



The use of information and communication technologies in teaching geography

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Summary

This is a study on the use of information and communication technologies in the teaching of Geography (ICTs). Technologies are increasingly present in people's lives. And the vast majority of students have access to technology. Thus, education needs to incorporate the use of ICTs in the teaching-learning process. When used in a planned and organized way, ICTs have a great contribution, but for this to happen it is essential that the teacher has knowledge about the use of technologies and responsibility for learning, understanding the need for more dynamic, interesting and motivating classes. Geography classes can become much more interesting with the use of ICTs. **Key words:**Technologies. Teaching. Geography.

Abstract

This is a study on the use of Information and Communication Technologies in the teaching of Geography (ICTs). Technologies are increasingly present in people's lives. And the vast majority of students have access to technologies. Thus, education needs to incorporate the use of ICTs in the teaching-learning process. When used in a planned and organized way, ICTs have a great contribution, but for this to happen it is essential that the teacher has knowledge about the use of technologies and responsibility for learning, understanding the need for more dynamic, interesting and motivating classes. Geography classes can become much more interesting with the use of ICTs.

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1. Introduction

In the current context, of the Pandemic caused by Covid-19, education is at a time of great changes, arising from the need to continue the teaching-learning process, albeit remotely. This presents itself as a major challenge, as in some ways these changes/innovations had been necessary for a long time, but due to various factors they were being postponed.

The choice for this theme is due to the importance of the use of ICTs in current education, where students are connected to technologies and need to learn to make conscious use of this tool. This study is a bibliographical research, based on authors who dedicated themselves to studying the topic in more depth. Its main objective is to deepen

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knowledge about the use of Information and Communication Technologies in teaching in general and more specifically in the area of Geography.

Therefore, this study is divided into topics. The first, "Information and Communication Technologies" reviews the importance of technologies for humanity. Next, "ICTs in education" points to the need for education to follow developments in society, adhering to the uses of ICTs to promote a more dynamic and attractive teaching and learning process for students. And finally, "The use of ICTs in teaching Geography" presents the contributions of ICTs in classes to effective student learning, and not just to illustrate content. The need for improvement and knowledge on the part of the teacher to plan and develop strategies for using ICTs is also highlighted so that they can truly be a bridge to knowledge, with interaction between those involved in the teaching-learning process and the content.

2 Theoretical foundation

2.1 Information and Communication Technologies

Technology is present in people's daily lives in many activities that range from simple activities such as leisure to more complex ones for carrying out and executing different jobs in areas such as health, industry, commerce, among many others that are extremely linked. the use of technologies.

Technology has long been part of people's lives and over time it has been improved with the aim of better meeting the needs of human beings who constantly and incessantly search for ways to improve and make their lives easier. Castells (2001, p.68) states that information technology is "[...] a historical event of the same importance as the Industrial Revolution of the 18th century". Thus, today's society is experiencing a period of constant technological innovations that are improved every day.

Nascimento (2012) highlights that technological items have been part of people's lives, changing their customs and way of living. The tendency is for this phenomenon to continue growing and becoming indispensable. "Technologies bring the idea of ease, comfort, practicality and innovations in this field are rapid and force subjects to live in a constant acquisition of skills for use" (NASCIMENTO, 2012, p.14).

Thus, communication and information technologies have become fundamental for a globalized society, where everything advances very quickly, requiring changes and changes.



constant improvement to keep up with market trends. It can be said that society is decisive in the aspect of technology, since as the individuals who use it demonstrate their needs, values and interests, it is also necessary to adapt to their changes.

Castells (2001) highlights that technology is an extremely necessary condition for the organization of digital communication networks, so that everything is very interconnected and connected.

[...] networks are instruments for the capitalist economy based on innovation, globalization and decentralized concentration; for work, workers and companies focused on flexibility and adaptability; for a culture of continuous deconstruction and reconstruction; for a policy aimed at the instantaneous processing of new public values and moods; and for a social organization that aims to supplant space and invalidate time. (CASTELLS, 2001, p. 498).

In this context, the expansion of computer networks comes to represent a new way of organizing in time and space, as through it one can carry out countless activities without moving from place to place. Especially in the current context, amid the COVID 19 pandemic, it is clear that the use of ICT is extremely important, since many essential services require internet access to avoid travel and crowds.

Monteiro (2014) highlights that the advancement of information and communication technologies, while spectacular, causes some fears regarding their negative consequences, mainly because they highlight social inequalities. Thus, people who do not master the use of ICT end up being excluded from access to many essential services and also from the new organization of the labor market, since remote work is increasingly present in people's daily lives, in current and future professions.

