THE POTENTIAL USE OF SMARTPHONE AND SOCIAL NETWORKS IN PUBLIC SCHOOLS: A CASE STUDY IN NORTH OF BRAZIL

Eva Daltio, José Gama, George França, David Prata and Gentil Veloso
Programa De Pós-Graduação Em Modelagem Computacional De Sistemas - PPGMCS
Universidade Federal Do Tocantins – UFT, Brazil

ABSTRACT

This paper analysis the relationship between smartphones and social networks as compatible technologies with the school´s pedagogical demands in the 21st century. In the classroom there are some challenges imposed by their own dynamics, these analyses aims to highlight the potential of teaching and learning productivity and the contribution of these technologies focus on the production of knowledge. The information contextualized in this analysis has the focus into the base of the research and the objective and it was collected from a public high school in Palmas, the capital of Tocantins state in Brazil. In this study 212 students and 27 teachers participated. The results confirm the need to change from traditional teaching to practice focused on curricular integration of information and communication technologies (ICT), considering the intense relationship and time of students and teachers with the virtual world. This relationship is intensified by the popularization and dissemination of mobile technologies and the importance attached to social networks in the context of social relations.

KEYWORDS

Smartphone, Social Networks, Learning, Digital Technologies, School

1. INTRODUCTION

The advancement of science and technology in the last decades has defined a milestone in contemporary society, the so-called "knowledge society" in Castells´ definitions (1999). This phenomenon consolidated the presence of a new time in communications. In this scenario, ICT (Information and Communication Technologies) assumes an immeasurable importance to the global context, where knowledge generates and improves new technologies, contributing to the production of new knowledge in a continuous process.

In this sense, the United Nations Educational, Scientific and Cultural Organization (UNESCO) gives prominence to mobile technologies, characterized by the use of tablets, iPads, portable book devices, game consoles, and especially the smartphones, defining mobile devices as: “digital, easily portable, owned and controlled by an individual rather than an institution, with access to the internet and multimedia aspects, capable to facilitate a large number of tasks, particularly those related to communication”. (Unesco: 8).

This scenario influences and contributes to the transformations in social relations evidenced by the use in different types of media, mainly due to relationship by the internet. These technologies reinvent and are reinvented by every function, thing, or attribute; the innovations, adaptations and discoveries succeed, overlap, interconnect and complement each other in a linear, bidirectional and / or multidirectional sense, characterizing the flow spaces of the (Castells, 1999) society design.

According to this techno-sociocultural panorama, it is possible to visualize and verify the power and influence of social networks in people's lives, as well as the ease of access to different social groups, according to the phenomenon of mobility and portability, characterized by the presence of mobile devices, notably the popularization of smartphones.

Associated with the increasing speed of access to information, competitiveness for the production of smartphone applications intensifies, making it possible to access all types of services and interests of users. This ubiquitous characterization allows the formation of social networks, in which users can carry out any type of business interest, whether consumer or content producer.

In this scenario, it should be noted that young people are connected to the Internet and to the social networks, producing, distributing and consuming a lot of information. This reality has generated increasing demands in the relation between the number of users gradually avid for new electronic devices with capacity for the production and distribution of contents, for the most different purposes. The popularization of the smartphones, associated to the facilities and attributes of ICT, has given a new identity to the youth of the 21st century, regardless of the social class to which it belongs.

Thus, the ICT exerts pressure on the industrial, economic and social processes of production, also does educational policies to their respective didactic-pedagogical processes within Brazilian public schools.

For a better contextualization, this approach will be presented in five sections namely. In the introduction, where will be visualized the theme and its evolution, in agreement with the smartphones, social networks and teaching and learning. In the second section, the relationship between smartphone and social networks is approached in greater depth, based on many authors, such as (Lemos, 2004), (Valente, 2011), (Bonilla, 2005). Statistical data are extracted from the Brazilian Institute of Geography and Statistics (IBGE), the National Telecommunications Agency (ANATEL), the Global System for Mobile Association (GSMA) and the United Nations Educational, Scientific and Cultural Organization (UNESCO). In the third section, the data of a high school of Palmas, capital city of Tocantins federal state, is presented. The database is analyzed in relation to the provision of teachers to integrate the use of ICT in public education. Finally, in the fourth section , the opinions and conclusions built during the survey are carried out.

