

## Artigo Original

# The Weaving Of Knowledge In Whatsapp Groups

Daniela Mendes Vieira da Silva<sup>1</sup> e Agnaldo da Conceição Esquinca<sup>2</sup>,

## Abstract

The internet currently permeates the lives of human beings in general. Smartphones connected to the large network are a fundamental part of this hyperconnected reality. One of its most popular applications is the social network WhatsApp, through which approximately one billion people connect directly and in groups. Interaction in WhatsApp groups is a contemporary phenomenon. They are used daily for the discussion of personal, political, family interests, for the elaboration of school or university works and for debates about specificities of a profession with a view to improving the practices of the members of a group gathered around a common interest, for example. This paper, a theoretical essay, discusses the weaving of knowledge mediated by groups with common interests on WhatsApp. In the development, the digital scenario that led to the emergence and diffusion of WhatsApp was characterized, the construction of knowledge in cyberculture was discussed and considerations were made about the weaving of knowledge in groups of this social network. As a result of this work, it was understood that groups

---

<sup>1</sup> Secretaria de Estado de Educação do Rio de Janeiro. Av. Prof. Pereira Reis, nº 119, Santo Cristo, Rio de Janeiro - RJ, Brazil.  
E-mail: danielamvds@yahoo.com.br.

---

<sup>2</sup> Universidade Federal do Rio de Janeiro. Av. Athos da Silveira Ramos, nº 149, Centro de Tecnologia, Block C, Room C127-6, Cidade Universitária, Rio de Janeiro - RJ, Brazil.

on WhatsApp can bring the perspective of a construction of community knowledge, chaotic and ubiquitous within a theme of interest to a collective.

**Keywords:** WhatsApp. Cyberculture. Virtual omnipresence. Weaving of knowledge.

## I. Introduction

The relationship between human beings and knowledge has changed with astonishing rapidity in the face of the Internet domain in our daily lives. With the advent of the internet, people with common interests have connected and produced diverse meanings and knowledge.

Nowadays, the large network inhabits the daily lives of a large part of the world population, through the ubiquity of mobile devices and their applications, in several areas of human interaction, since the growth in the use of smartphones connected to the internet has been shown exponentially (SANTOS; MADDALENA; ROSSINI, 2018). This technological invasion, in the daily life of a large part of humanity, makes the relationships between connected human beings extremely complex, since, through their cell phones, knowledge is produced, traded and woven.

The expression “knowledge fabric”, used by Alves and Oliveira (2001), opposes the modern notion of a fragmented character of knowledge, allowing the understanding of the process of knowing to include other concerns of the practitioner in its multidimensionality” (SANTOS; SANTOS, 2013, p. 50).

And, more and more, due to hyperconnection, we think, express ourselves and negotiate meanings in a plural way, that is, we think with others mediated by our smartphones connected to the internet (SANTOS; WEBER, 2018). In this context, the social network WhatsApp is currently a cultural artifact for the interaction, both personal and professional, of human beings around the world (ALVES; PORTO, 2016; OLIVEIRA, 2017). We know about you that (TABELA 1):

**Table 1 –Foundation, users, mission**

<b>Foundation</b>	WhatsApp was founded by Jan Koum and Brian Acton, who together spent nearly 20 years at Yahoo. WhatsApp joined Facebook <sup>3</sup> in 2014, however it continues to operate as an independent application and with a focused focus on building a messaging service that is fast and works anywhere in the world.
<b>Users</b>	More than 1 billion people in more than 180 countries use WhatsApp to keep in touch with friends and family, anytime, anywhere. WhatsApp is free <sup>2</sup> and offers messaging and calling services in a simple and secure way. It is available on cell phones around the world.
<b>Mission</b>	WhatsApp emerged as an alternative to the SMS system and now makes it possible to send and receive various media files: photos, videos, documents and location, as well as texts and voice calls. Our messages and calls are protected with end-to-end encryption, which means that third parties, including WhatsApp, cannot read or hear them. Behind every decision is our desire to enable people to communicate without barriers, anywhere in the world.

Source:WhatsApp (2019).

WhatsApp, according to its official website (<https://whatsapp.com>), can be downloaded for free on any smartphone and even on any computers. It offers, in an environment presented as secure and encrypted, a range of functionalities, which we understand as cultural artifacts. As cultural artifacts, we understand with Weber and Santos (2013, p. 173) that they range from "the book, to mass media and finally to hyper-media", and that "our appropriations of these artifacts have been modifying our own relationship with the construction of the knowledge, being impossible today to think about a knowledge that is not affected by the digital network".

The WhatsApp features that are available to the public through an

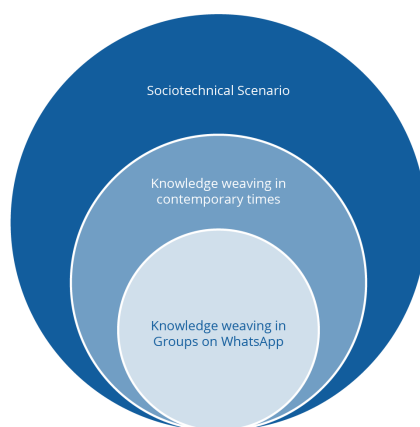
<sup>3</sup> Worldwide Social Network.

internet connection are: text messages; group conversations; voice and video calls; sharing photos and videos; document sharing; audio sharing; use on the computer screen.

