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ABSTRACT

The purpose of this article is to present the results of the survey of scientific production on WhatsApp as a tool for pedagogical use. For this, the "State of the Art" methodology was used, which consists of a study of everything that was researched and built in the area, from the search for descriptors in a database. In the case of this research, the SciELO (Brasil Scientific Electronic Library Online) platform was selected. The descriptors "WhatsApp, mobile, m-learning, learning, education, teaching, literacy, literacy and academic literacy" were used. As for the results, the 17 articles were presented along with which level of education they were present and which areas are interdisciplinary with the research. Among the articles, their contributions to thinking about the use of WhatsApp in education were also presented, namely: the use of WhatsApp by the subjects before the research; their various positive perceptions; its use in teacher training, orality, language teaching and health; needs of the development of new technological competences.

Keywords: WhatsApp, state of the art, digital technologies, pedagogical tool, teaching.

1 INTRODUCTION

Mill (2009, p. 38) demonstrates that technological development brings unprecedented possibilities of communication or interaction between subjects, which certainly also influences school times and spaces and consequently profoundly affects the pedagogical practice. The author also points out that these new spaces and times adjust to the needs and/or technological development, which can be perceived in the perspective of an evolution of human civilization (MILL, 2009, p. 39). Thus, it is demonstrated that education is being invited to rethink its curricular proposals and pedagogical practices, consequently requiring new pedagogical practices from educators (MILL, 2009, p. 45).

As stated by Bueno (2021, p. 125), the quantity and quality of digital technologies put at the service of teachers in virtual learning environments such as platforms, applications, websites, among other resources from computers and mobile phones have increased. Considering this situation, we conducted Scientific Initiation research in the Pedagogy course of the University of São Francisco, which sought to investigate whether WhatsApp, one of these digital technologies, can be used as a pedagogical tool, since it is an application widely used in everyday life, both by students and teachers. Junior (2016, p. 14) states that

WhatsApp, launched in 2009 by Brian Acton and Jan Koum, is an instant messaging and voice calling app for smartphones. Users have at their disposal the functionalities of exchanging messages by text, exchanging videos and PDF documents, as well as making calls at no cost, using an Internet connection.

In this way, it is intended to make the exposition of the results of a study of the state type of art that made the survey of research that investigated the use of WhatsApp as a pedagogical resource in teaching; such study was the first part of our research of Scientific Initiation.

2 THEORETICAL PERSPECTIVES

In our Scientific Initiation research, we aim, through WhatsApp, to offer an academic writing course as a complementary part of a Course Completion Work discipline in which students must produce a scientific article. To substantiate our discussions on the importance of language, we take as the theoretical basis for this research the Socio discursive Interactionism (ISD), in which Bronckart (1999, 2006) states that it is in the interaction between people that human activities take their forms and it is through the texts that these activities occur.

For this to happen, there is a need to articulate texts with textual genres, since whenever a text is produced, the speaker needs to choose the textual genre that is more in accordance with the context in which it is found (BRONCKART, 1999). Taking into account what Schneuwly and Dolz (2004, p.25) and Dolz, Gagnon and Decândio (2010, p. 43-44) affirm, textual genres are seen as mega instruments that contribute to the transformation and mastery of psychic processes, being used as instruments for the   human development of their language capacities; therefore, textual genres act as mediating instruments for the action of speakers in their various interactions.

The academic textual genre scientific article, as stated by Bueno (2019, p. 195), "is an instrument that allows dialogues, questions, disagreements, in addition to guaranteeing its author the insertion in a scientific community". As presented by Bueno, Silva and Pereira (2014, p. 40-44), many are the characteristics that make up a scientific article, having its canonical structure usually presented by:

(a) context of production and thematic content, where an enunciator is presented, its recipients, social place (academic environment), the objective, time and space (when it was written and where it will be published), and thematic content.

(b) discursive aspects, where the structure of the article is presented, such as pre-textual elements (having as example, title, authors' names, institutional affiliation, research funding program); textual elements (introduction, theoretical basis, methodology, results, discussion and to close the final considerations); and post-textual elements, constructed to complement the article and according to n recession of the rules for publication (title, abstract and keywords in a foreign language, footnotes,

bibliographical references and other complementary information).

(c) discursive linguistic aspects, where the textualization mechanisms that contribute to thematic coherence and give linearity to the text are presented. Texts need connection (conjunctions, adverbs or adverbial locutions, prepositional groups, nominals and sentence segments); nominal cohesion (input function that marks a unit of meaning and the resumption, which reformulates the introduction throughout the text); and verbal cohesion (guarantee the temporal organization verbalized in the text); modalization (comments, evaluations or judgments that the author makes about the thematic content presented by the enunciative voice).