2. SMARTPHONES AND SOCIAL NETWORKS

From the first telephone call that took place in April 1973 to the present, the cellular device went through a process of evolution that marked the history of telecommunications. Since 2007, with the launch of the iPhone by Apple, smartphones have emerged and have taken a leading position in the world.

The dynamics of this evolution from the cellular apparatus to the smartphones is present, both in its anatomical and functional structure, and in the fact that it becomes a ubiquitous and pervasive phenomenon, according to (Hansmann, 2003). The most part of its popularization is due to the convergence property of applications available to the most different types of users and services, as well as the refinement related to the size, weight and quality of images. These characteristics identify it as a kind of "(...)" handyman ", in the view of (Lemos, 2004).

As new versions are released in the market, smartphones bring more features, in an attempt to overcome previous versions and the version of competitors to meet the requirements of users. In addition, the mobility and portability attributes take advantages and facilities to these mobile devices. Conceptually, the property of mobility can be understood as the possibility of using mobile devices connected during displacements (Lemos, 2008) and (Alves, 2009). In contrast, the portability is the faculty that fixed and mobile telephony users have been given to carry their lines to the operators that best suite them. According to the National Telecommunications Agency, Anatel, numeric portability is "a facility that enables the fixed and mobile telephony services customer to maintain the telephone number (access code) assigned to it." This property now requires a greater investment from telephony companies in order to meet the requirements of an emerging market and a new consumer profile.

According to the estimate made by IBGE, Brazilian Institute of Geography and Statistics, Brazil country has more than 207 million inhabitants. It is the Latin American country best placed in relation to the use of smartphones, with 234.6 million devices connected to the internet (2017). Of this total, 73% use the 4G technology, according to a report from the GSMA agency, responsible for GSM technology.

It is necessary to consider that the evolution of Internet access services in Brazil are boosting the connectivity indexes. According to the Digital Convergence agency, released in November 2017, 3G technology, surpassing the target for 2017, and already reached more than 5 thousand Brazilian municipalities. The 4G network is already present in more than 3,000 municipalities. There are more than 88.5 million accesses by August 2017. This sector is expanding with the advent of 5G technology, scheduled for the market to 2019. This technology promises to be far superior to 4G predecessor. According to a survey released in November / 2017, by the National Telecommunications Agency (ANATEL), Brazil has more than 241 million lines in operation and a density of 116.96 cells per 100 inhabitants.

This context and the evolution in the quality of the provision of services to the user makes it increasingly possible to access information through mobile devices at any time. In this case, besides the numerous applications for mobile devices, it is important to highlight the use of social networks through the smartphone.

According to (Telles, 2010:7), social networks "are environments that focus on bringing people together ... exposing their profile with data such as personal photos, texts, messages and videos, and interacting with other members, creating lists of friends and communities. " Moreover, this activity attracts the majority of young people also contributing to the improvement of abilities to manipulate the smartphone resources.

This relationship can be seen as a potential beneficial to the composition of methodological actions that contributes to the quality of teaching and learning, especially the learning of young students.

It is no longer possible to consider processes of teaching and learning alienated from the technological resources of contemporary society. There is no prospect of regression. On the contrary, there is an increasingly consistent world trend, a panorama, where the real and the virtual world meet, completed and interconnected. A scenario with common places for the internet of things, identity, augmented reality, networks, mobile devices and other technologies classified as emerging technologies of the 21st century.

Immersed in this universe of cutting-edge technologies, the smartphone has become an object of personal use of fundamental importance in people's lives, especially in the lives of young people who feel comfortable as part of this context. "In this new spatial logic there is a social pressure that demands the necessity of belonging, awakens in individuals a greater need for consumption of goods that identifies them with groups they want to contact." (Daltio, Franca and Prata, 2017:8).

In this sense, this study aims to understand the relevance of the use of social networks and smartphones in the teaching and learning process of the students of a public school in Palmas, State of Tocantins, Brazil, allowing the expansion of knowledge production possibilities.

