Tecno-adicción: una revisión sistemática de literatura desde la visión pedagógica con enfoque en el mejoramiento del proceso enseñanza – aprendizaje

Techno-addiction: a systematic review of literature from the pedagogical perspective with a focus on improving the teaching-learning process

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Summary

Introduction. Information and Communication Technologies (ICT) have undoubtedly generated benefits in the educational, labor, and social fields, influencing people's daily lives; however, their excessive use has caused unfavorable effects on children, adolescents, and youth; thus, it increases isolation, anxiety, and mental fatigue; while in education it has intensified tiredness, lack of attention, and disinterest in carrying out and fulfilling school activities. Objective. To document, through a systematic literature review, the publications related to techno addiction from a pedagogical perspective with a focus on improving the teaching-learning process, addressing the concepts, importance, and consequences. Methodology. This is a qualitative study, using action research with a literature review from different sources such as the Google Scholar search engine, the E-Book and EBSCOhost databases, the postgraduate work repositories, virtual books and magazines, using a total of 40 publications, the method was bibliographical documentary, and the typology was descriptive. Results. In the new globalized society, it is essential to promote efficient communication, reflection and leadership in educational institutions, aspects that have a strong relationship with technology. Conclusion. There is a need to guide parents to guide their children in the proper management of connectivity; in addition, in educational institutions, the creation of interactive spaces will prevent risky behavior. General study area: Information and communication technologies. Specific study area: Teaching-learning process.

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Abstract

Introduction. Introduction. Information and Communication Technologies (ICT) have undoubtedly generated benefits in the educational, labor, and social fields, influencing people's daily lives; However, its excessive use has caused unfavorable effects on children, adolescents and youth; thus, it increases isolation, anxiety, mental fatigue; while in education fatigue, lack of attention, lack of interest in carrying out and complying with school activities have intensified. objective. Document through a systematic literature review the publications related to techno addiction from a pedagogical vision focused on improving the teaching-learning process, addressing the concepts, importance,

and consequences. Methodology. It corresponds to a qualitative study, action research was applied with a literature review in different sources such as the Google academic search engine, the E-Book and EBSCOhost database, the postgraduate work repositories, in books and virtual magazines, using a total of 40 disclosures, the modality was documentary bibliographic, the typology was descriptive. Results. In the new globalized society, it is essential to promote efficient communication, reflection and leadership in educational institutions, aspects that have a strong relationship with technology. Conclusion. There is a need to guide parents, to guide their children in the proper management of connectivity; In addition, in educational institutions, the creation of interactive spaces will prevent risky behaviors. General study area: Information and communication technologies. Specific area of study: Teaching-learning process.

Introduction

In this same vein, Carneiro et al.(2021), with a pedagogical vision, promotes cooperation, critical and analogical thinking and specific skills, elements that contribute to decision-making and problem solving, therefore, in teaching, technology from various cultural perspectives improves and expands learning opportunities.

However, the rapid progress of the information society includes relevant challenges that benefit education, and it is interesting to highlight that current generations have not had to access new technologies, considering that they were born with them and face knowledge from innovative postulates, which generate a challenge for teachers, most of them digital immigrants.(Hernandez, 2017).

At the same time, it is evident that scientific and technological progress promotes the well-being of individuals; unfortunately, on countless occasions, its incorrect use, and excessive use, has given rise to technological addiction, generating harmful impacts on health, cognitive, emotional and social development, impoverishing the psychological aspect, which subsequently affects inadequate academic performance.

In accordance with the above, the ease of access to the use of the Internet, social networks, video games, the possibility of establishing immediate communications has increased the excessive use of technology that currently extends to the personal, academic and professional environment.(Fajardo Pascagaza & Cervantes Estrada, 2020)From this perspective, it is significant to highlight that technological addictions refer to the

conflictive interaction between humans and different screens: television, tablets, computers and other devices.

Technological advances and their impact on society

In this section it is important to state that in recent years the scientific literature has shown a valuable growth in publications related to technology addiction, a problem observed worldwide. Méndez & González (2018) in reference to the use of the Internet state that 31.5% show risk indices, 23.3% excessive use behavior and 13.2% behavioral dependence in the use of the network; in telephony 28.4% show risk, 21% immoderate use and 8% are dependent on their smartphone.

Regarding the use of WhatsApp, 43.5% show conflicting behaviors, 21% use it with a risk level, 14.5% use it excessively and 8% show dependence, the behaviors are related to inadequate academic performance Méndez & González (2018); in this regard it is deduced thatSocial networking is designed in such a way that it is addictive for users and WhatsApp, although not considered a social networking association, is no exception; its permission to use, its availability at any time and the fact that it is free of charge keep people up to date throughout the day.

Likewise, on social networks, 19% use them at risk, 13% with exaggeration and 7% maintain a dependency Méndez & González (2018); however, by allowing access to children and adolescents through the Internet, manipulating mobile phones, computers and tablets, vulnerability increases, with access to the line being asynchronous, that is, there are no restrictions of space and time (Aguilar & Fonseca, 2019).

Marengo et al.(2019)Regarding video games, 24% of the population is at risk, 12.5% use them compulsively, and 5.7% show dependence. However, it is important to recognize that addiction leads to the deterioration of interpersonal relationships, generating a loss of control by the individual in their daily life activities.

Regarding the excessive use of social networks and video games, they have become a problem that harms health, behavior, interaction, and communication, generating difficulties in decision-making, planning and control in the domination of impulses, affecting the IQ that from the educational practice leads to a low academic performance.

In another study carried out in Madrid, it is noteworthy to mention that the Internet is used by 98% of adolescents (15 years old), of which 94% access various applications and resources through digital telephony; as for cell phones, 28.4% exhibit a level of risk, 21% use them in unlimited times. Regarding messaging, 14.5% overspend their time. According to social networks, 19% have conflict indices, 13% use them excessively Méndez et al (2018). Therefore, it is deduced that the risk percentages affect mental health, wear and tear on behavior control, immaturity, emotional discomfort,

inappropriate behaviors; in general, its use can be problematic when the number of hours connected interferes with the proper functioning of their daily life.

