Historical Development Of The Usability Of Audiovisual Resources (Digital Networks), As A Study And Learning Technique, By Engineering Students At Colombian Universities

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Abstract

The teaching-learning process has been permeated by technological expressions that allow revealing trends in the forms of relationship between teachers and students; through the use of audiovisual resources inside and outside the classroom. In this sense, based on a quantitative approach methodology, a group of university students from the Faculty of Engineering of the Universidad Cooperativa de Colombia, Bogotá campus, were surveyed to find out their perceptions about the use of audiovisual formats (videos, tutorials, cinema forums), as guided and autonomous study tools to strengthen their professional training process.

At the same time, a literary review of an academic type was carried out, around three categories of analysis that were configured in a log of findings; to reference theoretical and scientific postulates around concepts linked to educational innovation, for teaching-learning in university contexts. In general, the research results allowed us to identify not only the preferences of university students, in their moments of learning; but investigative inputs for the development of strategies that can guarantee better teaching processes, for the young people of the current information and knowledge society.

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Introduction.

In the current information and knowledge society, teachers have been committed to seeking new alternatives for the transmission of academic information in the classroom, being an immersed need demanded by educational and social contexts in a global trend. For this reason, it leads to breaking the gap that exists between the traditional learning method and the incorporation of new Information and Communication Technologies (ICT), in order to connect with students and relate in a didactic and different.

The appearance and use of new information and communication technologies (ICT) in education has increased progressively. This incorporation of ICTs in the school context is due to the emergence of the information society and the attempts of the school to adapt to it. (Botía, M. Marín, A. 2019).

The changes that have been implemented today, in the educational field in relation to teaching-learning, are subject to technological and audiovisual resources, where the videos produced in educational entities by academic collegiate bodies stand out, as well as as the undeniable presence of a whole world of information represented by digital social networks.

Based on the above, a quantitative research was carried out in which a group of university students, enrolled in the Faculty of Engineering of Universities of Colombia, participated through face-to-face surveys that had as their object the identification of preferences and usability. on audiovisual resources, in the teaching-learning processes that they have experienced throughout their professional training process.

At the same time, an academic literature approach was advanced to explore the realities that frame the incursion of information and communication technologies in educational environments, in order to recognize national and international trends, for the generation of training proposals for high impact, that take into account the characteristics that represent the new generations, their study habits and autonomous and collaborative learning techniques.

In the same way, in this process of change and appropriation of new technologies in educational institutions, it is important to know the abilities and skills that educators have, who from empiricism and sometimes their own design of strategies, have been establishing in their pedagogical acts, not only the use during face-to-face class sessions, but also the extracurricular recommendation of audiovisual resources for the learning and practice of new knowledge, by their students.

In summary, this research work not only wanted to investigate the usability preferences of audiovisual resources in a group of young engineering students, based on their skills and intrinsic command of digital language, but also to identify how their teachers also see these alternative tools. of study, a valid path for effective teaching and learning, in correspondence with global expressions and trends in educational innovation.

Methodology

The research was developed from a quantitative approach, through the collection and analysis of data, based on the use of the survey as the main information collection technique.

The foregoing taking into account that, through surveys, the opinions, attitudes and behaviors of citizens can be known (Reyes, M, 2015), so that from the proposed questionnaire, a series of questions were generated to achieve the present research objective: to identify the levels of usability, based on the perceptions of a group of engineering students from Colombian universities based in Bogotá, about the use of audiovisual resources, in their teaching-learning processes in the classroom and self-study habits.

The survey form consisted of 11 questions, the first six to characterize the population under study and the last five to comply with the research objective stated in the previous paragraph. In this way, the first six questions provided not only the authorization of the students as survey participants, to analyze the respective results, but also the identification of these as active students of the engineering undergraduate program.

- Statement of the survey:

"The data collected here will contribute contributor to the research called: "TECHNOLOGICAL AND ALTERNATIVE COMMUNICATION RESOURCES THAT IMPACT THE TEACHING-LEARNING PROCESS" and "ANALYSIS OF THE IMPACT OF DIGITAL NETWORKS ON SMEs".

- Questions for the characterization of the population and validation of active student status.

1. Do you accept that the information provided by you be analyzed within the methodological process of the aforementioned research? Endorsement of participation and analysis of results.
2. What is your ID (student code)? Validation of active student academic period 2022-2.
3. What academic program do you belong to? Student validation of the Faculty of Engineering.
4. What is your study day? Validation preferential study time.
5. What gender do you identify with? Demographic validation.

6. What academic semester are you in? Academic level validation.
The other questions in the questionnaire are presented in the respective chapter on results, through graphs and analysis of findings.

Audiovisual Resources

When addressing the term audiovisual resources, linked to educational contexts, it is common to understand that these are presented as strategic tools for teaching, under precepts that seek to guarantee moments of interactive learning between students and teachers, so they are also understood as channels. of usual communication, within the classrooms.

In this way, audiovisual resources are technological tools that help transmit information or knowledge through optical and acoustic systems, as well as being storage materials that can serve as support resources for traditional teaching methodologies. (Adame, T, 2009).