The textual genre scientific article is one of the most common to the academic environment, and for the researcher to be inserted in it, it is expected that he has access to academic literacy. Regarding this academic study, Lea and Street (2014, p. 477-478) state that the approach to student writing and literacy in academia can be conceived by three perspectives or models: (1) study skill model; (2) academic socialization model and (3) academic literacy model. The three are not exclusive, but rather overlapping. At first, the (1) first model, study skills, perceives writing and literacy as the individual and cognitive ability of students, assuming that students can transfer their literacy knowledge from one context to another. The (2) model, academic socialization, is consistent with the process of acculturation of students in discourses and genres based on themes and disciplines. Therefore, the al Uno's acquire ways of speaking, writing, thinking and interacting in literacy practices, relying on the assumption that disciplinary discourses and genres are relatively stable, and once the student has understood, they are able to reproduce it. Finally, (3) the third model, entitled academic literacy, is related to the production of meaning, identity, power and authority, since it considers that writing in academia is not neutral and that students need to be clear about these relationships in order to be able to move better in the university experience through texts.

Considering the work with the scientific article aiming at the academic literacy of the students, the work with WhatsApp in which classes would be offered to discuss the texts and their language seemed to us a good resource, but in the interactionist perspective that we assume it is always necessary to know what other researchers have already concluded about our object of study. Is WhatsApp really a good technological resource in education? In order to understand this, we proceed to the State of the Art.

However, before the presentation in the State of the Art of what has already been researched, it is also necessary the more specific presentation of what WhatsApp is. Based on Junior (2016, p. 26), the captive application aims to deliver messages and connect friends and family, and it is not necessary to pay for each message sent, but only the data network to access the internet. Through WhatsApp, photos, videos, voice messages can be exchanged, which can make people's lives easier. In February

2016, the application had already reached the mark of more than one billion users in the world, being estimated about 100 million Brazilians using the application (JUNIOR, 2016, p. 14). According toa survey conducted by *Panorama Mobile Time*, also done in 2016, about 90% of users send a message every 24 hours, that is, they use the service daily (JUNIOR, 2016, p. 34). In a more recent survey, made available by *Panorama Mobile Time* (2021), WhatsApp is presented as the application that the Brazilian opens more times throughout the day, being presented by 54% of respondents. The application is also presented as being the one that Brazilians spend the most time seeing throughout the day, with 33% of responses from those surveyed.

It is also necessary to reflect that, as of 2020, the world has entered a pandemic, COVID-19, caused by the coronavirus (SARS-COV-2). As Arruda (2020, p. 258-264) points out, as the school is a space with great risk of contamination, face-to-face teaching was blocked and teaching through technologies began to be used. The conditions of teaching work, teaching and the way education happened was modified, requiring new pedagogical practices to be employed so that education could be efficient (MARTINS, 2020, p. 252).

Since education is being increasingly invited to rethink its curricular proposals and differentiated pedagogical practices, consequently educators are increasingly being required to insert themselves within this (MILL, 2009, p. 45). Therefore, the possibility of using WhatsApp as a pedagogical resource is in power to be one of the answers to this, corroborating for an articulation of these new ways and possibilities of communication between the subjects.

3 METHODOLOGICAL PERSPECTIVES

For Ferreira (2002, p. 258), state-of-the-art research is defined by the bibliographic character, since it has the purpose of mapping and discussing a certain academic production in different fields of knowledge, presenting how, times, places and conditions such productions were produced.
Romanowski and Ens (2006, p. 38-41) consider that there is a need for studies that carry out a balance and mapping of the scientific knowledge already elaborated and point out the approaches, the most researched themes and the gaps, therefore, the states of the art are justified as a possible answer to this need. Thus, the States of the art usually collaborate to find the constitution of a theoretical field, since they raise the data that is known about a certain area corroborating for an analysis of the researches of the subject. They often also establish a relationship with previous productions, contributing to the identification of recurring themes, new perspectives and consolidating an area of knowledge.

For this, the methodological process must follow definition of the descriptors; location of research banks; criteria for the selection of the material; collection of research material; reading of

publications; [...] and analysis and elaboration of preliminary results (ROMANOWSKI and ENS, 2006, p. 43).