Regarding the control of the use of technology at home, 15% do not have consent to use the Internet, 22% use their mobile phone in secret, 32% say that the family does not know the usefulness of the devices, 29% use the service at night. 23.8% express their inability to control their connectivity and its applications; in other European countries, dependence prevails in a variation, 1.98% in adolescents in Norway, 9.6% of young people in Australia (Méndez et al 2018).

Based on the information obtained, it is determined that teenagers use more than one device daily, establishing a combination between the computer and mobile phones, their use increases on weekends, a factor that has caused anxiety, disorders and addictions.

In Latin America, the studies carried out by Hernández(2017), they state that more than 50% of the population investigated showed Internet addiction disorders; in Peru, 7% of people suffer from excessive use of technology.According to theNational Institute of Statistics and Informatics (2017),51.7% of children use the Web, 70.4% use computer networks regularly, 88.8% interact using email or chat, 84.5% obtain information; 80.5% of families have a cell phone; 98.9% and 97.0% have access to mobile phones. 93.0% have technological tools.

In Argentina, in reference to access and use of cell phones, computers and networks, in the fourth quarter of 2019, (88.8%) use telephones, (45.1%) use computer equipment, (86.8%) use the Internet; particularly in Buenos Aires, 80.7% are connected, 57.9% use a device and 84.7% communicate via mobile phone (National Institute of Statistics and Census of the Argentine Republic [INDEC], 2019).

In Ecuador, studies have shown that there has not been a deepening of the use of technologies, which is why its inhabitants are less aware of the risks produced by social networks; meanwhile, information issued by the Ecuadorian Institute of Statistics and Census (INEC, 2020) states that 53.2% use the Internet, 86.1% of families browse the web, and 51.5% of children have a smartphone.

Continuing with the information released by the National Institute of Statistics and Census of Ecuador and cited by Peña & Herrera(2021), the following indicators and their results are presented:

- The national Internet usage indicator describes 53.2%; 61.7% in the urban sector and 34.7% in rural areas. It is significant to mention that the connection requires a cable or modem.
- It is mentioned that 92.1% of people aged 5 and over use the Internet at least once a day, 6.7% once a week and 1.0% once a month or year.

- Regarding the percentage in the different areas, it is established that 86.1% work in their home, 6.5% at work, 0.4% in educational institutions, 1.9% in public access centers, 4.6% in the homes of people close to them, and 0.3% in other places.
- In the smartphone indicator, 51.5% of the population nationwide owns a mobile phone, 58.2% in urban areas and 36.8% in rural areas.
- It is relevant to mention that 20.8% of the population aged 5 to 15 years owns a smartphone, while 74.9% of those aged 16 to 24 years and 81.6% of those aged 25 to 34 years.

- Regarding the profile of social media users, 92.2% is equivalent to the population aged 5 years and over, 58% have an activated cell phone, 41.4% use a Smartphone, and 44.6% use social media via their mobile phone.

Based on the numerical data presented, it is determined that excessive use of the Internet, mobile phones, and social networks leads to emotional discomfort expressed through disinterest, despondency, abandonment, helplessness, irritability, anger, and nervousness, factors that lead to social isolation, negatively impacting daily life.

As stated by Sánchez et al.(2018)Without a doubt, addiction to information and communication technologies particularly affects children with previous psychopathologies, producing addictive behaviors to connectivity, a problem externalized in the loss of control in its use, an aspect that leads to isolation (family, social, and educational), and neglect of academic activities.

In light of the above, excessive use of mobile phones creates psychological dependence or an addictive disorder, which intensifies aggressive, offensive, violent and impulsive behaviour, associated with learning disorders.

In this reality, children and adolescents who present a powerful use and abuse of devices manifest obsessive thoughts, loss of impulse control, difficulty in emotional self-regulation, educational problems, and conflicts with peers, factors that lead to poor academic performance (Gómez, 2017); in addition, with their inappropriate conduct and behavior they interfere with the family, generating tensions that aggravate health problems (depression, sadness, uncertainty or anxiety).

In this scenario, it is established that technological advances have their role in different areas, in educational management, resource administration, interpersonal communication, collaborative work, monitoring of academic performance, access to information and learning content; however, from a constructivist pedagogical approach focused on the student, it is determined that the abusive use of the Internet interferes with the training process, with the personality, with the fulfillment of their obligations,

conditioning the development potential until it becomes a true addiction, scientifically known as the abuse of technologies (Terán, 2019).

Under the above scenario, given the amount of terminology used in the description of the abuse of ICT, the discernment issued by researcher Caro is accepted.(2017), mentions that the emergence of new technologies gives rise to different terms related to technological addiction, for this reason in the conceptual delimitation the excessive use of the Internet, the exaggerated use of mobile phones, the lack of control in video games and the permanence in social networks considered addictive are analyzed; In addition, the criterion set forth by the American Psychiatric Association (APA) is included, which recognizes in the scientific literature as behavioral addictions.

For his part, Espinoza Freire(2019), proposes to determine the literature referring to the possible addiction to technology at a time by defining the problem and reviewing the bibliography, to establish the state of the art and documentary analysis of works that, due to their content or methodology, are considered a reference in the object of study of this research, the formulation of the hypotheses, the selection of the work method, collection of information and the final report.

Considering that the advantages of using technologies are linked to the effects and consequences, in order to account for the possible problem, the variables mentioned by previous researchers in reference to techno-addiction, or addiction to technologies, were investigated, along with a systematic review of literature from a Pedagogical perspective. In this regard, the questions raised in the study are mentioned:

- Is it important to investigate the review articles produced on techno-addiction in the pedagogical field?

- Is there a description of the importance of information and communication technologies in the educational area using the bibliographic analysis tool?

- What is the analysis of the effects produced by the excessive use of technologies with a pedagogical vision, using different sources and search engines that benefit in obtaining relevant information?

- Has an argument been made on relevant aspects of techno addiction as a risk factor in learning using the bibliographic analysis tool?

In response to the questions posed, the following objectives are established:

- Investigate the review articles prepared on techno-addiction in the pedagogical field.

- Describe the importance of information and communication technologies in the educational field using the bibliographic analysis tool.