Taking into account the above and in correspondence to the fact that in recent decades education has been influenced by technological advances, it is also common to find that the relevance of audiovisual resources in classrooms is also due to the characteristics that represent generations. of today, favorite consumers of screens and the Internet.

At the same time, with the entry of technology in education, a challenge has been established for teachers, in order to achieve pedagogical strategies to teach classes in an innovative and effective way. However, audiovisual resources offer multiple possibilities for educators who teach today in the information and knowledge society to take initiatives in inserting technological tools for teaching that are available to each individual such as: television, video games and mobile devices with the purpose of strengthening the cognitive processes of each student (Mosquera, 2022).

However, the use of audiovisual media in education is of great benefit to encourage student learning, since they stimulate critical thinking, creativity to generate content related to the topics seen, interest, feedback and storage of information obtained in the classroom. Its use can help to enhance the interest, creativity, retention and autonomous and meaningful learning of students. (Botía, M. Marín, A. 2019).

It should be noted that the typology of audiovisual resources that can be used to achieve learning processes of high interest for today's students; reveals countless possibilities among which stand out: infographics, still images, moving images, movies, podcasts, video games, tutorials and even documentaries. In this sense, the range of alternatives is not only wide, but multi-format, which could help the teacher to choose her preference, and even make external searches for materials already produced, that fit the academic objectives that he wants. to impart.

In this way, the audiovisual resources must not only be didactic but also planned, that is, selected in advance by the teacher, in order to respond to the objectives of the academic curriculum, generating a purposeful participation in the students, a development of academic skills and arranging for information literacy, that is, that students can freely access the data they need and can transmit it ethically.

Based on what has already been stated, it is relevant to highlight that one of the most preferred typologies by university students has to do with audiovisual products in video format, among which movies and tutorials stand out. The foregoing allows us to delve into the information quality of this type of resource, which is why educational institutions of the 21st century join forces to promote the use of educational videos for teaching-learning processes.

Educational Video

Thus, it should be noted that an educational video is considered an audiovisual resource used by teachers as a learning-teaching training strategy, which consists of visual and sound materials that transmit specific topics of a particular subject, in order to the recipients, students, acquire knowledge in a more spontaneous and comprehensible way.

Hence the use of videos made specifically for a didactic purpose, in which specific topics related to a particular subject are dealt with; denotes innovation not only from the technological expression, but from the expertise and capacity of the teachers, for the generation of content where the images shown and the narration complement each other to show an idea or topic in a complete, but simple and easy way. understand. (Vital, R. et al, 2021).

Obviously, this digital tool known as educational video has been incorporated into teaching models, since they beneficially contribute to visual learning and foster skills in each student; such as critical thinking and to process and investigate information. Under this feat, there are several significant investigations and experiences that have been developed worldwide, not only from the own production of educational videos, but from the generation of strategies that allow recommendations to videos present on social networks, which students also use. as a study habit and academic reinforcement.

A case of success that can revalidate what was previously stated, can be validated in the analysis carried out by several researchers from the University of La Laguna (Spain) a couple of years ago, (Padrón, M. et al, 2017), who through the application of the "Educational Pills", short videos made by teachers with simple dialogue, to transmit and reinforce specific knowledge in a time of six to ten minutes maximum,

have been marking a teaching milestone. In the same way with educational videos that are also made by teachers and aim to cover the topics in a more detailed way, as support for face-to-face education, taking into account that these are attractive and stimulate the interest of students to participate in classes.

E-learning

The development described so far not only summarizes a world reality, but also opens a new door for interactive learning through spaces and technological tools that help students and teachers, which has allowed the implementation of innovative educational methodologies. such as E-learning, understood as support for the teaching-learning process, since it has efficient results; the teacher can be aware of the student's progress, the exchange of information becomes enjoyable; and meets the interests of today's student, also known as a digital native (Prensky, M. 2001).

In this way, audiovisual resources are also an expression of the aforementioned E-learning methodology, due to the fact that new trends, within the development of educational technology, point towards an increase in activities based on interaction and the collective creation of knowledge (Avello, R. Duart, J. 2016). In the same way, the benefits of E-learning are strengthened with educational tools that promote problem solving, critical thinking, reasoning and reflection can be successfully implemented for the construction of knowledge, by creating environments for social interaction through tools for collaborative networking. (Avello, R. Duart, J. 2016).

Briefly, E-learning promotes a knowledge society with a vision of data access, with interactive and creative environments for student development, since it facilitates the creation of stimuli that motivate the learner to continue searching. of knowledge; This methodology seeks to innovate in the classroom, adapt to the student's needs and help in their learning process.

On the other hand, joint learning also enters as a tool that complements the E-learning methodology, since it helps the student to be able to socialize and expose their knowledge with an equal from the technological environment, however, for the In the generation of these groups, aspects such as the familiarity of the students must be taken into account and that they have the possibility of choosing who they want to meet with to develop academic work.