In this way, as this social network started to integrate the daily life of a significant part of the world population and directly interfere in the way in which it interacts with the world, and also, as we are interested in reflecting on the collective interaction of its users, a Since the way in which contemporary knowledge interacts points to plurality, this theoretical essay seeks to present a reflection on how knowledge can be woven into WhatsApp groups gathered around a theme, which is the motivating question of this study.

To achieve this goal, we structured this essay based on this introduction, which presents it, justifies its importance and outlines our research question and the structure of the present work. In the other sections, we present the methodological paths of the article; we make a presentation of the socio-technical scenario that led to the emergence and diffusion of WhatsApp; we established a discussion about the fabric of knowledge in cyberculture in general; we make considerations about the weaving of knowledge in groups in this social network gathered around a common theme (FIGURE 1) and make our final considerations, seeking to answer the question raised, through our interpretation of the raised references.

**Figure 1 – Structuring our discussion**



Source: Prepared by the authors.

## 2. Methodological Procedures

The present study is characterized as a theoretical essay that seeks to present reflections on the weaving of knowledge in WhatsApp groups, through articulations between our interpretations of scientific articles and books related to the object of study of this work. These articles and books were raised from the scientific repository of Teaching and Cyberculture Research Group (GPDOC-UERJ), for the relevance of their studies on the topic, and of authors related to this repository.

A theoretical essay, according to Meneghetti (2011, p. 323), is "a means of analysis and clarification in relation to the object, regardless of its nature or characteristic. The essay form is the method in which new knowledge, even scientific or pre-scientific. "As for the object of this analysis, it is known that it" can be material or immaterial, concrete or abstract, but it is always real, as it exists as something that appears, has essence and is fully knowable. Others can derive from one object, because, as a phenomenon, it can manifest itself in different ways" (p. 324).

Now, the essay does not presuppose nor does it require "empirical proof, even though it may present itself as an element of confirmation of assumptions. This is permanent reflection, in which the centrality of its strength is less in the empirical evidence and more in the attributes of reason. that thinks reality" (MENEGETTI, 2011, p. 326).

Therefore, the present essay is constituted of the relations between the reflections constructed here and the object of these reflections, which are based on the literature raised and which do not intend to be an end point about the object, but rather, to provoke and provoke the reader in the sense that reflect on the topic in focus.

### 3. Sociotechnical Scenario And Emergence Of Groups

In order to dialogue with our object, the fabric of knowledge in WhatsApp groups, it is necessary to understand the socio-technical scenario in which this social network emerges and establishes itself. Now, we live in the postmodern era, also known as the information society.

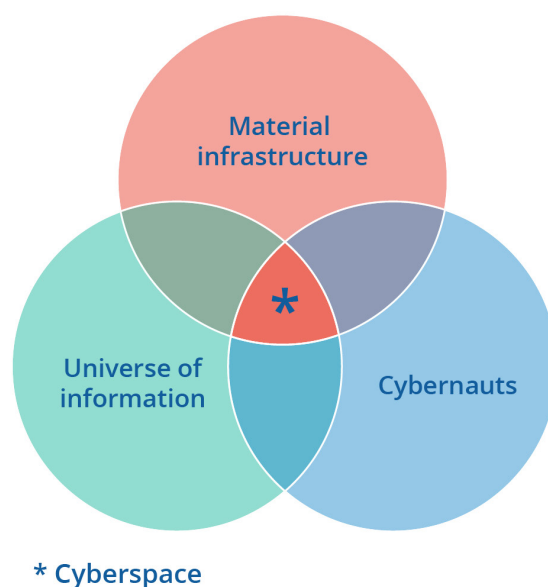
Such an era arises in the second half of the twentieth century, together with the consumer society and the mass media that have profoundly changed the way in which a large part of the human population relates. It is from this advent that compulsory consumption is started, not only material goods, but also information of any kind, a need that is stimulated and reinforced all the time by advertising and the mass media sponsored by the first, which gradually flooded society and dictating the customs of the population (LÉVY, 1999).

Created at the end of the 20th century, cyberspace comes into existence from the worldwide interconnection of computers and can be understood as an open communication space<sup>4</sup>. It offers potentialities that we must explore positively in the different fields of human activity.

This space is the result of an international movement of people eager for interaction. Thus, cyberspace encompasses the entire material infrastructure of digital communication, the oceanic universe of information that it houses, and also the human beings (cybernauts) that navigate and feed this universe (FIGURE 2). In this way, those who interact with it are the citizens of that space in which all their interactions and information stored and interconnected by the internet are part of (LÉVY, 1999).

---

<sup>4</sup> A palavra “ciberespaço” foi inventada em 1984 por William Gibson em seu romance de ficção científica *Neuromante*. No referido livro, esse termo designa o universo das redes digitais e é descrito como a nova fronteira econômica e cultural (LÉVY, 1999).