- Analyze the effects of excessive use of technology from a pedagogical perspective, using different sources and search engines that benefit in obtaining relevant information.

- Discuss relevant aspects of techno addiction as a risk factor in learning using the bibliographic analysis tool.

Based on the objectives, this literature review aims to answer the following hypotheses:

- Techno-addiction affects the teacher's pedagogical work, the behavior of students, and academic performance.

- Excessive use of the Internet, addiction to mobile phones and spending time on social networks affects the teaching and learning process, leading to poor academic performance.

It is worth mentioning that the inconveniences associated with the excessive use of technologies have promoted various negative consequences that are detrimental to the teaching and learning process. In this regard, the dependence of students on electronic entertainment (virtual games), the Internet, and social networks reduces productivity and sociability within and outside the educational environment.

Description of the importance of information and communication technologies in the educational field

Information and communication technologies in the educational field

In order to understand the educational reality, it is necessary to delve into the technologies and know their weaknesses, in order to contribute to progress, improvement and transformation according to the demands determined by society at a given time. This implies that education is not static, on the contrary, it remains in continuous change. Faced with this situation, researcher Cebollero et al.(2021), mentions that the abuse of technology has led students to become addicted to technological activities that affect their physical, mental and social integrity, deteriorating the values learned in the family.

In this regard, Méndez et al.,(2018), mention that the fifties were considered the basis for the subsequent development of technology in the educational area, thus the use of audiovisual resources in the formative space became the first specific field that studied informative applications for teaching; while in the sixties the media influenced the social context, giving rise to the electronic revolution through the use of radio and television,

electronic devices that contributed to customs, politics, economy, marketing, journalistic information and also education.

Therefore, the educational challenge determined by the school system includes innovation in the teaching model developed by teachers with the support of technologies, who must be trained to transform the methodology; based on the Sandí literature(2018), mentions the following digital skills that teachers must achieve:

- *Knowledge in the localization of information*

  It refers to the storage and selection of digital content that will be used during the training period through the use of external networks, applications and computer tools that allow organizing access to digital practices from software that includes virtual reality, in this way technologies benefit in the experimentation of new ideas.

- *Communication and collaboration*

  They contribute to strengthening digital competence and encourage interaction through technological tools; thus, the user shares content based on knowledge and understanding by participating in different platforms or communities that allow the use of online resources.

- *Production of own content*

  By using different tools including: blogs, websites, YouTube channels, using gamification and other virtual play strategies, demonstrating proactivity in the creation, design and dissemination of educational resources to improve knowledge regarding the use of ICT.

- *Safeguarding devices and personal data*

  By adopting security measures, taking special care with the content that enters the inbox, especially when receiving emails or messages. In this regard, it is a priority to create passwords that include letters (upper or lower case), signs, and numbers, in this way the information is protected against unauthorized access.

- *Acquire technological skills*

  For Freire et al.(2019), which facilitate the resolution of conflicts in the digital area, leading to the improvement of the training process in the internal and external space, in this regard, the acquisition of technological capabilities includes the learning of theoretical nuances that favor the deepening of knowledge, while

practice benefits digital skills from innovation, communication, association, interaction and socialization.

- *Sharing your online resources*

  Through interaction using digital technologies and different devices that incorporate the organization and method to teach the contents of the subjects proposed in the curricular planning.

- *Develop virtual content*

  That they promote the participation of students through different presentations of the work in a digital format, in blocks or through the use of digital applications.

This aspect for López et al.(2019)From an educational perspective, it is essential to take advantage of technological resources that contribute to the incorporation of scientific advances, the acquisition of knowledge, innovative, scientific and creative experiences, the democratization of knowledge, and respect for diversity.

Technological advances in the educational system

The impact of technology on the education system includes the technological infrastructure that facilitates the training management model, the structure of educational content, training and capacity building, perspectives that have transformed the ways of teaching in the classroom, while the different extracurricular activities propose the inclusion of parents in the behavioural and attitudinal development of their children.

Advances in information technology have promoted the generation of instructional spaces through interactive classrooms that allow combining individualized work with the formation of teams and interaction through cooperative tools. In this way, teachers stimulate investigative and exploratory learning that leads to autonomous, dynamic study and self-learning (Freire et al., 2019).

Along the same lines, in order to incorporate technology into pedagogical work, teachers must receive training in the use and management of virtual platforms with concepts that benefit the development of the curriculum and teaching programs, considering that the digital tools, techniques and strategies are oriented towards the knowledge of the content proposed in the curricula, within the framework of compliance with the study plan, which from a constructivist perspective encourages the dissemination of innovative experiences.

Educational technology tools that motivate and increase the interest of students during teaching and learning

It is estimated that in a globalized and competitive world, the use of technological resources leads to the transformation of teaching and the improvement of learning; consequently, teachers have the skills to use them appropriately, encouraging students to make good use of them. In this particular case, Luque & Herrero(2019), states that virtual tools facilitate the storage of information, offer entertainment, and interactive material that encourages and increases interest in learning curricular content, proposes the following:

- *Google Drive*

  It makes it easy to upload documents, create new ones, edit them or download them to your computer; among other advantages, you can share the changes made or modifications in real time, and it also makes it possible to search for information safely, using the free online service.

- *WhatsApp*

  It benefits unlimited communication in all sectors of the world, through the text messaging service with no character limits, instant, and free; it also offers the sending of images, iconography, representations, audios, videos, web links, documents, catalogs and magazines through the use of the Internet.

- *Email*

  It is a service on the network that promotes the sending and receiving of messages, it uses a communication system that constitutes a link that integrates people, companies, organizations, societies, institutions in an online messaging system; the content may include: letters, sounds, signs, symbols, images, photographs, graphics, programs, files.(Teran Prieto, 2019).

- *Power Point, Prezi*

  They are dynamic tools that facilitate the creation of presentations of information or specific content, with the possibility of adding texts, graphics, images, videos, and other elements such as sound and effects. Due to their advantages in the educational process, they are used by teachers and students at different educational levels.

- *Educaplay, Edmodo or free platforms*

They have become necessary tools to strengthen teaching; their appropriate use facilitates the organization of institutional activities, improves the experience during the learning process of the contents; also, through online classes, it promotes access to the use of materials and audiovisual resources, in addition, it strengthens communication between users and members of the educational community (Viñas, 2017).