Distance today is not mainly geographic, but economic (rich and poor), cultural (effective access through continuing education), ideological (different ways of thinking and feeling) and technological (access and mastery or not of communication technologies). One of the clear expressions of digital democratization is manifested in the possibility of access to the Internet and in mastering the theoretical tools to explore all its potential (MORAN, 1997, p. 146)

In this context, it is essential to reflect on how education has been using ICT in the daily classroom, as “[...] you cannot teach a class today as in the past, it is necessary to use technologies to favor of learning” (PESSOA, 2011, p. 23). Therefore, it is necessary to integrate systematized knowledge with technological resources, thinking about training subjects capable of working in an increasingly competitive market and mastering new means and resources that enable better learning.



2.2 ICTs in education

Among the countless challenges that permeate the classroom space is the use of information technologies. Even though it is clear that access to the internet and other technological resources are increasingly present in the daily lives of students, there are many difficulties in making the use of this tool effective in the pedagogical practice carried out in the classroom.

Monteiro (2014) highlights that information and communication technologies were introduced in schools to computerize bureaucratic and administrative activities and later, they also began to be introduced randomly in the teaching and learning process.

The fact is that our schools have not kept up with the development of information and communication technologies and according to the countless research that is currently being carried out in this area, although there is a process of computerization in public teaching units, we are far from reaching a full integration of education with the use of technological means. (NASCIMENTO, 2012, p. 16).

One of the biggest challenges is the acceptance of educators who are still resistant to this new way of teaching, where the student is the subject of the process, and no longer a mere receiver of information and knowledge passed on. Many educators have not kept up with the evolution of ICT and do not master their use, which makes it difficult to use them both in planning and during classes.

In this sense, Moran (2015) highlights that some teachers are afraid of admitting their difficulties to their students and thus losing their controlling attitude and knowledge holder. Many don't know how to change, they don't have the confidence to innovate and even due to a lack of knowledge they present resistance.

Technologies at school can make the teaching-learning relationship more attractive for young people, but this is a new challenge for education precisely because these trends force schools to reorganize their teaching model. It has difficulty adapting to new technological means because they allow students to interact more, moving away from traditional education standards that understand the student only as a passive subject of their own training (NASCIMENTO, 2014, p.16).

It is believed that it still represents a great challenge in education to combine the use of ICT with the teaching-learning process, as there are many difficulties for this to occur in a planned and efficient way. Moran (2015) reinforces that the internet can help teachers to better prepare their classes, expanding the possibilities of how to teach, review the assessment process and communicate with students and their colleagues.



The first space is a new equipped classroom with different activities, which is integrated with going to the laboratory to develop research and technical-pedagogical activities. These activities are expanded and complemented at a distance, in virtual learning environments and are complemented with spaces and times for experimentation, knowledge of reality, insertion in professional and informal environments (MORAN, 2004, p. 250).

Currently, the vast majority of schools have equipment and internet connection to use as a teaching resource, but in practice there is still a long way to go before this use becomes a constant practice in the classroom. According to Ramos (2012, p.6) "Educational technology is understood as the set of techniques, processes and methods that use digital media and other resources as support tools applied to teaching, with the possibility of acting in a methodical way among those who teaches and who learns".

It is essential that students understand that the use of ICT needs to be done responsibly and with the objective of learning, understanding the need to adhere to the instructions and guidelines given during classes.

The production of knowledge with autonomy, with creativity, with criticality and an investigative spirit provokes the interpretation of knowledge and not just its acceptance. Therefore, in pedagogical practice, the teacher must propose methodologies that include the development of projects that provoke a systematic study, a guided investigation, to overcome the view that the student is an object, and make him a subject and producer of his own knowledge. (MORAN, 2000, p.86).

Thus, the use of ICT in a planned way contributes significantly to motivating students, awakening curiosity and interest in them, since knowledge is presented in a more intriguing and meaningful way.

Pessoa (2011, p. 25) highlights that "The training process must offer conditions for the teacher to build knowledge about communication and information technologies, pre-eminent in the current educational situation, especially with regard to class dynamics". In this way, the use of ICT in a planned way contributes significantly to motivating the student, awakening curiosity and interest in them, since knowledge is presented in a more intriguing and meaningful way.