For our Scientific Initiation research, the selected descriptors pertinent to the research were searched in the SciELO (Scientific Electronic Library Online) database throughout June and July 2021. They were divided into two categories, primary (3) and secondary (7), with the construction of the collection of articles occurring through a dialogue between them. Therefore, the 3 primary descriptors (WhatsApp, mobile, m-learning) were combined and searched along with all the other 7 secondary descriptors (learning, education, teaching, writing, academic literacy, literacy, and literacy). The database chosen for the search of descriptors was Scielo. A total of 545 articles were found, of which 52 had the descriptors in the title, abstract or keywords. Among these 52, 17 were selected that agreed with the theme.

4 FINDINGS

We found 17 articles, as shown in the table below:

Article name	Author(s)
Só mais um minutinho, teacher": planejamento estratégico colaborativo e individual para tarefas orais em l2 em uma escola pública	ZACCARON; XHAFAJ; D'ELY, 2019
Adoção de m-learning no ensino superior: o ponto de vista dos professores	PINA et al, 2016
Conexões Matemáticas entre Professores em Cyber formation Mobile: como se mostram?	ROSE; CALDEIRA, 2018
Emoções e ações de professores ao falar inglês no WhatsApp	ARAGÃO, 2017
Escritura ortográfica y mensajes de texto en estudiantes universitarios	CAMACHO; CASTILLO, 2015
Estrategia para la implementación de la educación mediática en escuelas públicas de nivel básico	LINARES, 2019
La confianza de los adolescentes escolarizados en las redes sociales virtuales	FONSECA, 2016
La dicotomía difusa contra la dicotomía tradicional oral / escrito. La escritura por WhatsApp	GIRALDO, 2018
La norma escrita en las conversaciones de WhatsApp de estudiantes universitarios de posgrado	CAMACHO; CASTILLO, 2017
Novos Tempos, Novos Desafios: Estratégias para Equidade de Acesso ao Ensino Remoto Emergencial	APPENZELLER et al, 2020
O uso de ferramentas tecnológicas como comunidades de práticas por docentes de uma rede particular de ensino	AXE; OVEN; ALMEIDA, 2020
O uso de mensagens eletrônicas instantâneas como recurso didático	ROBERTS; TELES, 2019

Projeto Novela: uma abordagem comunicativa e intercultural no ensino de alemão como língua estrangeira	AQUINO, 2019
Using mobile phones and social media to facilitate education and support for rural-based midwives in South Africa	CHIPPS, 2015
WhatsApp y Facebook como mediación pedagógica en procesos de Orientación Socio Ocupacional	LAFAURIE-MOLINA; SINNING-ORDOÑEZ; VALENCIA-COBO, 2018
WhatsApp® como Recurso para a Educação em Saúde: Contextualizando Teoria e Prática em um Novo Cenário de Ensino-Aprendizagem	PAULINO et al, 2018
When Teacher Education Goes Mobile: A Study on Complex Emergence	BRAGA; MARTINS, 2020

Source: Prepared by the authors (2022)

Regarding the research areas, the one that had the highest frequency was education, being present in 16 of the 17 articles. Among these 16 articles that dialogue with education, their respective levels are: Elementary and secondary education, with 9 articles; Higher education, with 8 articles; Early childhood education; and post-graduation, both with 1 article each.

There was also a great perception regarding the interdisciplinarity of the areas that dialogue with the research. In addition to education and technologies, other areas were also found in an interdisciplinary way: Applied Linguistics, Human Sciences, Health, Mathematics and Applied Social Sciences.

A categorization of the themes presented in the articles was also made. Among the 17, some appear in at least two: (i) Use of WhatsApp by educational subjects; (ii) Subjects already used WhatsApp before the research / being a resource dialogic; (iii) Positive perception of the subjects regarding the use of WhatsApp; (iv) Need to develop new skills for the use of technologies; (v) Use of WhatsApp as a tool to improve teacher education; (vi) relate WhatsApp to orality; (vii) Relate WhatsApp to language teaching; (viii) WhatsApp can increase the trust of its subjects; (ix) WhatsApp and its use in the area of Health.

Both categories (i) "use of WhatsApp by educational subjects "and (ii) "research subjects already using WhatsApp before the research" were presented, directly or indirectly, in 16 of the 17 articles. Therefore, it is possible to infer that WhatsApp can be used as a pedagogical resource in different ways. Contributing to this perception, Pina et al (2016, p. 284), in the article "Adoption of m-learning in higher education: the point of view of teachers", state that there is an increase in studies that address the need to find atheoretical-pedagogical framework to understand and enable teachers to use m-learning.