It is evident that the advancement of information and communication technologies contributes to the creation of various computer programs, social networks, virtual environments for collective and autonomous learning, fostering the generation of digital scenarios for bidirectional work between users: teachers, students, researchers, professionals, and others (Fernández & Quiroga, 2021).

Advantages of using technologies in the educational field

With a pedagogical perspective Cortés(2016), in the study carried out at the University of Barcelona, mentions the advantages offered by information and communication technologies to improve the quality of teaching and overcome difficulties in academic performance:

- *Digital resources*

  They promote the acquisition of knowledge, speed up access to synchronous and asynchronous communication; the systems that help in learning in other aspects are called platforms that can be different: Moodle, Blackboard, they contain digital spaces (virtual library, publications made in scientific journals, information related to various topics that will be disseminated in the classroom, in an innovative class through images, collections, video tutorials, documentary programs, presentations in which audio is incorporated and animations that contribute to the reasoning of certain contents.

- *Virtual platforms*

  These are resources that have increased changes in the pedagogical area by producing different forms of knowledge dissemination using technologies, with the aim of contributing to the development of students' thinking, consolidating the interaction between teachers, students, parents or representatives. In this regard, it contains virtual classrooms, online education, elements that allow reinforcing dynamism, for this reason, the center of teaching is the student, who through the guidance of the teacher achieves the objectives in the affective, cognitive and productive dimensions.

- *The virtual classroom*

It is a digital environment that supports the exchange of knowledge, enabling the participation of students within the online platform, which allows for various activities: sharing content between teachers and students; it is specifically characterized by the following aspects:

Free access, not subject to schedules or physical displacements.

The student can use the resource from anywhere.

Requires an Internet connection for easy navigation.

The advantages include:

- They reduce communication barriers, improve the exchange of information and the confrontation of opinions, maintaining responsible leadership that seeks the cooperation of members; in addition, they promote collaborative group work to achieve meaningful and interactive learning.

- It contributes to self-esteem and self-worth by reducing fears and worries when expressing ideas and thoughts in virtual environments.

- The use of the Internet allows equal access to information and knowledge, allowing the confrontation of ideas and opinions that allow knowledge to be shared autonomously and safely.

Based on the above, the use of technologies stimulates interpersonal communication, enables the exchange of information in the educational community, promotes access to learning programs, the creation of material, evaluation, administration and management of resources, being an indispensable means for knowledge.

Analysis of the effects of excessive use of technologies from a pedagogical perspective

Techno addiction

Until a few years ago, the school was considered the teaching center. The student learns content, concepts, theoretical definitions through the use of the blackboard, texts, encyclopedias and documentaries; materials that later guide towards memorization. As stated by Martín et al. (2021), with the advent of technology, lectures were transformed into virtual classrooms, in this way digital resources benefited knowledge, since by integrating theory and practice, meaningful learning was achieved in a collaborative environment.

It has been found that these technologies cause serious problems of addiction and deterioration of social functioning over time. On the other hand, many teachers are not

properly trained in the use of these digital elements, which can waste time during class. In this sense, it is a factor that has limited the relationships between students, while the abuse of their use has led to psychological conflicts, loss of interest in learning and demotivation in achieving educational objectives.

In this same context, the term techno addiction refers to the excessive use of digital devices that lasts an indeterminate amount of time; while compulsive use refers to subjects who frequently, assiduously and constantly think about technologies, even when they are not using them, and may feel obsessions, obfuscations, and stubbornness with them (Chóliz, 2017).

Consequently, among the particularities that give rise to addictive behaviors are: ease of access, speed and promptness in the connection, and operability 24 hours a day, the opportunity to access the diversity of content, the easy establishment of social relationships, emotions of control or dominance in games, persistent connectivity with friends, isolation, and the possibility of creating fictitious identifications (Terán, 2019).

- *Exaggerated concern about Internet practice*

  The student shows anxiety when he or she does not use the Internet, impacting the personal and social area, associating with the conflict of isolation and with addictive behaviors, making it necessary to reflect on current educational activities, and those that must be carried out through the use of technology.

- *Need in the use*

  Students addicted to the use of digital tools show a tendency towards loneliness; by distancing themselves from social and physical contact, sometimes losing track of time and space, an action that harms their self-esteem, learning and control of their lives.

- *Show impatience*

  When humans do not use the Internet, they show impatience, violent behavior, feel upset, annoyed, or irritable, symptoms of an abuse of technology, such as nervousness, distrust in the activities they perform, little confidence in their abilities, and difficulties in making decisions.

It is inferred that excessive use of the Internet generates isolation, self-esteem problems, conditions and disorders that cause negative effects in the psychological, social and educational areas; one of the most important factors that influence this addiction is mobile telephony, which when used inappropriately as an entertainment tool can cause addictive consequences in adolescents.

Influencing factors in techno addiction

As society evolves, so does the world of the Internet and new technologies, and over time they have become the center of communication, impacting the production, exchange and use of digitalized information in various formats.

In line with what Astorga and Schmidt have stated(2019)It states that the available information is digitalized, and most of it is accessible through the Internet and other computer networks; then it can be stated that the arrival of new technologies has meant a change in the coexistence of individuals (thought, relationships with others, entertainment, marketing and education), in this regard, the quick and easy access to content from anywhere stands out.

- *Genetic and neurobiological factors*

  VariousStudies indicate that genetic factors influence vulnerability to addictions and behavioral attitudes; that is, if the parents of an adolescent have exhibited addictive behavior of any kind, the child will be genetically more prone to developing an addiction.

- *Personality factors*

  Personality characteristics can play a significant role in addiction to new technologies; these include impulsiveness, emotional instability, low tolerance to discomfort or frustration, presence of antisocial behavior, high sensation seeking, low self-esteem and indecision, immaturity, lack of identity, interpersonal sensitivity, hypersensitivity to rejection, inhibited character with few social relationships.