For Silva (2010), digital social networks can be used as a pedagogical resource, but for this to happen it must be conscious, planned and with the purpose of building critical and participatory learning.

The educational process can be through face-to-face, semi-face-to-face education (part face-to-face/part virtual or distance), as well as distance education. (MORAN, 2015). Until 2020, this teaching modality was aimed at university education, but with the pandemic



caused by Covid-19 hears the need to provide access to classes remotely to preserve the health of both students, teachers and other employees.

The distance learning modality also constitutes a broad teaching-learning process, however teacher and student are not physically close, but interact through various technologies, mainly communication technologies that we have today, and which enable a mutual exchange of knowledge between them. (PESSOA, 2011, p. 23)

Thus, suddenly and even imposed by the current reality, it was necessary for teachers to challenge themselves to use ICT so that students had access to the syllabus and the school year was ensured. This represented a great challenge and the need to seek theoretical and practical knowledge to be able to adapt to the new demands and needs to adapt and provide this form of distance teaching for all levels of education.

Thus, the training process must offer conditions for the teacher to build knowledge about communication and information technologies, which are pre-eminent in the current educational situation, especially with regard to class dynamics.

2.3 The use of ICTs in teaching Geography

Geography is a subject in the school curriculum and must prepare students so that they are able to locate themselves, understand and act in the complex world, be able to problematize reality, formulate propositions, recognize the dynamics existing in geographic space, think and act critically in its reality with a view to its transformation.

Geographic thinking contributes to the contextualization of the student himself as a citizen of the world, by spatially contextualizing phenomena, by knowing the world in which he lives from the local to the regional, national and global scale. Geographical knowledge is, therefore, essential to the formation of individuals participating in social life as it provides an understanding of geographic space and the role of this space in social practices (CAVALCANTI, 2010, p. 11).

When working from the perspective of a society in constant construction and transformation, the educator has a great deal of openness in selecting and organizing content, as man's relationship with the space in which he lives has many consequences, both positive and negative, depending on the way it acts and interferes with it.

There are many possibilities for using ICTs in teaching geographic science so that the class becomes differentiated and truly meaningful “[...] it is necessary to leave the audio and text to move through the images, photos, videos present in the lives of students who are immersed in a



world where there is a very high density of information, provided by ICTs" (PESSOA, 2011, p.34). In this sense, Silva (2011) highlights that the world is constantly changing and the school needs to adapt to changes, being a mediator of knowledge. Thus, the educator needs to develop teaching that fulfills both its role of transmitting scientific knowledge and at the same time reflects on the reality of the context in which the student is inserted, perceives himself as an agent modifying the space and also a citizen with rights and duties in society.

We are experiencing a favorable historical moment for the production, authorship and sharing of diverse teaching materials. The task of mediation between the teacher, the student, the content and their interactions can be leveraged by such diversity. At the same time, issues such as technical, methodological and technological capacity for the appropriation and authorship of these teaching resources emerge. The classroom is increasingly home to digital native students, who can contribute to the construction of knowledge, mediated by ICTs. (GIORDANI; TONINI, 2015, p. 38).

Therefore, students are increasingly connected to the internet and have a great command over the use of technologies, so it is up to the teacher to organize content in order to provide practices and reflections that lead the student to understand reality and carry out learning. more meaningful and elaborate combining the use of technologies in teaching.

Thus, Ricarte and Carvalho (2011) point out that geography teachers, who interact in a historical and also dialectical way in the events occurring in the globalized world, need to return to research, interact, question, criticize and also create perspectives on the structure and context of digital inclusion, making these teaching aids so that geography classes become much more dynamic, interesting and interactive.

It is considered a great challenge for the teaching of Geography to incorporate Information and Communication Technologies (ICT) into everyday classes, in order to contribute to the student's effective learning, and not just to illustrate content, as was done previously. in the early days of the insertion of ICT in schools.

The value of technology in education is derived entirely from its application. Knowing how to direct the use of the Internet in the classroom must be a responsible activity, as it requires the teacher to value, within a progressive perspective, the construction of knowledge, in order to contemplate the development of cognitive skills that encourage the student to reflect and understand, as they access, store, manipulate and analyze the information they probe on the Internet. (ARAÚJO, 2005, p. 23-24).

Thus, this technology is a vehicle not only for accessing already developed knowledge, but a useful tool for acquiring skills involving language.



digital, interaction and construction of new knowledge. According to McLuhan (2005), the internet universe at the same time invites and challenges people to enter open paths to form virtual communities, forums for discussions, create or participate in personal blogs, access sources of information to substantiate and establish other fundamental information to build the knowledge.