It is necessary to consider that "it is necessary to extrapolate the classroom, to participate in the daily life, to dare." (Bonilla, 2005:70). It is also possible to contribute to the dynamics of the classroom by allowing and initiating the practice of knowledge production by students in public schools. Rather than the traditional practice of informational consumption where "students and teachers close themselves between the four walls of the classroom, as in a vial, without communicating and establishing relations with the external context " (Bonilha, 2005:69/70).

This distancing between contemporary technologies and pedagogical practices contrasts with the affinity and interest of young people for technologies and constitutes the great challenge for teachers of this century, who according to (Valente 2007:56) “the knowledge society requires that all people be able to learn continuously and become lifelong learners", and Medeiros corroborates with:

> An important challenge to face is therefore the appropriation of the multiple ICT and the media languages as effective teaching and learning instruments. To do this, in addition to the resources themselves, are necessary measures to provide training by teachers for their use, when it is desired to bring about significant changes in the way of teaching and learning. (Medeiros, 2007:29).

In this context, this approach has the purpose to provoke a structural change in the institutions and in the way of teaching and learning, based on the positioning evidenced in the answers of students and teachers to the questions addressed to them. The next session analyze the applied research data in a public school in Palmas

3. DATA AND ANALYSIS R

Considering the expressive use of social networks, the school and teachers can apply these resources in pedagogical actions due to the affinity and predisposition of students for the use of virtual communication, allying them to the process of teaching and learning.

The investigation starts by questioning the use of social networks by students and teachers of a public high school in Palmas, capital of Tocantins. It is verified that the social networks of Instagram and Twitter have predominance access of students in relation to the percentage of teachers, Figure 1.

ISBN: 978-989-8533-76-0 © 2018

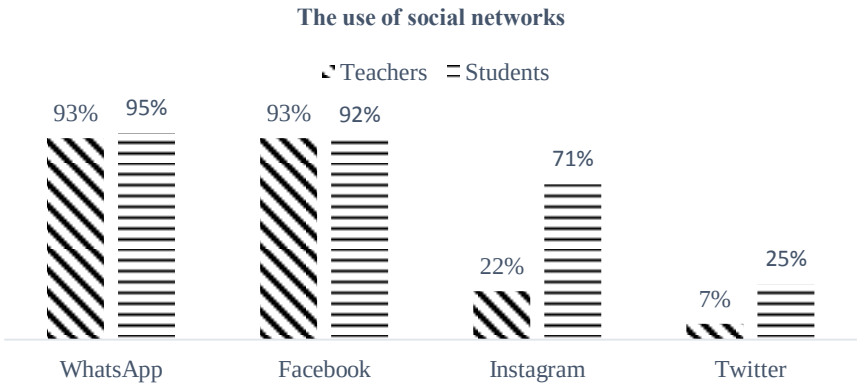

Figure 1. The Use of Social Networks

When teachers and students were asked about "on average, how much time per day do you spend accessing social networks?" the most of them are connected almost every day, Figure 2. Varying from 1h to 5h per day there is 30% of teachers and 35% of students. Up to 8 hours per day, there is 7% of teachers and 20% of students. It is clear with this result that social networks are part of the everyday life´s people, interconnecting them, facilitating communication, entertainment and relationships, and indicating a greater time of use by the students.

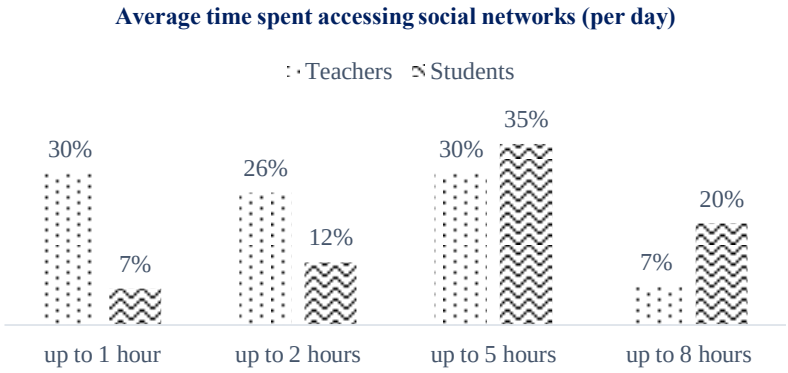

Figure 2. Average Time Spent Accessing Social Networks

Seeking the "purpose of the use of social networks" by students and teachers, 74% of teachers and 85% of students said they use social networks for leisure and entertainment, Figure 3. Of these, 93% of teachers and 49% of students use for communication. Finally, 67% of teachers and 31% of students use networks for work. For 56% of teachers and 86% of students social networks are used for educational purposes.