- *Family factors*

  According to Dominguez et al.(2016), the presence of an inadequate family functioning is the cause of multiple problems in adolescents, since an impassive, apathetic, indolent, and indifferent family with a high level of strict, severe, and inflexible parenting, without any structure and with socioeconomic difficulties, are factors related to poor supervision of students, particularities that lead children and youth towards the abusive use of technologies, being risk elements that increase addictions.

- *Environmental factors*

Having experienced stressful life events (SLE) such as traumatic separations, the death of reference figures, facing physical or sexual abuse, in the first years of life, is related to the development of addiction to new technologies.

- *Behavioral addictions*

The Internet and virtual social networks have had an essential impact on adolescence and youth; they include updates that have a variety of benefits, unfortunately there are individuals who end up obsessed, disturbed and distressed, being unable to control their use, putting their jobs and relationships at risk.

Internet use includes addictive factors such as chat, forums, email, and online games (strategy and virtual casinos). Excessive use presents several warning signs. For this reason, as the addiction increases, people tend to isolate themselves from their surroundings and ignore work, school, and social obligations. This is accompanied by psychological changes (mood and anxiety).

For Morales et al.(2016), behavioral addictions such as dependency disorders linked to everyday actions that do not involve the consumption of toxic substances, are usually called "drugs without drugs", where the subject practices activities that generate pleasure repeatedly until it becomes a habit, regardless of the implications that it may bring with it, that is, it crystallizes in a psychic consequence (deficient self-control in the behavior of the subjects) (p. 2).

- *Comorbidity*

The main discussion about the existence of Internet addiction is to determine that the problem is based on the high prevalence of comorbidity with other mental disorders that the subjects present; according to Domínguez et al. (2016), the most frequent disorders are: bipolar depression, generalized anxiety, social phobia, substance abuse, impulse control disorder, attention deficit hyperactivity disorder (ADHD) and personality disorders.

Effects of excessive use of technologies from a pedagogical perspective

Regarding the excessive use of technology, the work carried out by Rengifo et al. (2015) is mentioned, who state that adolescence is the stage where there is the greatest risk of acquiring an addiction to the Internet, due to the changes, confusion, consolidation of personal identity and feelings of frustration experienced.

In this regard, technological devices are essential, in the educational area they play a roleIt is crucial in the methodology and training of teachers, and its contribution to digital teaching stands out; however, its abusive or uncontrolled use produces changes in the

habits and practices of students, and may be part of a problem that generates dysfunctions, instabilities and imbalances at a cognitive level, and in academic performance. Chóliz (2017) reveals the influence of ICT in education:

- The goal of adolescents is to achieve their independence, and technology, among its various functions, contributes to fulfilling this need. In this regard, digital education helps in the mental and emotional progress of students, while their interaction with the network and electronic devices benefits their autonomy.

- Technologies contribute to the enjoyment of entertainment through applications that include social networks, instant messaging or video games; it should be noted that inappropriate use can generate addictive problems, which increase the student's difficulties in learning significant content, limitations in discriminating information, and conflicts in the skills to access bibliographic sources.

Regarding the effects produced by techno addiction, due to the unlimited use of the Internet it can lead to isolation, withdrawal, exclusion, negligence in the performance of functions or activities, indifference towards the pain of others, and lack of concern for personal image and hygiene.

Discuss relevant aspects of techno addiction as a risk factor in learning using the bibliographic analysis tool

Addiction to technology, the Internet and social networks in children, adolescents and youth

In view of the above, Chóliz(2017), states that there are two drawbacks associated with the use of technologies:

- Firstly, the harm that can be caused to other people through cyberbullying.

- Secondly, the harm to human beings themselves when technologies threaten their freedom; in this regard, we speak of technological addictions.

At this point, talking about information and communication technologies means referring to telephony, social networks and video games that intervene in all aspects of life, as well as the significance of their use, especially by teenagers.

Thus, mobile phones, processors, laptops, computers, and the Internet are part of school life; in many cases, excessive use of them generates attitudes of dependence, incomprehension, alteration, and insufficient control over their behavior, influencing their academic satisfaction (National Institute of Statistics, 2019).

Symptoms of excessive use or addiction to technologies

Taking as a starting point that techno addiction is related to the permanence in the use of technologies, it is deduced that it is a problem of interest in the research area of health and education, according to Velásquez (2018) it is necessary to know the symptoms that students suffer most frequently:

- The obsession with obtaining the latest technological innovation (digital telephony, operability, devices) increases the loss or lack of cognitive control over the successes or failures of decisions, generating problems with memory, expression, communication and thinking, aspects that significantly interfere with the performance of daily activities.

- The abuse of virtual social networks increases poor performance, loss of communication and disinterest in other study subjects,feelingThe need to submit to several applications (Facebook, WhatsApp, Instagram, and games) for twenty-four hours a day, this addiction absorbs the minds of children and youth.

However, from a psychological perspective, the unlimited use of social networks can cause severe consequences for students, including the following: social isolation, distortion between the real and virtual environment, lack of attention during the teaching and learning process, melancholy, nervousness, tensions that influence health and failure in the educational environment; for the reasons stated above, it is essential to offer information to the educational community with a pedagogical vision.

Warning signs of techno addiction

Technology and the Internet attract students because of their immediate gratification, interactivity and various windows with different activities. Their use is positive as long as they do not ignore the fulfillment of tasks (studying, going to the movies, going out with friends or family). In this regard, a basic component of the addictive disorder is interference in daily life and loss of interest in other occupations.

ForNavarrete(2016)Any behavior that meets these criteria would be operationally defined as an addiction:

- *Salience*

  A specific activity that becomes transcendental in an individual's life and governs his or her judgments, thoughts, feelings, and behavior.

Mood modification: The subjective experiences that people have as a result of their involvement in the activity.

- *Tolerance*

  The process that requires increasing the amount of a particular activity to achieve the same effect.

- *Withdrawal syndrome*

  Unpleasant emotional states and/or physical effects that occur when a particular activity is abruptly stopped or reduced.

- *Conflict*

  It refers to the complexities that arise between the addict and his environment (interpersonal conflicts), complications with other activities (work, social life, hobbies, interests), or in the individuals involved in the particular activity.

- *Relapse*

  The tendency to return to early patterns of activity in the most severe form of addiction after years of abstinence or control.