**Figure 2 – Cyberspace as the intersection of three sets**

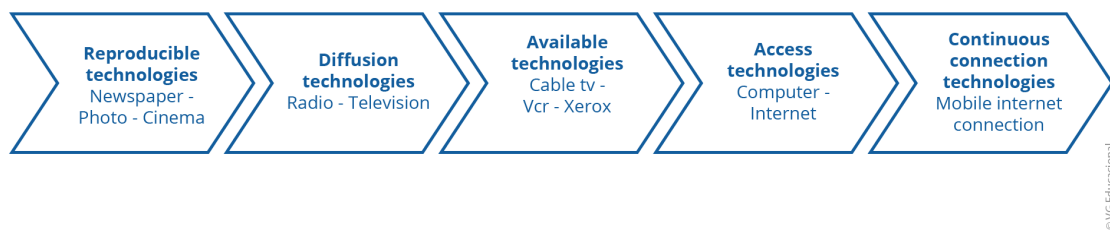
eVGC Educacional

Source: Prepared by the authors.

It is an electronically produced space that, at the same time, is everywhere and nowhere. It is a “no place” that allows free, decentralized, multimedia access, that connects users to their idiosyncrasies, is fast and in which information appears and disappears on the screens at every click. Thus, this space expands the possibilities for the encounter with the other, because, in it, it is possible for people with different nationalities and locations to interact, according to common interests, without having to worry about distances, passports, visas and long trips to meetings. face-to-face, as cyberspace does without all this (SANTAELLA, 2010).

But, how do we get to this hyperconnected world? To answer this question, Santaella (2010) demarcates five technological generations that have succeeded in human activity and that have resulted in the complexity and connectivity of our contemporary culture, namely: reproducible technologies (newspaper, photo, cinema); diffusion technologies (radio, television); available technologies (cable TV, VCR, xerox); access technologies (computer, internet) and technologies of continuous connection (mobile internet connection), as in Figure 3.

### Figure 3 – Five technological generations



Source: Prepared based on Santaella (2010).

We understand with Weber (2012) that the newspaper, the photo, the cinema, the radio, the television, the computer, the internet and the mobile internet connection are cultural artifacts created by the human being, aiming to share knowledge. They represent the will of the human being to share information, to learn about news, to circulate knowledge, to spread art, in short, they are born from their thirst for communication.

In this process, the technologies of the reproducible (newspaper, photo, cinema) expanded the possibilities and made the circulation of information cheaper. In the case of writing, in order for information to be passed on, it was copied in a slow and expensive process or it was passed on orally with the natural distortions expected in this mode of reproduction and transmission. In the case of the image, in order for something to be portrayed, a talented painter was needed who was able to accurately reproduce the required image, which was very costly and time-consuming.

With cinema, stories started to be told, initially, with video and written words (silent cinema) and, later, with audio, which greatly expanded the possibility of spreading, not only entertainment, but also information, a since it was also used for reproduction. Information and entertainment, at that time, were totally different and the boundaries between them were well-defined.

Diffusion technologies (radio, TV) have further expanded the



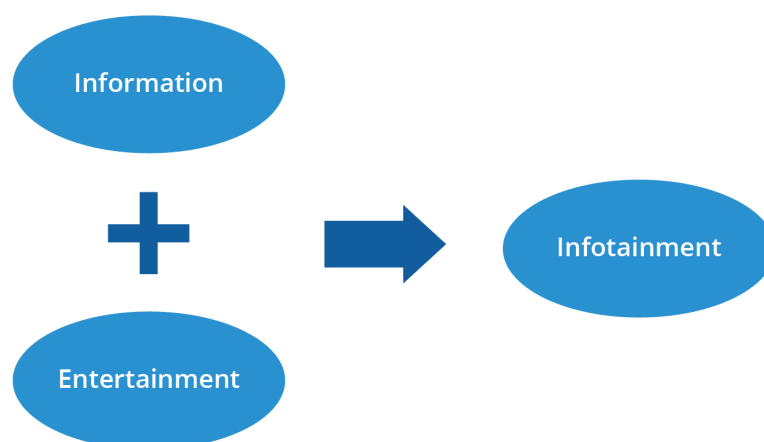
circulation of information, bringing it closer to people's daily lives. Such technologies started to offer information and entertainment closer to the most immediate interests of the consuming public, but, still, with well-demarcated borders between information and entertainment.

The available technologies (cable TV, VCR, xerox) bring with them the advantages of diffusion technologies, adding mobility to them, expanding the possibilities of consumer choice regarding the moment and place of consumption of information and entertainment provided by them separately and demarcated.

Up to the present stage, information flows from the generating poles to its consumers, in a one-way street. In access technologies (computer, internet), initially, the consumer received content, however, since the second generation of the internet (Web 2.0), the direction of information sharing has changed, since then, the consumer also generates and disseminates contents.

Thus, in the era of Web 2.0, the arrow that was one-way becomes two-way. Also in this stage, information and entertainment are merged and confused, and it is no longer possible to see a border between them, as shown in Figure 4.

**Figure 4 – Infotainment**



© VG Educacional

Source: Prepared by the authors.

In continuous connection technologies (mobile internet connection), not only does the consumer also produce content in a two-way street, but it also frees it from connection and interaction elements attached to a wall. Here, the cyber user produces, receives and interferes with the content received in real time. At this stage, any boundaries previously defined are even more porous and uncertain.