Among the categories previously exposed, 2 of them are presented directly or indirectly in 12 of the 17 articles. The first of them, (iii) "positive perception of the subjects regarding the use of WhatsApp", are justified through Paulino, Martins, Raimondi and Hattori (2018, p. 177), when they affirm that in this new learning environment there is a very positive aspect: the facilitation of the

participation of all students rather, since in a virtual chat group messages can be shared simultaneously, without having to wait to manifest.

As for the results of the article by Pina et al (2016, p. 290) the advantages of cell phone use presented were: "portability", "temporal mobility", "spatial mobility", "connectivity (communication with other people", "tablet size allows educational activities", "connectivity (access to content", "media convergence", "active participation of the student in the teaching-learning process", "connectivity (internet access", "personalization of learning", "better not to disperse attention", "contextual mobility", "better for the study of the theoretical part of the course", "democratization of the study". Some of the teachers' responses in the article also contribute to the apprehension of m-learning, such as "in the perception of teachers, this category (which presented a greater number of codes and citations) reveals that teachers do indeed perceive advantages in the use of m-learning, especially as a complement to face-to-face teaching" (PINA et al, 2016, p. 290); "many students do not buy the book, but practically all have cell phones, so the cell phone should be better used by teachers for the development of educational activities" (PINA et al, 2016, p. 292); "Thus, it is to be assumed that teachers' perception of m-learning as compatible with their teaching practices could facilitate its adoption and diffusion." (PINA et al, 2016, p. 292).

However, negative results were also presented, such as: "Loss in teacher-student interaction", "limitation of thought", "small size of the cell phone for educational use", "worse for group work", "worse than the book as didactic material", "p or to evaluate" and "worse for the theoretical part of the course", "increase of work for the teacher (teacher's perspective), "lack of motivation of students for m-learning (student's perspective), "high financial cost to the student", "fear of losing pod er before the student" "resistance to m-learning", "fear of disrespect to copyright", "intrusion of professional life into personal life", "distrust of m-learning compared to face-to-face teaching", "poor quality of the network" (PINA et al, 2016, pp. 294-295). The authors say that "the professors for this investigated work, affirmed to like the face-to-face contact with the students and opposed the m-learning to the face-to-face teaching as an integral substitute from the first to the last" (PINA et al, 2016, p. 294).

As for the category (iv) "need to develop new skills for the use of technologies", Teles brings a quote from Rojo to represent such a statement, when it is said that "if the texts of contemporaneity have changed, the skills/capacity cities of reading and production of texts required to participate in current literacy practices cannot be the same" (ROJO, 2013, p. 8 apud TELES, 2019, p. 25). The authors Zaccaron, Xhafaj and D'Ely (2019), in the article entitled "Just one more minute, teacher: collaborative and individual strategic planning for oral tasks in L2 in a public school ", corroborate this inference when they say that there was a consistently positive perception regarding the use of

WhatsApp for the proposed task in his research, since the cell phone is linked to the daily life of the young population:

> Finally, the perception questionnaire was also asked the degree of satisfaction with the use of WhatsApp by the mobile phone to perform the task and 15, of the 17 participants, indicated the option "happy" or "very happy". In relation to this, the justifications centered on the fact that the use was creative and different from what is normally done in school. In the words of Fr. [Participant] 16, "I love fiddling with the phone so it was cool." Such enthusiasm in the use of the cell phone for the task reflects the presence of this device in the life of the contemporary adolescent. (ZACCARON; XHAFAJ; D'ELY, 2019, p. 418).

It was also observed that the (v) "use of WhatsApp as teacher education" can be observed directly or indirectly throughout 8 of the 17 articles, having as one of the possible justifications the fact that.

> [and] We understand that this research, then, offers the understanding of a formation that is not for teachers or teachers, but with teachers. Part of them is done with them, unlike a preconceived formation, which is often nothing more than a prescription distribution of ways of teaching, which have already been conceived, methodologies already ready, finished, and beliefs that the mathematical knowledge is the one that is in the books. (ROSE; CALDEIRA, 2018, p. 1088).

