



CULTURE OF DIGITAL AND AUDIOVISUAL LITERACY AMONG UNIVERSITY STUDENTS

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ABSTRACT

In the contemporary era, digital literacy has become an inescapable imperative, and university students are part of the generation that has grown up immersed in the digital world. The objective was to analyze the culture of digital literacy in students. A descriptive, observational and cross-sectional study was followed, the sample was 320 students, resulting in a good attitude towards technologies due to the familiarity of their use. The use of ICTs represents an invaluable support for students by facilitating research in the scientific and medical fields.

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1. Introduction

In contemporary times, the profound impact of Information and Communication Technologies (ICT), knowledge management and the growing trend towards globalization are clearly evident, elements that significantly influence people by bridging the digital divide and providing opportunities to cultivate skills and knowledge (Barrios & García, 2022). This scenario has generated a growing need for what is understood as digital and audiovisual literacy culture, where technological innovations are increasingly integrated into our daily lives through a wide range of products and services, including education, which has become an essential component of these transformation and development processes (Reyes & Avello, 2021). The insertion of ICTs in education offers the opportunity to take advantage of the benefits of these technologies to improve the quality and accessibility of educational processes, fostering an interactive and enriching approach to learning through the use of digital resources.

In this context, the culture of digital and audiovisual literacy becomes essential in people's daily and work activities. However, research by Schofield et al. (2023) highlights that technological skills are not universally distributed. Approximately half of the population lacks the necessary skills to use ICTs, even if they have a university education. Moreover, there are disparities in the level of technological training between genders; for this reason, the authors emphasize the importance of achieving complete digital competence, which encompasses all facets of literacy, including information, digital and technological literacy. This implies not only knowing how to use technologies, but also understanding and critically applying information, as well as making effective use of the digital and technological tools available.

2. Digital and audiovisual literacy

Digital literacy is a concept of great relevance in today's society, it encompasses the ability to perform actions in a cyber environment, such as searching, researching and analyzing information using technology, it also implies the ability to develop skills to create and enhance content in a virtual context; it is not simply about using technology as a means of communication, but to understand that it represents a new way of interacting, communicating, creating and understanding information in the digital environment. Digital literacy comprises a set of competencies that enable people to interact effectively and responsibly with ICTs, taking advantage of their benefits and facing the challenges they bring, being increasingly crucial in a world where technology and information are fundamental elements in our daily lives.

Today, society is immersed in the digital era, in which information, knowledge and learning are fundamental. In this context, information management acquires critical importance, as it implies the accurate and appropriate selection of what is relevant and necessary, thus fostering the skills, competencies, contexts and meanings that encompass the complexities of this technological era (Parra & Balanza, 2020). It is essential to recognize that the precise definition of the scope of digital literacy still requires greater clarity, as digital can encompass both a tool and a technique or service with different properties and characteristics (Barbieri & Blanco, 2020). In the current context of the information society, addressing the complexities of the digital environment requires a broad and comprehensive concept of literacy that is not reduced to specific skills or to particular technologies or sets of technologies (Espeja & Lázzaro, 2022), it is crucial to consider all forms of skills-based literacy, but also to go beyond, encompassing the full picture of digital literacy in all its dimensions; this implies a comprehensive understanding of the competencies and capabilities needed to navigate and actively participate in today's digital society. According to Toledo (2022), digital literacy encompasses several levels, ranging from basic skills such as posting on Instagram, through an intermediate level involving the use of technology to improve daily life and increase efficiency, to the advanced level that requires the ability to create original digital content. Digital literacy brings a number of significant benefits, such as the development of critical thinking that enriches education and improves the quality of information available, it also contributes to the improvement of skills and the daily use of technology, which translates into a higher quality of life. In addition, digital literacy can open doors to better job opportunities, with more favorable prospects and remuneration; however, it is essential to take into account the digital divide that manifests itself due to disparities in the educational, social, economic and cultural spheres, both nationally and globally (Reyes & Avello, 2021).

According to Guajala et al. (2021), digital literacy aims to provide education and evaluate content, while developing basic computer skills, enabling people to use computer tools in their daily lives and creating new social and economic opportunities for themselves, their families and their communities. As a result, digital literacy becomes crucially important, as it fosters inclusion and is closely related to the digital divide, also known as the social divide, as both influence each other, thus emerging as the key to progress in the information and knowledge society (Social, 2022).

According to Oberländer, Beinicke and Bipp (2020), there are several definitions of the concept of digital literacy, e.g., it implies the ability to successfully carry out digital actions in various life situations, including work, learning and other everyday aspects; it varies according to the individual situation of each person, and is a process that develops and evolves as the mastery of digital competencies progresses; a broader term than ICT literacy, as it includes elements related to literacy in general, such as information, media and visual literacy; it involves the acquisition and use of knowledge, techniques, attitudes and personal skills, and includes the ability to plan, execute and evaluate digital actions in the resolution of everyday tasks, as well as the ability to reflect on the development of one's own digital literacy.