However, the fact of the fraying of borders and the radical change of people's roles in each new environment does not mean that cyberculture has erased previous media. This is not what happens with each new emerging interaction channel: radio has not eliminated newspapers, nor has television extinguished radio, just as movie rental companies have not eliminated cinema. Also, we cannot say that each of these media, with which we interact over time, has remained unscathed by each emerging technological novelty. What exists is a reframing in this process. To take a current example, the movie rental service has not disappeared, what is in extinction are physical rental companies. Confirming the aforementioned reality, we see that streaming services like Netflix<sup>5</sup> show progressive profits and amazing growth.

Such generations interconnect and coexist, since a new technology does not erase the previous one, but rather refreshes it, creating completely new socio-cultural environments. This is because: "What it does is change the social functions performed by the previous technologies, causing realignments in the role that each one has to play" (SANTAELLA, 2010, p. 18).

In this way, the existence of cyberspace is gradually incorporated into the cultural melting pot in which human beings are immersed. The culture plus cyberspace is called cyberculture. For Lévy (1999, p. 18) "cyberculture", specifies here the set of techniques (material and intellectual), practices, attitudes, ways of thinking and values that develop together with the growth of cyberspace".

---

<sup>5</sup> Netflix is a cyberspace-based platform that provides on-demand access to movies and series by monthly subscription.

It can be understood as a contemporary culture that is structured based on the performance, at different levels, of its members. Performance that passes and is pervaded by cyberspace all the time. In all areas of human activity, it is present, since human beings, from it, start to communicate in a plural way, mediated by the gadgets<sup>6</sup> of continuous access.

Cyberculture, therefore, is impregnated by the activities of its members, through its material infrastructure, soaks and interferes in the daily lives online and offline of its "citizens" (LÉVY, 1999; SANTOS, 2011).

## 4. Weaving Knowledge In Contemporary Times

In order to reflect on the weaving of knowledge in WhatsApp groups, it is necessary to elaborate on this weaving in contemporary times. The idea, in this item, is to think of this composition beyond WhatsApp, reflecting on the context in which this social network and, in particular, its groups are inserted.

The internet has revolutionized the way we relate to knowledge. It is from Web 2.0 that we cease to be receptacles of information and that we also become its producers and distributors. Santaella (2014) summarizes this paradigm shift, when he states that the acquisition of knowledge depends on the materiality of the interfaces that mediate this acquisition. Lévy (2004, p. 176) complements this idea when he states that:

In addition to its specialized meaning in computer science or chemistry, the notion of interface refers to translation operations, of establishing contact between heterogeneous media. It remembers at the same time the communication (or transport) and the transforming processes necessary for the success of the transmission. The interface keeps the two dimensions of becoming together: movement and metamorphosis. It is the operator of the ticket.

---

<sup>6</sup> Electronic devices.

Now, in the era of Web 2.0, the availability of interfaces, the two-way way of sharing and the dissemination of information bring challenges to “the entire secular tradition of educational resources and practices”, as stated by Santaella (2014, p. 17) . The author also warns that:

Digital media came to shuffle the cards of the game, in all fields of social, political, cultural, communicational, educational with repercussions in the psyche, in the ways of thinking and knowing, in the dispositions to act and in the ways of perceiving and feeling and interacting . There is no stronghold of human life that has remained unscathed by the digital maelstrom (SANTAELLA, 2014, p. 15).

Therefore, human interaction in cyberspace “is an ingredient without which contemporary culture, work, art, science and education, in fact the whole range of social interactions, is unthinkable” (ARONOWITZ, 1995, p. 22 quoted by SANTAELLA , 2003, p. 30).

It is not possible to think, in the contemporary world, for a large part of the world population, in a human interaction dissociated from the technology that impregnates what "touches". In this scenario, how can we think about human interactions disconnected from smartphones that are constantly being loaded by ourselves and by many of our contemporaries? These devices can be thought of not only as communication tools, but also as artifacts that expand our action in and on the world. Regarding the relations between tools and artifacts, Santaella explains (1997, p. 33) that:

[...] Like utensils, tools are also artifacts. As the etymology of the word stipulates, derived from the Latin adjective *utensilis*, which means "fit for use", utensils are produced with the primary purpose of being used. Unlike utensils, however, tools are artifacts designed as a means of accomplishing a job or a task. They therefore work as extensions or extensions of skills.

In a similar perspective, Borba and Souto (2016, n.p.) question, already in the title of their article: “Human beings-with-internet or internet-with-human beings: an exchange of roles?” and they discuss a little of this symbiotic relationship as an expansion of the human beings-with-media construct, coined by Borba and Villarreal (2005). For the authors,

This approach [human beings-with-internet] harmonizes with the epistemological view of the human-beings-with-media construct, since the feedback given by the media during an experimentation can generate debates, discussions, questions, ideas and different possibilities for solving problems. a given problem by those involved in solving the problem. This perspective is permeated by the perspective of collective, collaborative and dialogical work, since in this construct humans and media are seen as a unit that produces knowledge (BORBA; SOUTO, 2016, n.p.).

From the two quotations above, it may be possible to infer that we currently live in a context in which technology modifies the human, which also acts on it, in a way that no limit is distinguished between human beings and machines. In other words, here, we are faced with the post-human of Santaella (2003), that is, with the human who is also a machine and the machine humanized by its user.