The excessive use of digital resources, especially the Internet and video games, has generated different consequences in students, manifested in their daily work in their context (family and school), affecting interpersonal relationships that influence their psychosocial development, affecting the practice of values and replacing them with inappropriate attitudes, reactions, and rudeness, among other actions, which cannot be controlled in the family (Cueva, 2020).

Risks generated by technological additions in the teaching-learning process, from a pedagogical perspective

In this regard, several consulted bibliographies affirm that the terminology, abuse of information and communication technologies acquire different designations: addictions, behavioral addictions, socio-addictions, technological addictions, cyber addiction, immoderate use, problematic use, and others.

Now, techno addiction is linked to the abusive use of computers, virtual resources, and telephony, with the repeated use of the Internet prevailing, a factor that interferes with the behavior and conduct of students, generating; impairments in school performance, academic isolation, loss of attention during class, insufficient control of emotions, neglect

in socializing with peers, difficulties in determining the time to carry out educational activities.

In this line, the factors that hinder the establishment of interactions in the communication channels between the members of the educational community, from this point of view, have an impact on the pedagogical work, the development of the curriculum, the teaching programs, and the practices in the classroom during the training processes.

In accordance with the above, the following are among the risk factors related to the abuse of technologies and the Internet: personality traits, withdrawal, emotional instability, exaggerated levels of entertainment and moods (depression, anxiety, indignation and irritability), which harm academic performance, sometimes leading to cyberbullying situations.

Methodology

Depending on the depth of the object, exploratory research or interpretive study was used to delve deeper into the topic, answering the questions: what effects does the excessive use of technologies produce?, why is it analyzed from a pedagogical perspective?, and how does it affect learning? In this way, the researcher achieves her first approach to the problem, and opens the possibility of carrying out future work in the same line of knowledge (Paño Yáñez et al, 2019).

Likewise, the research being qualitative in nature allowed for a critical study to be carried out, supported by bibliographical consultations from various sources (articles published in journals, books, memoirs, among others) that contributed to the topic of techno-addiction: a literature review from a pedagogical perspective, a trend that has generated negative consequences that affect health, the psychological and academic areas.

Given the above, it is important to mention that documentary bibliographic research, in a systematic and sequential process, contributes to the structuring of ideas from a theoretical and methodological perspective for didactic purposes, acquiring information from different sources:

- *Primary or direct sources*

   Includes definitions of terms or units used in the original study (photographs, yearbook images, memoranda, letters, correspondence, catalog codes).

- *Secondary sources*

   It includes compilations made in lists, translations, collections and reproductions of texts produced by different authors.

- *Tertiary sources*

Contains periodical and consolidated publications in bulletins, books, and manuals.

In this scenario, the systematic review of literature allowed the identification, evaluation and interpretation of studies carried out by researchers, academics and professionals specifically in techno addiction or addiction to the use of technology.

The question that guides the methodological process is presented below: Have the publications related to techno addiction from a pedagogical perspective been documented through a systematic literature review?

Search and selection of studies

For the systematic review, information included in journal articles, doctoral theses, and master's thesis located in the different repositories and virtual libraries created for the Human Sciences and Medicine was selected.

In turn, the information will allow other researchers to consult the cited bibliographic sources, developing understanding and comprehension and perhaps continuing to delve deeper into techno addiction from a pedagogical perspective or in studies similar in content and conceptualization.

The systematic search process was carried out in three stages, detailed below:

First stage. Selection of databases and areas of study

- *Compilation of the database,* The search was planned for articles indexed in Google Scholar (SCOPUS), the E-Book database and EBSCOhost, the repositories of postgraduate works, in books and virtual journals, using a total of 40 disclosures.

- *Determining fields of study*, the search strategy was carried out mainly in the line of educational technology, substantially in the area of education, and particularly in social work.

Second phase. Determination of journals and keywords

- *Selection of magazines*

The search was focused on journals specializing in educational techno-addiction and education.

Inclusion criteria

The inclusion criteria were:

- Articles that were published and disseminated after 2015 until the present.

- Open access articles published in the virtual library of different universities.

- Easily accessible articles published especially in Google Scholar.

- Articles with bibliographic studies on techno addiction.

- Articles with research carried out in the educational and social areas.

- Articles published in English or Spanish.

Exclusion criteria

In the literature review study, the following exclusion criteria were applied:

- Articles published before 2014.

- Articles under review.

- Information published on Wikipedia.

- Information on general-use Internet pages or blogs.

- Articles that do not allow access

- Articles published for economic purposes.

Results

The need to use technologies, their easy access, the diversity of information, the inappropriate use of countless devices, affects people and therefore society, for this reason, on a personal level, I open the possibility to carry out a future review of bibliographic literature related to the treatment and prevention of techno addiction, considering that currently the lack of knowledge about this problem has been detrimental in different fields, especially in education; in addition, in the near future, it would be significant to delve deeper into preventive standards for the responsible use of ICT.

Technology can negatively affect the educational dimension, the social, family and recreational context (it reduces the time spent on sports activities); thus, at home, conflicts arise as a result of the excessive use of digital devices; for the reasons stated above, it is considered that possible research can be carried out to deepen knowledge on the subject,

considering that students, teachers and parents must acquire the skills to identify the risk generated by techno addiction.

It is important to point out that the criteria presented by the researchers mentioned in the study are not sufficient, and are also supported by technical knowledge in a scientific-technological process, placing their approaches towards the evolution of technology, addictions due to the time of use, inadequate management and the consequences produced in different contexts; however, it is considered significant to establish systematic attempts with the intention of identifying greater benefits in the educational area, delving into the guidelines that teachers, parents, and society should follow.

Discussion

The research, with a focus on the bibliographic study modality, addresses the concept, background and consequences that techno addiction has produced during the last decades in the educational system, understood as a disease generated by the inability to adapt to new technologies; from this point of view, the criteria of different researchers are mentioned.

As seen in the progress of the work, techno addiction is a new phenomenon that has recently emerged in society, and can harm people at any stage of their lives, characterized by the disproportionate, excessive and exaggerated use of computer networks.

It is also highlighted that, through the literature review, a variety of terms were found concerning Internet technology, the use of WhatsApp – Facebook, and the use of video games; however, there were few studies referring to technology addiction in general.