According to the above proposal, the definition of *digital literacy* is summarized as follows: "Digital literacy is the knowledge, attitude and ability of people to adequately use digital tools, as well as the ability to identify, access, manage, integrate, integrate, evaluate, analyze and synthesize digital resources. It also involves constructing new knowledge, creating media expressions and communicating with others in specific life contexts, with the aim of facilitating constructive social action and reflecting on this process" (Oberländer, Beinicke & Bipp, p. 135). Digital literacy encompasses all forms of literacy needed in the 21st century society due to its multifunctionality and breadth, so its nature has led to specify its implicit dimensions, which has expanded its meaning in a cross-cutting manner (Montenegro, Raya & Navaridas, 2020).

Audiovisual literacy is a concept that refers to a person's ability to understand, analyze and produce messages that are transmitted through audiovisual media, such as films, television programs, online videos, commercials, among others; this form of literacy goes beyond the simple ability to watch and listen to audiovisual content; it implies a deep understanding of how messages are constructed, how visual and auditory elements are used to convey information, and how these messages are interpreted and related to society, culture and reality (Castaño, 2022). In a world increasingly dominated by media and digital technology, audiovisual literacy has become fundamental to participate critically and actively in society. Audiovisual media have a powerful impact on how we perceive the world, how we relate to others, and how we understand different realities. Therefore, audiovisual literacy does not only imply being able to passively consume content, but also being able to analyze and question the information presented to us, understand the underlying messages and recognize the biases and manipulations that may exist in the media (Retamal, 2022), Oca Rojas, et al (2020).

In this sense, audiovisual literacy is also closely related to media education and the ability of individuals to be critical and aware of the influence of the media in their lives, which implies developing skills to identify the veracity of information, to understand how stereotypes and discourses are constructed in the media, and to be able to express themselves effectively through audiovisual media (Ramé, 2021). Audiovisual literacy is a set of skills and competencies that enable people to understand, interpret and produce messages in audiovisual media. It is fundamental in a world increasingly dominated by image and sound, and promotes active and critical participation in contemporary society (García, 2023).

3. Methodology

The research was descriptive, observational and cross-sectional, conducted at the Tampico School of Medicine "Dr. Alberto Romo Caballero" of the Universidad Autónoma de Tamaulipas. Its student population is 1240 students of the Medical Surgeon career belonging to the period January-May 2023, distributed from first to tenth semester, according to the information provided by the Academic Secretary of this institution. Regarding the selection of the sample, 320 students (26%) were randomly selected, who voluntarily accepted to participate; the data collection was done through a survey elaborated in Microsoft Forms composed of 17 items including gender and grade point average and 15 multiple choice items that were answered anonymously with a time limit of 30 minutes.

The reliability and validity of the instrument was obtained through the analysis carried out by 5 experts in technology and innovation in ICT in the educational area and the reliability was determined by applying a pilot sample to 100 students (approximately 30% of the subjects investigated) and applying Cronbach's alpha coefficient, which yielded a high reliability range, from 0.93 to 0.97 for the 15 questions included in the survey and an overall value of 0.95 for the instrument; the results obtained indicated that the elimination of some of the items was not significant, so the survey was applied in its entirety to the study group. As for the analysis of the information collected, the results were downloaded in a data concentrate and processed in the statistical software SPSS (Statistical Package for the Social Sciences) version 22; they were interpreted by means of descriptive statistics with measures of central tendency and percentages.

4. Results and discussion

The gender distribution of the respondents was 162 women (50.46%) and 158 men (49.54%).

Most of the surveyed students have a laptop or smartphone, and the percentage of internet access via computer or phone is considerably high, reaching 94.68% (see Table 1). These data are similar to the research conducted by Hidalgo et al. (2019), where it was reported that 96.8% of the surveyed students of the medical program have internet access. Furthermore, in both studies, the personal computer stands out as the device most used by students, representing 82.9% in the study by Hidalgo et al. (2019) and 90.62% in the present study. These results also coincide closely with the findings of Carrillo et al. (2021), who reported an internet access percentage of 92.3%.

Table 1. ICT available for educational activities

Technological support	Frequency	Percentage
Internet (computer, telephone)	303	94.68%
Laptop computer	290	90.62%
Smartphone	261	81.87%
Tablet	161	50.31%
Desktop computer	115	35.93%
Smart TV	108	34.06%

Source: Own elaboration, 2023

The mean score obtained was 8.38, with a range of 7.7 to 9.30, as shown in Table 2. All students who scored 9 or higher (n=12) have essential resources such as a laptop, smartphone, and Internet access, providing them with ample connectivity capabilities. Among students whose scores fall in the range of 8 to 8.99 (n=287), who constitute the majority of respondents, 90.8% have a laptop or smartphone; this suggests that connectivity is not a challenge for students in accessing information, with no direct association observed between this variable and the scores obtained.