In order to justify the use of category (vi) "relating WhatsApp with orality", presented in 5 of the 17 articles, Aragão contributes with a testimony of two professors of his research:

> I believe that the application is less embarrassing than the face to face, because it does not have feedback right away from the person's physiognomy, you do not immediately think about what the other is thinking. Then you even think, but later. And there you go, with that, we get to flow more with English, because you don't have the immediate feedback of the other's expression. (FERNANDA, personal communication). [...] A similar observation was made by Professor Katia when describing the predominant feeling when speaking English through WhatsApp audio files: "I have always had difficulty speaking English. I don't think I have a very good pronunciation. I always tell my students that 80% of what I know, I learned on my own. But since there's no one watching, but just listening, I felt safer to speak and that was really good!" (KÁTIA, personal communication) (ARAGÃO, 2017, p. 97-98).

Two other points cataloged throughout the articles, specifically in 4 of them, were (vii) "relating WhatsApp to the teaching of languages" and (viii) "WhatsApp can increase the confidence of its subjects". As one of the possible justifications of the first category, Zardini (2015, p. 2 apud TELES, 2019, p. 31) states that WhatsApp as a didactic tool for English language teaching hassome advantages: (a) informal environment of the discussions generated by the group; (b) increased communication between students; (c) exchange of information and knowledge; (d) interaction between students; (e) contact with the language; (f) improvement of the cognitive process in the formulation of sentences and ideas; (g) exchange of material and (h) speed in the resolution of doubts. As for the second category, statements such as that "the use of similar tasks with asynchronous tools, such as WhatsApp, can increase the confidence of the ap rendiz and result in better performance" (WEISSHEIMER et al.,

2018, apud ZACCARON, XHAFAJ and D'ELY, 2019, p. 419) contribute to its justification of the frequency in 4 articles.

As for the last two, (ix) "reflection on the standard orthographic norm" and (x) "WhatsApp and its use in the health area", both obtained the frequency presence in 3 articles among the 17. As for the first, Camacho and Castillo (2015, p. 95; 2017, p. 1090) present that the grammatical deviations committed by students, both undergraduate and graduate, are not related to the use of WhatsApp to send instant messages. As for the second, there is a possible justification for the use of WhatsApp in the health area when it is stated that

> [the] WhatsApp® application can and be widely used in classes in the course of Medicine and other areas of health. As positive points of the experience, we highlight the dynamism, the ease of interaction, the fluidity of dialogue and exchange of information, the adherence of students, the possibility of immediate interaction with other platforms, especially for real-time search of articles and evidence that support the discussion and effective learning of students by didactic-pedagogical involvement with a tool used by them rotin for various other purposes (PAULINO; RAIMONDI; HATTORI, 2018, p. 178).

Finally, even if it is presented in only one of the articles, it was possible to verify the use of WhatsApp to try to assist in the problems caused by the pandemic, caused by the COVID-19 disease. As stated by Appenzeler et al (2020, p. 2), due to the suspension of activities at the university where the research took place, emergency remote teaching was chosen. To this end,

> [the] use of new strategies brought challenges, such as teacher training, student adaptation, community mental health and management of time for study, and the guarantee of access by students has become a concern of the academic community (APPENZELER et al, 2020, p. 2).

According to the article, based on the situation of the university and the world, a survey was made among the students, using WhatsApp and the institutional email of the students as supports for the coordination to pass a form prepared by google forms (APPENZELER, 2020, p. 2). Therefore, even though WhatsApp has not been used in this situation directly as a means for teaching, it had the function of assisting and facilitating students' access to the questionnaires. In this way, he aroused new strategies for teaching to continue occurring.

5 FINAL THOUGHTS

Considering the purpose of the State of the art, as previously presented by Romanowski and Ens (p. 38, 2006), to map an area by examining the knowledge already elaborated, the most researched themes and the existing gaps, among the research done so far, it is noticeable that the approaches in their great majority are related to education and its technologies, but not only to them, since other works with interdisciplinary areas appear.

Not least, it is proven by the authors throughout the articles that, what was once said in the introduction by Mill (2009, p. 38) about the new technological tools, is confirmed with the use of WhatsApp. Therefore, it is inferred here that WhatsApp could very well exist as a teaching power and that it can clearly be used in new research and pedagogical practices applied to any specific area of teaching.

Some gaps that have not been presented until then can also be perceived, which may be researched in the future. Just as an example, we have: the use of WhatsApp for academic writing (or academic literacy); the use of WhatsApp for the construction of scientific articles; the use of WhatsApp in the pandemic period; the textual genres present in WhatsApp; the contribution to multiliteracies; the use of didactic sequences in WhatsApp; the relationship of WhatsApp with socio discursive interactionism. These are proposals that we hope to see soon in the articles.

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