On the other hand, it is significant to reflect that the existence of multiple terms is normal, and to consider that their study is new due to the increase in technological devices (microprocessor, smartphone, sensors, personal assistants, video game console, tablet, androids, among others); it is necessary to take into account that they can establish a connection with various systems, social networks, video games or mobile applications; in this sense, it is added that the user may face an overload of activities, an excess of tasks, which require the use of technology, causing the student conflicts in attention, concentration or precision to carry out quality work (Terán, 2019).

In light of the above, social networks have influenced learning, the advancement of knowledge and the acquisition of experiences among students (Araujo, 2019). However, although they facilitate the completion of collaborative activities and tasks, their excessive use can hinder interpersonal relationships, affect behavior, decrease academic performance and make the communication process impossible (Vilches & Reche, 2019).

Conclusions

- In response to the question posed in the formulation of the problem, Has a systematic literature review documented the publications related to techno addiction from a pedagogical perspective? It is highlighted that there were few studies related to the variables, however, different terminologies were used that facilitated obtaining information: abuse of the use of technological resources, and excessive use.

- Regarding the bibliographic study carried out through the literature review, it is significant to mention that the advances in science and the progress of technology are processes that impact the development of society, due to the advantages and consequences that affect the quality of life of children, adolescents and young people, who on various occasions require special attention in the dependence on the use of devices that give rise to addictions to mobile phones, the Internet, video games and social networks.

- Among the positive effects of information and communication technologies, the advances in the use of virtual methodologies that benefit comprehension, the application of computer strategies that allow the reinforcement of content and the improvement of performance are mentioned; however, the excessive use of devices (smart phones, computers, laptops, tablets and others) negatively affects the student by increasing distraction in the completion of activities, irresponsibility, low grades, and learning problems.

- On the other hand, after reviewing several repositories, databases and documentaries, it is determined that, in the scientific area, there are few investigations, studies or articles referring to the excessive use of technological devices; for this reason, the symptomatology is deepened, highlighting in the psychological aspect the behavioral changes, the progressive distancing of affective relationships, and the loss of control; while from a pedagogical perspective it includes difficulties to concentrate, cognitive deterioration, lack of concentration, among other factors that lead to poor academic performance.

Conflict of interest

The authors declare that they have no conflicts of interest.

Bibliographic References

Araujo Portugal, J. (2019). The social component. An indicator of online collaborative work. Journal of Media Education and ICT. EDMETIC, 8(1), 171-200. Retrieved from https://journals.uco.es/index.php/edmetic/article/view/11104

Astorga Aguilar, C., & Schmidt Fonseca, I. (2019). Dangers of social media: How to educate our sons and daughters in cybersecurity. Educare Electronic Journal, 23(3), 1-24. Retrieved from https://www.scielo.sa.cr/scielo.php?script=sci_arttext&pid=S1409-42582019000300339

Bermello Navarrete, R. d. (2016). The negative impact of technologies on adolescents and young people. Mayabeque Journal of Medical Sciences, 23(2), 11. Obtained from https://www.medigraphic.com/pdfs/revciemedhab/cmh-2016/cmh163h.pdf

Carneiro, R., Toscano, J., & Díaz, T. (2021). The challenges of ICT for educational change. Madrid: Metas Educativas. Retrieved from https://www.oei.es/uploads/files/microsites/28/140/lastic2.pdf

Caro Mantilla, M. (2017). Technological addictions: Disease or adaptive behavior? Psychiatric Hospital, Cienfuegos, 115(2), 11-10. Obtained from http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1727-897X2017000200014

Cebollero Salinas, A., Cano Escoriaza, J., & Orejudo Hernández, S. (2021). Internet abuse and adolescents: gratifications, family supervision and responsible use. Educational and family implications. Digital Education Review, 5(39), 1-18. doi:https://doi.org/10.1344/der.2021.39.42-59

Chóliz Montañés, M. (2017). Prevention of technological addictions in adolescence. Madrid: Educational Guidance. Obtained from https://revistas.comillas.edu/index.php/padresymaestros/article/view/7749/7566

Cortés Rincón, A. (2016). Innovative practices of educational integration of ICT that enable professional development of teachers. Bogotá: Doctorate Program in Education. Autonomous University of Barcelona. Obtained from https://www.tdx.cat/bitstream/handle/10803/400225/acr1de1.pdf?sequence=1

Cueva Gaibor, D. (2020). Educational technology in times of crisisEducational technology in times of crisis. Conrado Journal, 16(74), 341-348. Retrieved from http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1990-86442020000300341

Domínguez Vergara, J., & Ybañez Carranza, J. (2016). Addiction to social networks and social skills in students of a private educational institution. Purposes and Representations. Journal of Educational Psychology, 4(2), 122. Obtained from https://dialnet.unirioja.es/servlet/articulo?codigo=5693203

The National Institute of Statistics and Census of the Argentine Republic (INDEC). (2019). Access and use of information and communication technologies. National Institute of Statistics and Census of the Argentine Republic, 4(83), 16. Obtained from https://www.indec.gob.ar/uploads/informesdeprensa/mautic_05_20A36AF16B31.pdf

Espinoza Freire, E. (2019). The research problem. Conrado Journal, Cienfuegos, 14(64), 22-32. Obtained from https://www.researchgate.net/publication/335031934_EL_PROBLEMA_DE_INVESTIGACION

Fajardo Pascagaza, E., & Cervantes Estrada, L. (2020). Modernization of virtual education and its impact in the context of Information and Communication Technologies (ICT). Academia y virtualidad, 4(10), 10. Obtained from https://revistas.unimilitar.edu.co/index.php/ravi/article/view/4724/4399

Fernández Sisa, S., & Quiroga Chancay, D. (2021). Information and communication technologies (ICT) as a methodological strategy for the development of oral language in children aged 4 to 5 years. Quito: Central University of Ecuador. Retrieved from https://www.dspace.uce.edu.ec/entities/publication/2beff6fe-125c-4b0f-bed1-f9db006c1eb0