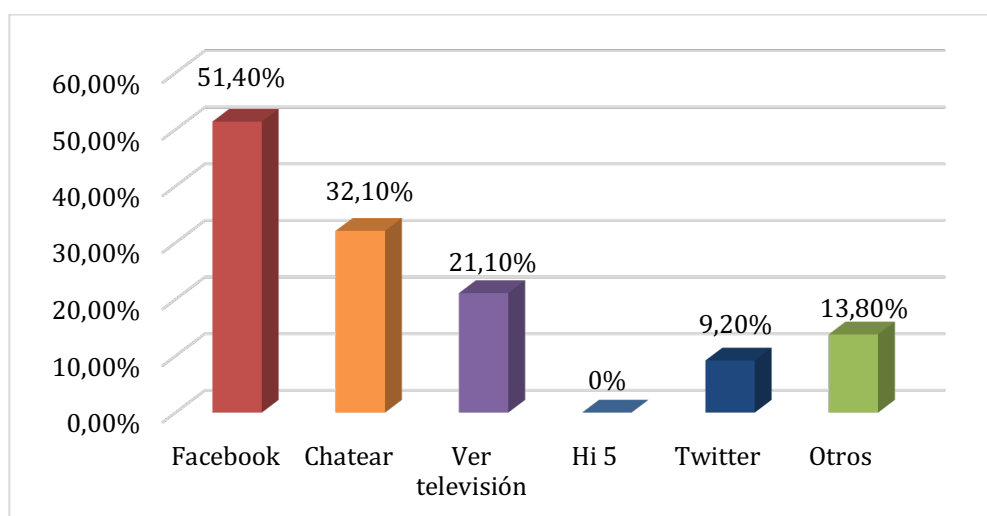
Table 2. Students' grade point averages

Range of values	Frequency	Percentage
9 or higher	12	3.75%
8 a 8.99	287	89.69%
7 a 7.99	21	6.56%
Total	161	100%

Source: Own elaboration, 2023

The medical students who participated in the survey dedicate an average of 4 to 7 hours per day to educational activities in general; in terms of time dedicated to educational activities with ICT, this ranges from 2 to 4 hours per day. However, it is important to note that 77% of respondents report engaging in simultaneous activities while studying with ICT, the most common activities include the use of Facebook, real-time Internet conversation (chat), as well as watching TV, accounting for 51.40%, 32.10% and 21.10%, respectively, as shown in Figure 1. These findings are consistent with the results of Hernández, Sánchez and Giménez (2021), who found that 59.0% of young people spend between 1 and 4 hours a day using ICTs, and of that time, 43.0% is spent searching for information, these results being similar to those obtained in this research. Furthermore, according to Santana et al. (2019), the most common communication activities among students include chatting, sending or receiving emails, and accessing Facebook or Hi5 with a percentage of 37.0%.

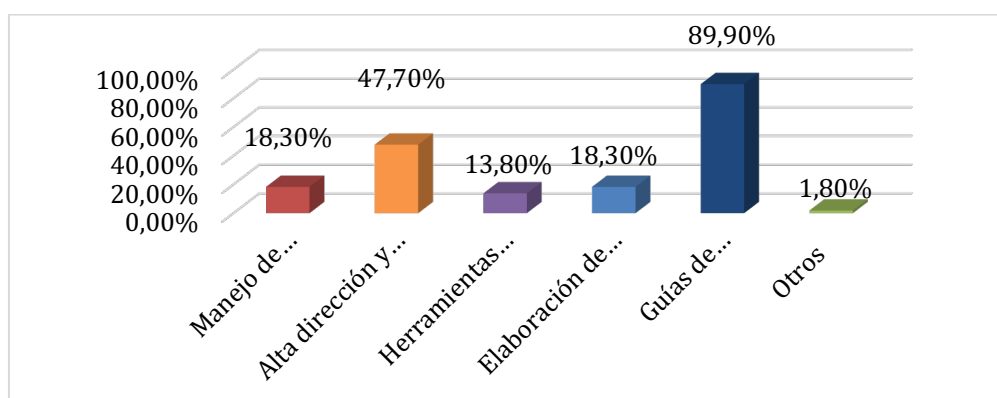
Figure 1. Simultaneous activities performed while studying using ICTs



Source: Own elaboration, 2023

In relation to online education, 28.7% of the students mentioned not having participated in blogs and discussion forums, on the other hand, 72.1% have attended a videoconference and an impressive 90.2% have completed some online course; these findings agree with the research conducted by Villavicencio et al. (2019), which coincides with this study in terms of participation in blogs and discussion forums, as they reported that 81.5% of students have participated in these activities, while 75.0% have attended online conferences and 87.0% have completed online courses. When asked about their preferences in terms of the online courses they like to participate in, the majority expressed a preference for courses related to clinical practice guidelines, as can be seen in Figure 2.