This hyperconnected reality brings, in addition to its inevitable challenges, advantages never imagined in the pre-internet era. According to Santaella (2014), mobile media facilitate the weaving of knowledge, as they provide ubiquitous access to information (which occurs at any time, anywhere) and offer personalized and individualized connectivity, intensifying collaboration in real time, facilitating the meeting of informal groups with common concerns and interests. In times of human beings in a network and in the network, there is always some exchange happening, there is always interaction and knowledge being woven in a plural way.

Faced with the human-beings-with-internet construct, with high

connectivity, and with an overabundance of information, the production of knowledge is increasingly collective, since “at the beginning of the connection, it is necessary to co-create in a network, connection with other people, producing meanings, exchanging information, circulating, distributing information, knowledge, knowledge” (SANTOS, 2011, p. 40). In cyberculture, knowledge is co-created by many hands continuously, often connecting people who have never been in direct contact, but whose ideas are found through us and the different networks to which they belong and who connect online and offline. line, through common actors and ideas.

This plural and ubiquitous fabric of knowledge in cyberculture, Santaella (2014) calls ubiquitous learning. Regarding it, it is known that,

Its most striking feature is found in spontaneity. Wherever the user is, an occasional curiosity arises, it can be instantly sated [...]. [Therefore,] the type of learning that is developed is open, individual or group, and can be obtained in any occasions, eventualities, circumstances and contexts (SANTAELLA, 2014, p. 19).

For Santos (2005, p. 140), “Since cyberspace is a fertile environment for communication and learning, new processes and products are being instituted. New training possibilities are emerging and, consequently, new research”. Therefore, we are witnessing a resignification of borders and role delineations. In this context, everything that was well-defined in the pre-cyberspace scenario is transmuted and seems to change roles depending on the point of view from which one looks. These boundaries change radically with the advent of cyberculture and intelligence technologies, because from there, entertainment and information merge.

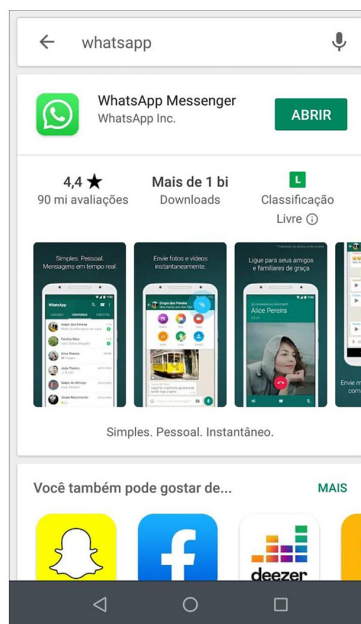
In this new environment, changes take place at ever more amazing speeds, and navigating the seas of the internet brings challenges. According to Silva and Alves (2018), information is increasingly available on the large Internet network, but it is necessary to know how to filter, select and evaluate the content critically accessed, since a large part of humanity is already connected, having access, from absolutely decentralized way, to all kinds of information.

## 5. Weaving Knowledge In Whatsapp Groups

In this item, we come to the direct discussion of the weaving of knowledge in WhatsApp groups, a topic we intend to reflect on in this essay. We have already presented the socio-technical scenario in which this social network is inserted, as well as we weave, in general, explanations about the weaving of knowledge in contemporary times, which uses the aforementioned socio-technical scenario.

Our arguments here take into account the fact that, although WhatsApp can be accessed on computers, it is used massively on smartphones (for example, currently, only Google Play<sup>7</sup> has more than one billion downloads of the application of this social network) (FIGURE 5).

**Figure 5<sup>8</sup> – Downloads**



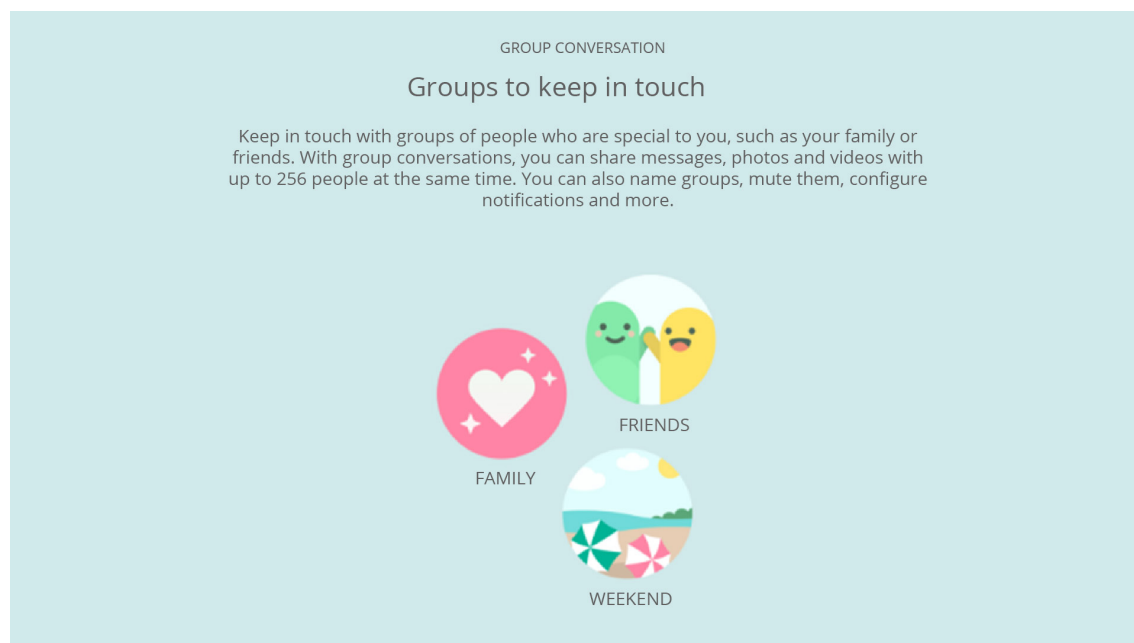
Source: Google Play screenshot taken by the authors (2019).