The indicators point to a potential investment in the training of teachers for the pedagogical use of social networks, since, teachers and students in an inseparable invasion into the school space, making use daily. Students use social networks for longer and educational purposes, that is, teachers have the advantage of benefiting from the inherent use of this resource by the student, with a view to the teaching and learning process.

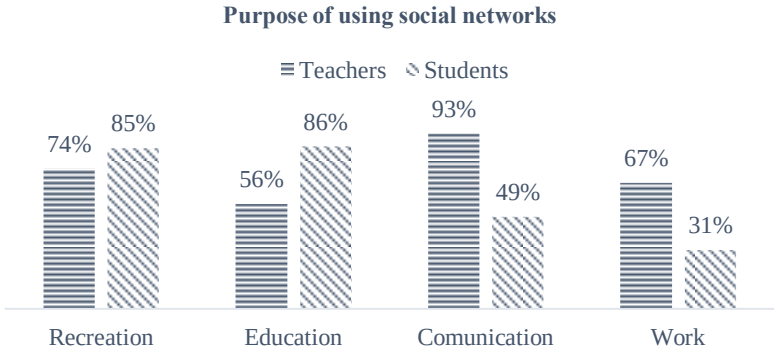

Figure 3. Purpose of Using Social Networks

When questioned about "the belief that social networks definitely influence people's opinions," 74% of teachers and 59% of students think so; the others, 26% and 34% respectively answered that "partial", Figure 4. This paradigm of belief in social networks is based on the fact that today's society is networked, which in turn dictates rules, changes habits, customs, incorporates values and influences the ways of living and interacting.

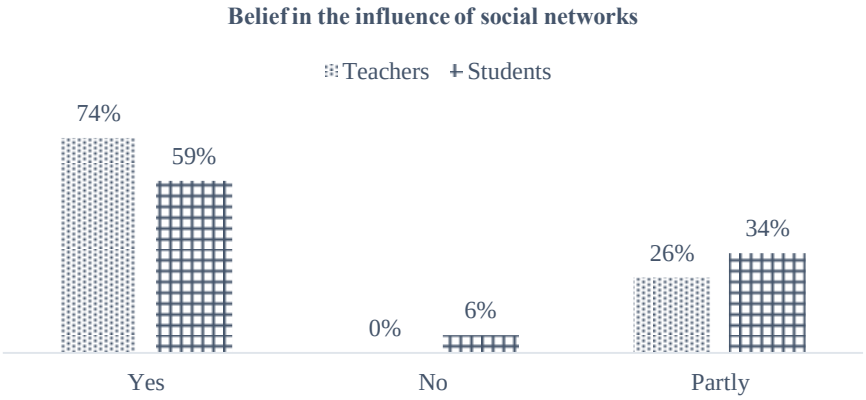

Figure 4. Belief in the Influence of Social Networks on People's Opinions

When questioned if "they did any pedagogical activity at school using social networks", 52% of teachers and 53% of students affirm that they have not done, Figure 5.