Figure 2. Online courses they would like to participate in



Source: Own elaboration, 2023

The databases that students use to access medical scientific information are detailed in Table 3, and their order of most frequent use is as follows, first, Google Scholar, followed by Scielo and EBSCO. It is interesting to note that, although EBSCO is the database that is most promoted in the institution due to its teaching program, students tend to prefer Google Scholar, these findings coincide with the results of Valladares et al. (2020), where it is mentioned that OVID is the most used database, although specialized databases such as Scielo, EBSCO and OVID offer advanced search tools, students seem to opt for the convenience of Google Scholar.

It is important to note that much of the indexed medical literature and databases with relevant publications are in English, as mentioned by Aguila, De Oca Motano and Martinez (2023), therefore, English proficiency becomes a crucial factor for the comprehensive learning of medical students, since the ability to search for scientific publications is significantly limited without a good command of this language. In this study, it is observed that the percentage of reading comprehension in general English reported by the students ranges between 50% and 75%, results that agree with those found by Fernández (2023), where it is indicated that 70.0% of the students comprehend readings in general English.

Table 3. Databases used to obtain scientific medical information

Databases	Frequency	Percentage
Google Scholar	247	77.18%
Scielo	158	49.37%
EBSCO	117	36.56%
Others	47	14.68%
Scientific research	44	13.75%
Microsoft academic research	9	2.81%

Source: Own elaboration, 2023

Regarding the attitude of students towards new technologies as a means of acquiring knowledge, it is observed that the most outstanding preferences include reading a book (70.6%), followed by searching and reading publications on the Internet (62.4%) and the option of listening to a videoconference (38.5%); these results are similar to those presented by García, Moreno & Flores (2020), who reported an outstanding preference for reading books and publications on the Internet. Although familiarity with the use of ICTs in everyday life has facilitated their incorporation in education, the full use of these technologies in the search for medical-scientific data or information for learning has not yet been achieved.

It is relevant to note that there are numerous investigations on the successful application of these tools in the educational setting, as shown by the positive results obtained in previous studies (Ayabaca, Alba & Guamán, 2019). In a study by Largo et al. (2022), it was found that students showed greater interest and improved their motivations, as well as skills such as effort and persistence in tasks when using ICTs; the use of technologies also promoted creativity, divergent thinking and provided them with successful experiences, in addition to fostering autonomous learning and adaptability to different learning rhythms, as Cervantes, Peña & Ramos (2020) point out.

5. Conclusions

In the context of digital and media literacy culture, the need for university students to acquire digital competencies is becoming crucial today. In an increasingly digitally immersed world, the ability to effectively manage technology is not only considered a valuable skill, but also a fundamental requirement for success both academically and professionally. Digital literacy is not simply reduced to basic knowledge of technological tools; it involves the ability to search, evaluate, and critically and effectively use online information. University students who develop these competencies gain a

significant advantage in their learning process and in preparing for their future career path, as it fosters autonomy, problem-solving skills and adaptability, skills that are highly valued in both academic and work environments.

In the context of digital and media literacy culture, ensuring that all students have access to these skills is a crucial challenge. Digital divides, whether economic or geographic, can leave some students behind, so educational institutions and governments must strive to provide adequate resources and promote equity in access to technology and connectivity. This makes digital literacy a right that should be accessible to all. As technology continues to evolve, college students must be prepared to face challenges such as information overload, the proliferation of fake news, and social media addiction. At the same time, they have the opportunity to take advantage of online educational resources, collaborate globally and contribute to innovation.

In the current era of interdependence, Information and Communication Technologies (ICT) have shortened distances and expanded access to knowledge, resulting in a narrowing of the gap between researchers and available information, this phenomenon drives the creation of new objects and solutions aimed at improving the quality of life of people, therefore, it is crucial to encourage and promote the use and integration of these technologies in university academic programs. This approach creates an enabling environment for students to acquire competencies in technological tools that are highly demanded in today's job market, not only prepares students to face these challenges, but also contributes to closing the gap between technological advancement and education, allowing more people to benefit from the opportunities offered by ICTs. In this context, the culture of digital and audiovisual literacy is considered essential for the integral development of university students in the 21st century, provides the necessary skills for academic and professional success, promotes inclusion and equity, and fosters responsibility and ethics online, as we move into an increasingly digital era, digital and audiovisual literacy becomes a fundamental pillar of higher education and preparation for life in modern society.

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