Freire Pazmiño, J., Guzmán Núñez, B., Cabrera López, J., & López Pazmiño, M. (2019). Emotional intelligence: a competence to strengthen cognitive development, critical thinking, decision making and academic performance. Digital Science. Publication 42, 3(2), 15. Obtained from https://cienciadigital.org/revistacienciadigital2/index.php/CienciaDigital/article/view/472/1081

Gómez Ferreira, K., & Marín Quintero, J. (2017). Impact of social networks on adolescent behavior and interpersonal relationships in Latin America over the last 10 years. Bucaramanga: Degree modality to obtain the Bachelor's degree in psychology. Universidad Cooperativa de Colombia. Obtained from https://repository.ucc.edu.co/server/api/core/bitstreams/707145f7-76ee-4902-9fc4-d0ad40622fb1/content

Hernández, R. (2017). Impact of ICT in education: Challenges and Perspectives. Purposes and Representations, 5(1), 325 - 347. doi:http://dx.doi.org/10.20511/pyr2017.v5n1.149

Ecuadorian Institute of Statistics and Census (INEC). (2020). Ecuador: Internet use grew 11.5% due to teleworking and virtual classes. Primicias, 1(1), 3. Obtained

from https://www.primicias.ec/noticias/tecnologia/uso-internet-ecuador-aumento/

National Institute of Statistics. (2019). Survey on Equipment and Use of Information and Communication Technologies in Households. Press Releases, 1, 112. Retrieved from https://www.ine.es/prensa/tich_2019.pdf

National Institute of Statistics and Informatics. (2017). 28.2% of the population that uses the Internet does so exclusively by mobile phone. Presidency of the Council of Ministers of Peru, 3. Obtained from https://www.inei.gob.pe/prensa/noticias/el-282-de-la-poblacion-que-usa-internet-lo-hace-exclusivamente-por-telefono-movil-9825/

López Pazmiño, M., Sagñay Guashpa, P.S., & Mera Holguín, L. (2019). The family environment and cognitive learning. Digital Science, 27(3), 19. doi:https://doi.org/10.33262/cienciadigital.v9i2.420

Luque González, A., & Herrero, H.G. (2019). Impact of technology on society: the case of Ecuador. Scientific Journal of the University of Cienfuegos, 11(5), 176-182. Retrieved from http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S2218-36202019000500176

Martín García, A., Vásquez Astudillo, M., & Ortiz Acuña, J. (2021). Digital technologies in postmodernity: Challenges for the school. ReTER. Revista Tecnologías Educacionais em rede, 2(1), 14. Retrieved from https://periodicos.ufsm.br/reter/article/view/64023/html

Méndez Gago, S., González Robledo, L., Pedrero Pérez, E., Rodríguez Gómez, R., Benítez-Robredo, M., Mora Rodríguez, C., & Ordóñez Franco, A. (2018). Use and abuse of Information and Communication Technologies by adolescents. A representative study of the city of Madrid. Joint work carried out by the Department of Addiction Prevention of the Institute of Addictions of Madrid Health together with the Chair for Social Development of the Camilo José Cela University. Obtained from https://www.madridsalud.es/serviciopad/estudio-uso-abuso-las-tecnologias-la-informacion-la-comunicacion-adolescentes/

Morales Granados, D.T., Gallego Ríos, P., & Bohórquez Agudelo, M. (2016). The process of evaluation, diagnosis and psychological intervention in vigorexia as a behavioral addiction. Electronic journal Psyconex, 8(13), 1-11. Retrieved from https://revistas.udea.edu.co/index.php/Psyconex/article/view/326993

Paño Yáñez, P., Rébola, R., & Suárez Elías, M. (2019). Participatory Processes and Methodologies Reflections and experiences for social transformation (First ed.).

Madrid: Compilation. CLACSO – UDELAR. Retrieved from
https://biblioteca.clacso.edu.ar/clacso/gt/20190318060039/Procesos_y_metodolo
gias.pdf

Peña, A., & Herrera, L. (2021). Information and communication technology indicators.
Quito: Technical Bulletin. No. 04-2021 Multipurpose Survey. National Institute
of Statistics and Censuses of Ecuador. Retrieved from
https://www.ecuadorencifras.gob.ec/documentos/web-
inec/Estadisticas_Sociales/TIC/2020/202012_Boletin_Multiproposito_Tics.pdf

Rengifo, C., Mamani Ferrúa, L., & Vilca Quiro, W. (2016). Family functioning and
internet addiction in students of a public educational institution in North Lima.
Scientific Journal of Health Sciences, 8(2), 9-17. Retrieved from
https://revistas.upeu.edu.pe/index.php/rc_salud/article/view/245

Sánchez Pardo, L., Benito Corchete, R., Serrano Badía, A., Aleixandre Benavent, R., &
Bueno Cañigral, F. (2018). Program for the prevention of problematic use of the
Internet and social networks. Valencia: Community Prevention Unit for
Addictive Behaviors. Retrieved from
https://www.observatoriodelainfancia.es/ficherosoia/documentos/5693_d_Clicke
ando.pdf

Sandí Delgado, J. (2018). Serious games for the investigation of technological
competences that can be integrated into the teaching practice of teachers.
Argentina: Thesis. Master's Degree. National University of La Plata. Obtained
from
http://sedici.unlp.edu.ar/bitstream/handle/10915/71063/Documento_completo.pd
f-PDFA.pdf?sequence=1&isAllowed=y

Terán Prieto, A. (2019). Cyberaddictions. Addiction to new technologies (NTIC).
Pediatric Update Congress. Lúa Editions, 5(2), 131-141. Obtained from
https://www.aepap.org/sites/default/files/pags._131-142_ciberadicciones.pdf

Velásquez Rosero, M. (2018). Theotic reflection on internet addiction in adolescents.
Fedumar Journal of Pedagogy and Education, 5(1), 55-63. Obtained from
https://revistas.umariana.edu.co/index.php/fedumar/article/view/1684/1730

Vilches Vilela, M., & Reche Urbano, E. (2019). Limitations of WhatsApp for
collaborative activities at the university. RIED. Ibero-American Journal of
Distance Education, 22(2), 20. Obtained from
https://dialnet.unirioja.es/servlet/articulo?codigo=6968457

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