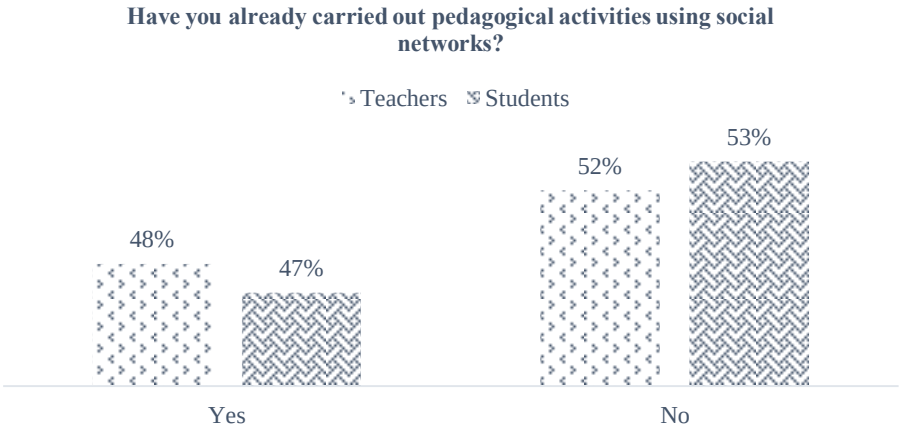

Figure 5. If There are Classroom Learning Activities Using Social Networks

It was also asked, "if it is possible to learn educational content with social networks". The results show, Figure 6, that 85% of teachers and 89% of students said yes. This result shows that so many students and teachers have personal affinities with social networks.

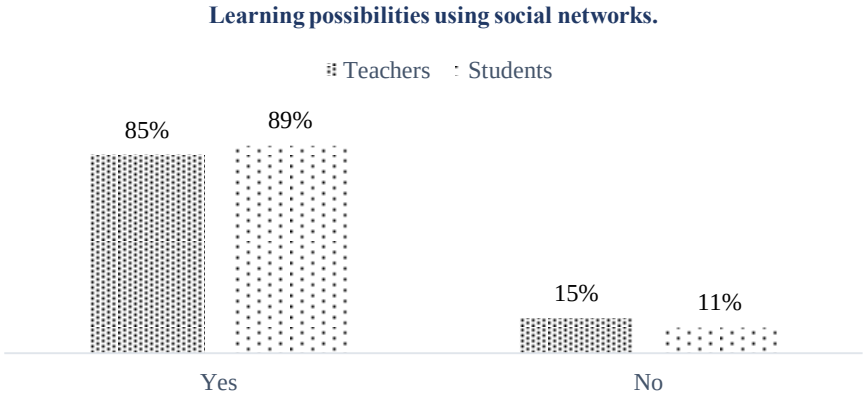

Figure 6. It is Possible to Learn Educational Content Using Social Networks

Given these results, it is evident that social networks are increasingly present in people's daily lives, and it is potential to educational purposes. It is noticed that, often, the use of smartphones is common among teachers and students to access the networks, whose intention is to maintain communication with leisure, education and work. So if 74% of teachers and 59% believe that social networks can influence people's opinions, would not it be an opportunity to be explored for pedagogical purposes and for the application or socialization of experiences between teachers and peers? The students of this generation are articulated in spaces created by social networks, as well as teachers.

During the research, it was verified that many teachers have already noticed and are moving so as not to be unrelated to this virtual universe. Most still do not use social networks as a tool to carry out activities with students, even believing in the potentiality of these tools. However, it can be seen that this is an opportunity to enrich pedagogical work, with not only research and educational games, but also to share ideas, develop projects and disseminate experiences within the school.

The inferences made from the data analyzed show that it is necessary to investigate this topic more widely, since the experiences of teachers regarding the use of smartphones and social networks in their pedagogical practices are slowly evolving.

4. CONCLUSION

This study analyzed to the potential context of didactic-pedagogical use of smartphones and social networks in the context of the Brazilian public School. In this sense, considering:

1. the need for improving the proficiency of Brazilian students in the rankings published by international organizations, such as PISA (2015), where Brazil is among the last 70 countries surveyed;
2. the need to integrate school practices with ICT;
3. technologies are means and ends, according to specific intentionality;
4. access facilities to social networks and other productivity applications;
5. the possibilities and potential of pedagogical activities for the use of smartphones associated with social networks;
6. in Brazil, according to data released by ANATEL, the density of mobile lines per inhabitant is 116.96%, and in Tocantins the density is 115.23%;
7. and, finally, considering that ICT, presented in all fields of human knowledge, has shown no downward trend. On the contrary, researches in emerging technologies, such as the areas of artificial intelligence, connectivity, augmented reality, among others, have intensified and, more and more, researchers are committed to developing new products and contents with new functions and skills for the service and adaptation of different spaces and situations in the life and activities of people.

