of the digital language created by the users of WhatsApp is present in 100% of the texts (Figure 1). The skills that were most developed were writing complete narratives (anecdotes) and demonstrating a clear communicative purpose. The use of language shared with the reader and spelling and grammar correction were less developed (Table 5).

When comparing the number of messages used by students, the prevalence of voicemail, as opposed to text messages, was noted. On average, each student recorded 98 text messages (approximately 48 words each) and 143 voicemails (approximately 73 words each) during the quarter, demonstrating that students are more comfortable sending voicemails.

Figure 1. Example of the textual production of a student from the experimental group



4. Discussion

The results substantiate the idea that the use of technology "allows, for example, teachers to create networked environments for students to store, share and develop their work in a collaborative manner, and to apply flexible student-centered teaching and learning strategies" (Casanova et al., 2019: 148).

The use of WhatsApp as a learning resource has positive effects on the development of communication skills, providing opportunities for students to feel that they are using modern technology and to strive to speak, listen, read, and write appropriately. This result reinforces the idea of Bottentuit et al. (2016) who define WhatsApp's pedagogical strategies as educational possibilities. That is, they are resources that provide great opportunities in the teaching-learning process. Furthermore, they assert that "some benefits of using social networks include sharing information and ideas and improving reading skills" (Badri et al., 2017: 1441).

Students communicate more often through WhatsApp, with enthusiasm and a feeling of freedom, especially when speaking, which has been noted in the critical comments they made on various topics, showing spontaneity in their expressions. This is due to the fact that the didactic use of the mobile phone is very motivating (Pineda et al., 2017).

Likewise, the results support the idea that "young people justify that, either for comfort, lack of time or shyness, they communicate through WhatsApp more often than face to face" (Rubio-Romero & Perlado-Lamo-de-Espinosa, 2015: 81), showing that this application, used rationally in an ethical framework, is a very useful learning resource to promote the development of oral and written communication skills, especially in those students who displayed shy traits when speaking.

The finding suggesting that oral communication skills were developed at a greater rate than written skills with the use of WhatsApp, coincides with authors who found a strong correlation "between the use of voice chat on mobile phones and the development of oral competence, suggesting some speech skills have experienced a superior improvement over others, such as fluency, pronunciation and vocabulary" (Andújar & Cruz, 2017: 48). It also supports findings by Rosenberg and Asterhan (2018), who indicate that chats on WhatsApp make students feel closer to their teachers, because of the playful speech used and the informal content, which is common in this type of communication. This aspect is related to the more personalized interaction that is created between teachers and their students, providing greater confidence to express themselves, which also generates a sense of "students' connection with the teacher and consultation, which promotes group work and the use of technology to perform school tasks in teams" (Coicaud, 2019: 157). In relation to written communication skills, these were developed with the use of WhatsApp, since this application is an inexpensive and flexible resource that offers potential to assist in the process of learning to write (Susanti & Tarmuji, 2016). However, the weakness lies in the grammatical and spelling errors found in the messages (Figure 1). In this regard, Vázquez-Cano et al. (2015: 101) point out that some of the errors in this type of communication include: "the absence of capitalization and accents, duplication of letters, word linking, phonetic spelling, heterographies and errors in letter spelling". For their part, Del-Barrio and Ruiz (2014) believe that spelling and standard language use does not improve with the use of WhatsApp, as students create their own digital language. This language responds to the need to express a lot with few words, which have been changed or shortened to make writing easier, a common feature in social networks (Díaz, 2019). Likewise, results show that 100% of the students used textisms in their productions, which far from impairing understanding, helped to interpret the message. On the one hand, researchers such as Gómez-Camacho et al. (2018) showed that there is no direct negative relationship between textual use and spelling; on the other hand, Hunt-Gómez et al. (2020) considered that textual use of non-normative graphemes, excluding capital letters or accents, causes spelling mistakes and learning problems. These last results should help to think of new strategies that help to improve written communication through WhatsApp in the educational field. In this respect, Gómez and Gómez (2015: 102) state that "a new digital literacy in communication mediated by computers and smartphones is essential among the objectives of secondary and higher education" since the innovative forms of digital writing should be opportunities to teach the language and be included in the classroom as educational resources (Hunt-Gómez et al., 2020).

5. Conclusions and recommendations

In conclusion, WhatsApp, as an educational resource, develops communication skills in secondary education students, helping them understand and produce oral and written texts with greater spontaneity and responsibility, promoting self-learning in a fun way and making them feel part of the technological age of knowledge. It is a highly motivating resource that allows students to learn in a fun way and have a more personalized relationship with the teacher, which fills them with confidence to produce their texts. This mobile learning resource has enabled students to read and write short texts, developing their critical and argumentative skills, using text and iconic resources spontaneously. In addition, and with greater intensity, WhatsApp has enabled the development of oral communication skills, by allowing students to listen to audios, analyze videos and broadcast voice messages to express their critical views on the texts heard. This mobile learning resource opens the door to new forms of teaching and learning, with many possibilities yet to be discovered. These must be oriented towards rational and ethical use, in order to continue to counteract the negative effects of technology since we know that, "despite the benefits of student participation in social networks, their misuse could affect students' academic lives and, therefore, their performance" (Badri et al., 2017: 1441).

Finally, it should be noted that the results of the study have two main weaknesses: they cannot be generalized due to the small sample used as it is a case study; and that only communication skills were evaluated in a general way, without reaching an in-depth analysis (semantic, syntactic and pragmatic), which opens up several possibilities for further research on this topic. These include broadening the sample, using complementary qualitative and quantitative methods, delving deeper into the content analysis of the productions and exploring the pedagogical potential of WhatsApp to promote other learning in various settings.

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