<sup>7</sup> Virtual store where you can download or buy apps for smartphones on the Android system (operating system developed by Google). There are also virtual stores for the other two operating systems: IOS and Windows.

<sup>8</sup> Image taken directly from Google Play on 6/11/2019.

Now, the cultural artifacts of WhatsApp were elaborated and designed for interaction via mobile phone application. Among these artifacts, we are especially interested in the groups of this social network (FIGURE 6).

**Figure 6 – Description of the groups**



Source: WhatsApp (2019, on-line).

WhatsApp groups were created by their developers for interactions, aiming at the leisure of their users, however their functionalities were understood by researchers as transcendent to this creation.

According to Alves and Porto (2016), the cultural artifacts of WhatsApp make it possible, in the palm of your hand, via smartphone, to record the storage of the interactional flows of several participants with common interests gathered in a group, asynchronous monitoring-participation and continuous access to the group's present and past discussions, due to the spatio-temporal capacity of this application, which allows its use as an app-learning<sup>9</sup>.

App-learning is learning by applications and social networking sites via the internet. From these, it is possible to have access to information,

<sup>9</sup> Learning via apps.



interact with peers, build and share knowledge in a collaborative way, without the need for a physical pole. In addition, the fact that the interaction takes place in a non-place brings, as an advantage, the breaking down of borders and physical distances, expanding, on a global scale, the reach of interaction with other actors in this process.

In addition to the space-time capacity, the app-learning allows: the generation of feedbacks in the course of the discussions; that the participants are informed of the interactional flows without the physical co-presence of the interactants; access to audios, videos and various documents in the order and context in which they were posted, to have some examples.

In this context, applications can be used as “support for the teaching and learning process, exerting a positive influence on the students' engagement in their studies and expanding the discussions and the classroom space” (ALVES; PORTO, 2016, p. 1).

The discussions and materials shared by a group in the WhatsApp<sup>10</sup>, for example, are recorded and available for consultation by its participants. However, the dynamics of the application itself make this consultation difficult in the event that the group considered to be very useful, as the conversations unfold on the screen and the previous interactions disappear from the participants' field of view very quickly.

In these groups, we have access to a range of hypertexts since this social network supports, as mentioned above, synchronous and asynchronous conversations, sharing of hyperlinks, audios, videos and documents in different formats. This happens because this social network uses the functionalities of mobile technologies which provide hypermedia resources to its users.

Such resources can give rise to ubiquitous situations of knowledge weaving in which they can “assume a posture of active subjects, with argumentative and reflective capacities, as they build and reconstruct concepts, present didactic strategies through the different

---

<sup>10</sup> Installing and using this application requires a smartphone connected to the internet.

functionalities of these environments” (OLIVEIRA, 2017, p. 226). In this way, mobile technologies enrich human interactions by providing these multiple resources.

In WhatsApp groups, interactions between participants take place through informational interfaces, which are ports, connected by bits and bytes through which we enter cyberspace and have access not only to the other, but also to different content that we can freely share, watch, indicate the audience through *links*<sup>11</sup> etc. Regarding the term "interface", Santos (2011, p. 90) explains that it came about "with the plug adapters used to connect electronic circuits. Then, it started to be used for the video equipment used to examine the system and if it refers to the human connection with the machines and even the human entry into cyberspace".

More than the simple transit of knowledge, what is at stake is the production of meanings based on this interaction, since, together with Santos, Carvalho and Maddalena (2017, p. 210):

[...] we defend a conception of Education in which we believe that knowledge is woven into networks of meanings and relationships. In this context, knowledge emerges in the encounter, in the connection, in the network, in the conversations and “in between”. In this perspective, we interact not only with each other, but also with things, with images, with texts, with sounds, with memories, with devices and everything else that is in the world. Thus, it is clear that new digital technologies not only enhance these networks, but are an integral part of them. They are constitutive of woven knowledge.

Thus, in a WhatsApp group one interacts with the other in cyberspace and with all the hypermedia possibilities that this environment provides, that is, meanings with the other can be woven and with all the cultural artifacts that the other uses.

---

<sup>11</sup> E-mail addresses.

In a WhatsApp group, the possible weaving of knowledge gains prominence, and the idea of knowledge transmission / reproduction gains a secondary role, that is, the weaving of knowledge becomes part of the collective in which one interacts. Here, the construction of knowledge is not the product of their reproduction, but the result of the intellectual engagement of people around a theme (OLIVEIRA, 2017).

Therefore, a process of producing knowledge about problems experienced by the participant may occur within the group. Therefore, the set of contents and strategies of and in the action of its members, discussed in the group, emerge, in this context, through problems, themes and needs of all the subjects involved. And the knowledge emerges from / in the exchange and / in the sharing of meanings of those involved in / by the collective (SANTOS, 2005).