Therefore, why not the use of smartphone and social networks, so present and accessible, in the service of teaching and learning? This is the challenge for change that is directly related to the need for teacher training, in order to develop pedagogical activities in harmony with this new scenario marked by the mastery of technologies.

In this context, this study is considering the several Brazilian federal states schools where students are legally prohibited to use the cell phone in class, including the schools of Tocantins. In the School Rules of the State Teaching Network of Tocantins, article 41: "It is forbidden to the student, in the school premises: II - to use a cellular device, smartphones, tablets cameras, headphones and any other sound system in the classrooms, except when contemplated in school planning".

In this sense, it is perceived that the integration of ICT resources into classroom pedagogical actions is still more challenging. If, on the one hand, the institutional organization itself imposes restrictions, legalizing the lack of skills to creatively and productively deal with technologies. On the other hand, there is a demand for professionals lacking training in the field of emerging technologies to the contemporary world.

This context can be verified by the analysis of the answers given by teachers and students in the questionnaires, which signaled to the urgency of pedagogical actions using ICT resources in the universe of the school. The reality researched is, only, a cut of daily situations experienced in schools, but representative in the Brazilian educational universe.

It was verified the need for changes in school planning, in the sense of using social networks in the pedagogical proposal of the school, in the projects and actions developed. The use of the Facebook platform and the WhatsApp tool, for example, can bring benefits to teaching and learning. In individual practice, both teachers and students make effective use of social networks in their daily lives, which makes it possible to obtain positive results regarding the integration of technologies in school practices.

As can be seen, the challenge lies in both the appropriateness of the institutional process and the internal changes of each individual, in this case, the teachers, who need to be open and willing to invest in their own formation. This context must be intrinsically related to quality of teaching and learning, capable of raising the scores and ranking of Brazilian students, making them competitive in any labor market. Likewise, these results should reflect the perspectives of social, political and economic development of the country.

The Brazilian Open University (Universidade Aberta do Brasil) is considering to use smartphones, e.g., the Moodle mobile application, as a support learning tool to the graduate and undergraduate courses of the distance learning environment of the Federal University of Tocantins (UFT, Universidade Federal do Tocantins). This is an amount of more than two thousand students.

ACKNOWLEDGMENTS

Authors would like to thank DTE, Ensino a Distância da Universidade Federal do Tocantins (UFT), Universidade Aberta do Brasil – UAB, for the financial support.

REFERENCES

Almeida, M. E. B.; Valente, José Armando. (2011). *Tecnologias e currículo*: trajetórias convergentes ou divergentes? 1. ed. São Paulo: Paulus, v. 1.

Almeida, M. E. B; ALVES, D. R. M. OSB; Lemos, S. D. V. (Orgs). (2014). *Web Currículo*: Aprendizagem, pesquisa e conhecimento com uso das tecnologias digitais. Rio de Janeiro: Letra Capital.

Alves, Mário J. (2009). *Mobilidade e acessibilidade*: conceitos e novas práticas. Revista Indústria e Ambiente.

ANATEL. (2017). Brasil registra 240,9 milhões de linhas móveis em operação em outubro de 2017. *Agência Nacional de Telecomunicações.*Available at: http://www.anatel.gov.br/institucional/noticias-destaque/1848-brasil-registra-240-9-milhoes-de-linhas-moveis-em-operacao-em-outubro-de-2017. (accessed 08 January 2018).

Beecreative. (2017). Telefone celular completa 40 anos de vida. *Beecreative.* Available at: *http://www.beecreative.com.br/telefone-celular-completa-40-anos-de-vida/. (accessed 08 January 2018).*

Bonilla, M. H. (2005). *Escola Aprendente*: para além da sociedade da informação. Cibercultura e Educação. Quartet. Rio de Janeiro-RJ.

Canabarro, M. Margarete. Basso, L. de Oliveira. (2013). Os Professores e as Redes Sociais – É possível utilizar o Facebook para além do "curtir"? R*enote*. V. 11 Nº 1. Available at: <http://seer.ufrgs.br/renote/article/viewFile/41625/26405>. (accessed 26 November 2017).