In this sense, Passini (2011, p. 125) highlights “[...] we have to be aware that these resources do not guarantee, in isolation, the dynamism of the class, as technology must be used as a means.” Therefore, it is necessary to think about strategies for using ICTs so that they can truly be a bridge to knowledge, with interaction between those involved in the teaching-learning process and the content, so that mistakes are not made.

Almeida and Prado (2006, p. 22) recall: “[...] to avoid or overcome the naive use of these technologies, it is essential to know the new ways of learning and teaching, as well as producing, communicating and representing knowledge made possible for these resources, which favor democracy and social integration”.

It is well known that the computer connected to the internet makes it even more accessible to read current texts, facts and photos that contribute as markers of opinions and builders of culture, so that students gain a lot in terms of information, but coordinated, thought-out actions are needed. and planned so that the expected results are obtained.

Therefore, it is important to plan geography classes and think about how to encourage the search for knowledge using ICTs, having pre-established itineraries, targeted research, using *websites*, satellite images of *Google Earth software* and photos, *Google Maps*, interactive games, among other tools that make it possible to teach and learn content in a different way to awaken pleasure and curiosity in the student, as through them it is possible to get to know cities, regions, countries, physical and human aspects and characteristics, without leaving the environment school, as field trips are not always possible. (SANTOS; NEUMANN; GIACOMET; HAURESKO, 2015).

Regarding the *Google Earth software*, Voges and Nascimento (2010) highlight that it provides interactive satellite images that can be observed in different parts of the planet, the country and others. With the visualization of various elements of the Earth's surface from different angles, such as images of streets, cities, forests, rivers, and others, it is a way to have access to information and statistical data that can make geography teaching much more interesting and meaningful. The need for educator training is highlighted so that they can master the use of available tools and guide students in order to combine



the teaching of content to the use of tools, because to teach you need to know and know how to use them in practice.

Pessoa (2011) highlights that ICTs serve to enrich and promote a better quality of teaching, which is why it is necessary to know how to take advantage of these tools that are already present in students' daily lives to explain and display geographic knowledge in a more contextualized and enjoyable way, providing the student the possibility of perceiving themselves as a citizen inserted in a society where practically everything is connected in a network.

The need for teachers to constantly seek training is highlighted in order to expand their knowledge regarding the use of ICTs in the classroom and how to use them properly, not just using them for another expository class. It is necessary to encourage the student to research, in the search for new knowledge.

This is still a major challenge for Brazilian education, being able to use ICTs as tools to assist in the teaching-learning process, and not having a merely complementary character. Thus, even the use of cell phones in the classroom can be seen as an ally for learning, as long as teachers warn in advance which applications and tools can be used to make appropriate use of these resources (SARRAF, 2012).

A technological tool that has been widely used and has been expanding is educational software, however it is important to note that software, as well as the use of other ICTs, alone does not guarantee that learning is effective. Mediation on the part of the educator is necessary, working on curricular content, incorporating new dynamics, theories and geographical phenomena to expand the possibilities of interaction, the connection with the reality of students, considering the social, economic, political and cultural context.

In this sense, Moran (2015) emphasizes that ICTs facilitate and expand groups and communities of practices, of knowledge, where the student can also be a producer of information, together with their colleagues and teachers. The author also highlights the importance of mixing classroom and virtual environments as a way of opening the school to the world and also of bringing the world into the school, as it is necessary for the school to reinvent itself and for this it is essential that the teacher appropriates the knowledge arising from the presence of ICTs, so that they are systematized in their pedagogical practices.

Thus, education is increasingly inserted in a context of changes that need to be accelerated to be able to teach and also encourage students to seek knowledge, making them researchers, as it is necessary to review the concept of teaching and learning in society current.



Final considerations

ICT, until some time ago, presented itself as something distant from Brazilian education. There were few teachers who challenged themselves to include some possibilities in their planning and classes. However, the need generated by the Covid-19 pandemic brought to light the importance of reviewing concepts in relation to ICTs.

It is noteworthy that the use of ICTs needs to be planned to effectively involve the student, awakening their curiosity, interest and search for new knowledge in a more intriguing and meaningful way.

In relation to the teaching of Geography, ICTs represent a great potential for access to updated information, images, data, maps, among others that can help students learn systematized content, at the same time, in becoming researchers and capable subjects. to build knowledge and use technology with more ownership and awareness.

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