We understand, with Santos, Carvalho and Maddalena (2017), that the weaving of knowledge is a process that occurs in a network and in the network and that, in these interactions, we share and signify our knowledge, values and practices in a two-way street. Furthermore, it is known, with Oliveira (2017, p. 220), that: “mobile technologies can provide learning contexts that favor reflective and authoring thinking”, this allows the highlighting of “new dimensions of network interaction, going beyond linearity with hypertext” (p. 220).

This is because “the navigability of a hypertextual environment corresponds to the user's ease of finding information, available in the form of pages linked by links, allowing the user to quickly locate information” (OLIVEIRA, 2017, p. 220). In this perspective, nothing is immutable, because “when the reader chooses his path in the network, he interferes in the organization of the space and meaning of the text, interconnects networks hidden under the nodes, thus activating semantic constructions, or nullifies them if they are not those of your preference” (p. 220).

However, it is important to highlight that the excess of functionalities and multitasking behavior resulting from the concomitant use of resources is pointed out by Carr (2010) as an obstacle to the retention of information and the development of more in-depth reasoning. According to this author, human activities that result from the elaboration of several

tasks at the same time, in an environment in which there is a profusion of distractors (e-mail notifications, beeps announcing messages, several elements available at the same time on the screen, etc.), lead to a superficial understanding of the reality in which the subject is inserted.

Groups on WhatsApp can be constituted, if thought and organized for this purpose, at the intersection between the ubiquitous fabric of knowledge and formal education. It is possible, therefore, in these groups, to build a structured environment in which the intersection between such fabric and formal education is sought. This is the case, for example, of the “WhatsAula” environment designed by Alves and Porto (2016) in which they use the features of a WhatsApp group to connect a planned class with the chaotic information provided by the interaction with cyberspace .

We also understand, with Santos (2011, p. 94), that “the dynamics of online environments are capable of creating Social Teaching and Learning Networks, as such environments allow significant learning experiences in different cyberculture times”. We also understand, with Santaella (2010), that these processes happen in a chaotic and ubiquitous way.

Now, the internet, while freely connecting people with different interests, is also the repository of informational products of these exchanges. In this context, learning has no time to happen, nor a well-defined curriculum. However, the presence of a qualified mediator for the process is essential, in order to avoid mistakes.

Still, according to Oliveira (2017), groups on WhatsApp have been gaining space, from an educational point of view, for experiences of weaving knowledge detached from the classroom *modus operandi*. This means that, in this space, the construction of knowledge and the production of meanings happen in a non-linear way, at the pace and in the interests of the participants themselves.

## 6. Final Considerations

We understand that, in a WhatsApp group, the different modalities of interaction, between the participants of a group, can create, in a virtual and ubiquitous way, an environment of mutual impregnation of meanings and knowledge, in which the participants are at the same time. apprentices and teachers.

It is worth mentioning that it is not possible to discipline the construction of knowledge in cyberspace, since, all the time, it is being woven, from the experiences of its Internet users. Such construction takes place in an absolutely fragmented and unpredictable way. In this environment, the subjects express themselves freely, either in one-to-one interactions, or in all-all interactions and promote the exchange and sharing of knowledge based on their interests.

This position is in line with the assumptions of the ubiquitous fabric of knowledge, from which we have the perception that the construction of knowledge takes place in a connected, pulverized and chaotic perspective. It is important, however, to point out that a WhatsApp group itself is only a medium, a support for the elaboration and sharing of narratives. And media are channels, in which information travels. It is, therefore, an interface with their idiosyncrasies, through which human beings interact.

We understand, from the researched references and the raised discussion, the groups on WhatsApp as a cyber environment, as a non-place, in which knowledge can be woven in a shared way regardless of the geographic location of its participants. We must also emphasize that, on the one hand, there are different cultural artifacts in favor of the engagement of people and the shared fabric of knowledge; on the other hand, we may have little depth in which these interactions take place. Thus, everything in this universe tends to be faster and more fluid, which can lead to discussions rich in subsidies, but without deepening. Finally, we understand that the groups on WhatsApp bring the perspective of a chaotic and ubiquitous community construction of knowledge within a theme of interest to a collective.

## References

ALVES, A. L.; PORTO, C. M. Whatsaula: tudo híbrido e misturado. In: CONGRESSO NACIONAL DE EDUCAÇÃO, 4., 2016, Natal. **Anais...** [...]. Natal: Conedu, 2016. p. 5-7.

APLICATIVO. DICIO: Dicionário Online de Português. [S. l.]: 7 Graus, [2021a]. Disponível em: <https://www.dicio.com.br/aplicativo/>. Acesso em: 4 fev. 2021.

ARONOWITZ, S. Technology and the future of work. In: **Culture on the brink: Ideologies of technology**, Gretchen Bender e Timothy Druckrey (ed.). Seattle: Bay Press, 1995. p. 15-30.

BORBA, M. C.; SOUTO, D. L. P. Seres Humanos-Com-Internet ou Internet-Com-Seres Humanos: uma troca de papéis? **Relime**, v. 19, n. 2, p. 1-26, 2016.