Castells, Manuel. (1999). *A Sociedade em Rede*. A era da Informação: economia, sociedade e cultura. Vol. 1. 11º Ed. São Paulo. Editora Paz e Terra,

Daltio, E.; França, G.; Prata, David. (2017). Reflexões sobre o uso dos smartphones com fins educacionais nas escolas. *Linkscienceplace*. v. 4, p. 115. Available at: http://revista.srvroot.com/linkscienceplace/index.php/linkscienceplace/article/view/328. (accessed 26 November 2017).

Freire, Paulo. 1996. *Pedagogia da Autonomia*: saberes necessários à prática educativa. São Paulo. 30. ed. Paz e Terra.

Hansmann, Uwe (2003). Pervasive Computing: *The Mobile Word Springer* [S.l.] ISBN 354-000-218-9.

IBGE. (2017). Estimativas da população residente para os municípios e para as unidades da federação brasileiros com data de referência em 1º de Julho de 2017. *Instituto Brasileiro de Geografia e Estatística*. ftp://ftp.ibge.gov.br/Estimativas_de_Populacao/Estimativas_2017/estimativa_TCU_2017.pdf. (accessed 10 January 2018).

Jenkins, H. 2009. *Cultura da Convergência*. São Paulo: Aleph. Available at: http://lelivros.top/book/baixar-livro-cultura-da-convergencia-henry-jenkins-em-pdf-epub-e-mobi-ou-ler-online/ (accessed 12 November 2017).

Lemos, André. (2007). *Cidade e mobilidade*. Telefones celulares, funções pós-massivas e territórios informacionais. Matrizes, vol. 1, núm. 1, 121-137. Universidade de São Paulo. São Paulo.

Lemos, André. (2004). Cibercultura e Mobilidade: a Era da Conexão. *Razón y Palabra*. N. 41. Available at: https://www.razonypalabra.org.mx/anteriores/n41/alemos.html. (accessed 12 January 2018).

Lemos, A.; Josgrilberg, F. (Orgs). (2009). *Comunicação e Mobilidade*: aspectos socioculturais das tecnologias móveis de comunicação no Brasil. Salvador: EDUFBA.

Libâneo, J. C. Santos, A. (2009). *Educação na era do conhecimento em rede e transdisciplinaridade*. Campinas, São Paulo: Alínea.

Medeiros, L. L. (2007). *Educação a Distância e formação de Professores*: relatos e experiências. Coordenação Central de Educação a Distância PUC – Rio (Org.). Rio de Janeiro. Ed. PUC – Rio.

Merije, W. (2012). *Mobimento*: Educação e Comunicação Mobile. São Paulo: Peiropolis. Available at: https://issuu.com/editorapeiropolis/docs/mobimento_wagner_merije_peiropolis?backgroundColor=. (accessed 12 January 2018).

SEDUC. 2017. Regimento Escolar da Rede Estadual do Tocantins. *Secretaria de Educação do Estado do Tocantins*. Available at: https://central3.to.gov.br/arquivo/371242/. (accessed 08 January 2018).

Tapscott, Don. (2010). *A hora da Geração Digital*. Rio de Janeiro: Agir.

Valente, J. A. (2014). *Aprendizagem e mobilidade*: os dispositivos móveis criam novas formas de aprender? In: Almeida, M. E.; Alves, R. M., OSB; Lemos, S. D. V. (Orgs.). Letra Capital, Vol. 1.

Telles, A. (2010). *A revolução das mídias sociais*. Cases, conceitos, dicas e ferramentas. M. Books do Brasil Ed. Ltda. – São Paulo.

UNESCO. (2013). *Policy Guidelines for Mobile Learning*. 7, place de Fontenoy, 75352 Paris 07 SP, France. Trad. Representação da UNESCO no Brasil. Available at: http://unesdoc.unesco.org/images/0021/002196/219641E.pdf . (accessed 09 January 2018).

Weiser, M. (1991). *The Computer for the 21st Century*, *Scientific American*, vol.265, no.3, September. p. 94 – 104. Available at: http://wiki.daimi.au.dk/pca/_files/weiser-orig.pdf. (accessed 09 January 2018).