BORBA, M. C.; VILLARREAL, M. V. **Humans-with-media and the reorganization of mathematical thinking: information and communication technologies, modeling, experimentation and visualization**. New York: Springer, 2005.

CARR, N. **The Shallows: what the internet is doing with our brains**. Nova York: W. W. Norton & Company, 2010.

CRIPTOGRAFIA. In: SIGNIFICADOS. [S. l.]: 7 Graus, [2021b]. Disponível em: <https://www.significados.com.br/criptografia>. Acesso em: 4 fev. 2021.

LÉVY, P. **Cibercultura**. São Paulo: Ed. 34, 1999.

LÉVY, P. **As tecnologias da inteligência: o futuro do pensamento na era da informática**. São Paulo: Ed. 34, 2004.

MENEGHETTI, F. K. O que é um ensaio teórico? **Revista de Administração Contemporânea**, v. 15, n. 2, p. 320-332, 2011.

OLIVEIRA, C. A. Entre processos formativos e interativos: o WhatsApp como espaço significativo na orientação e formação. In: PORTO, C.;

OLIVEIRA, K. E.; CHAGAS, A. (org.). **WhatsApp e educação**. Salvador: EDUFBA, 2017. p. 217-234.

OLIVEIRA, I. B.; ALVES, N. **Pesquisa no/do cotidiano das escolas: sobre redes de saberes**. Rio de Janeiro: DP&A. 2001.

SANTAELLA, L. A aprendizagem ubíqua substitui a educação formal? **Revista de Computação e Tecnologia da PUC-SP**, v. 2, n. 1, p. 17-22, 2010.

SANTAELLA, L. A aprendizagem ubíqua na educação aberta. **Revista Tempos e Espaços em Educação**, v. 7, n. 14, p. 15-22, 2014.

SANTAELLA, L. Da cultura das mídias à Cibercultura: o advento do pós-humano. **Revista Famecos**, v. 1, n. 22, p. 23-32, 2003.

SANTAELLA, L. O homem e as máquinas. In: DOMINGUES, D. (org.). **A arte no século XXI: a humanização das tecnologias**. São Paulo: Editora da Unesp, 1997. p. 33-44.

SANTOS, E. **Educação online: cibercultura e pesquisa-formação na prática docente**. 2005. 351 f. Tese (Doutorado em Educação) – Faculdade de Educação, Universidade Federal da Bahia, Salvador, 2005.

SANTOS, E.; MADDALENA, T. L.; ROSSINI, T. S. S. Diário hipertextual online de pesquisa: uma experiência com o aplicativo Evernote. In: SANTOS, E.; CAPUTO, S. G. (org.). **Diário de pesquisa na Cibercultura: narrativas multirreferenciais com os cotidianos**. Rio de Janeiro: Omodê, 2018. p. 91-110.

SANTOS, E. O.; SANTOS, R. A tessitura do conhecimento via mídias e redes sociais da internet: notas de uma pesquisa-formação multirreferencial em um curso de especialização. **Educ. foco**, Juiz de Fora, v. 18, n. 1, p. 43-69, mar. / jun. 2013.

SANTOS, E.; WEBER, A. Diários online, Cibercultura e pesquisa-formação multirreferencial. In: ENCONTRO NACIONAL DE DIDÁTICA E PRÁTICAS DE ENSINO, 17., 2014, Fortaleza. **Anais [...]**. Fortaleza: Endipe, 2014. p. 11-14.

SANTOS, E.; WEBER, A. Diários online, Cibercultura e pesquisa formação multirreferencial. *In*: SANTOS, E.; CAPUTO, S. G. (org.). **Diário de pesquisa na Cibercultura: narrativas multirreferenciais com os cotidianos**. Rio de Janeiro: Omodê, 2018. p. 22-46.

SANTOS, R. **A tessitura do conhecimento via mídias digitais e redes sociais: itinerâncias de uma pesquisa-formação multirreferencial**. 2011. 232 f. Dissertação (Mestrado em Educação) – Faculdade de Educação, Universidade do Estado do Rio de Janeiro, Rio de Janeiro, 2011.

SANTOS, R.; CARVALHO, F. S. P.; MADDALENA, T. L. Conversas ubíquas via WhatsApp: ambiências formativas multirreferenciais. *In*: PORTO, C.; OLIVEIRA, K. E.; CHAGAS, A. (org.). **WhatsApp e educação**. Salvador: EDUFBA, 2017. p. 193-216.

SILVA, B. D.; ALVES, E. J. O. Aplicativo WhatsApp em contextos educativos de letramento digital: possibilidades e desafios. **Revista Observatório**, v. 4, n. 5, p. 45-68, 2018.

WEBER, A. A. N. R. **Educação e Cibercultura: narrativas de mobilidade ubíqua**. 2012. 209 f. Dissertação (Mestrado em Educação) – Faculdade de Educação, Universidade do Estado do Rio de Janeiro, Rio de Janeiro, 2012.

WEBER, A. A. N. R.; SANTOS, E. Educação online em tempos de mobilidade e aprendizagem ubíqua: desafios para as práticas pedagógicas na cibercultura. **Revista EDaPECI**, v. 13. n. 2, p. 168-183, 2013.

WHATSAPP. **Sobre**. 2019. Disponível em: <https://www.whatsapp.com/about/>. Acesso em: 9 jun. 2019.