Results

During the second semester of 2022, the number of active students (enrolled) in Bogotá in some universities as a sample was taken as the reference universe, finding a total of: 4,977 young university students,

distributed in: Faculty of Human and Social Sciences, Faculty of Economic and Administrative Sciences, Faculty of Dentistry, Faculty of Law, Faculty of Public Accounting and Faculty of Engineering; the latter made up of six undergraduate programs, with the presence of 1,325 students in the area of engineering.

For the sample under observation, the systems engineering program was taken as a reference, one of those with the longest institutional trajectory; in addition to national and international recognition, by categorizing itself as an undergraduate with high-quality reaccreditation, granted by the Ministry of National Education, in light of its important levels and quality results, in factors of curricular formation, teaching staff, state tests , research processes and impact on society, from the work of its graduates.

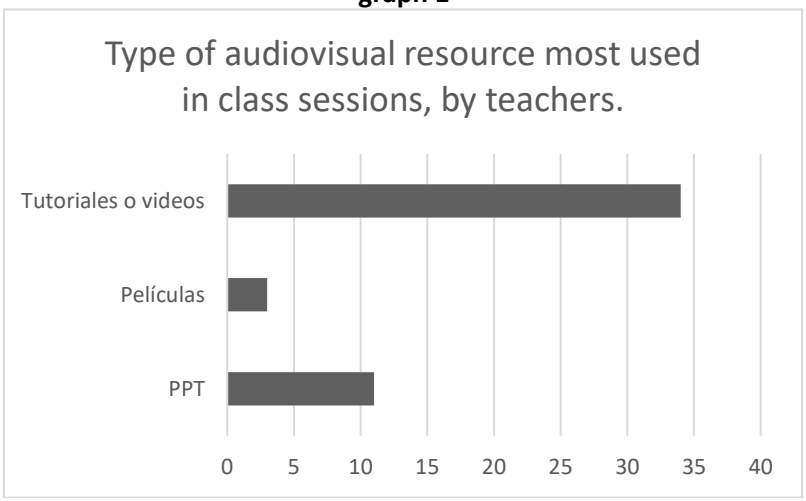
Globally, the undergraduate program in systems engineering, offered by the sample universities, for the academic cycle of the second semester 2022, had 489 students, of whom they wanted to have a participation of 10%, participating individually and in person. in the methodological process of the research in question, in order to know their usability preferences on audiovisual resources, in their moments of learning and private study.

In this way, the survey achieved the participation of 47 engineering students, a representative sample of an academic program of the universities of Bogotá. The global results and characterization of the participating population, ensured the survey of students of the two study days: daytime (25) and nighttime (22); as well as the different levels of training: first semester (7), second semester (5), third semester (5), fourth semester (5), fifth semester (5), sixth semester (4), seventh semester (4) , eighth semester (4) ninth semester (4) and tenth semester (4).

Faced with the specific questions of the survey that sought to identify the levels of usability and preference over audiovisual resources in their teaching processes; The survey took five multiple-choice questions as a reference, divided into two intentions: to know their learning experiences in face-to-face classrooms and to identify their positions regarding the relevance of the use of audiovisual resources to guarantee a better degree of appropriation of knowledge. acquired, for their professional life.

In this sense, one of the first questions made it possible to identify the most recurrent typologies used by teachers to transmit knowledge, relying on audiovisual resources, during face-to-face class sessions.

graph 1

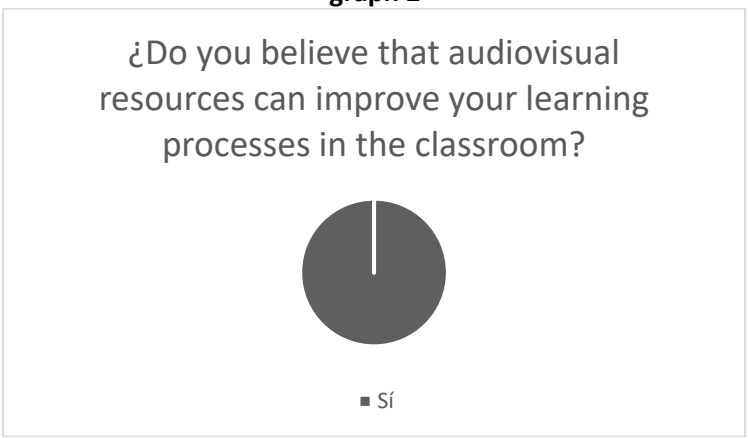


Source: own elaboration (2023).

The results to the question showed that the most recurrent audiovisual resource is the video, characterized by being a guide, step by step, from the graphic and auditory, which allows the student to follow instructions to carry out a particular procedure. At a lower usability value, slideshows and movies were chosen as elements used by teachers to address teaching topics during the sessions.

It is worth noting that, in the case of videos, these are multi-format products that allow the combination of images and audio, for the treatment and presentation of particular information. Through this type of audiovisual resources, students interpret knowledge from the use of the senses, in an alternative way and that usually has precise times of duration, which promotes effective communication and synthesis capacity, in addition to serving as a stage for class discussion.

graph 2

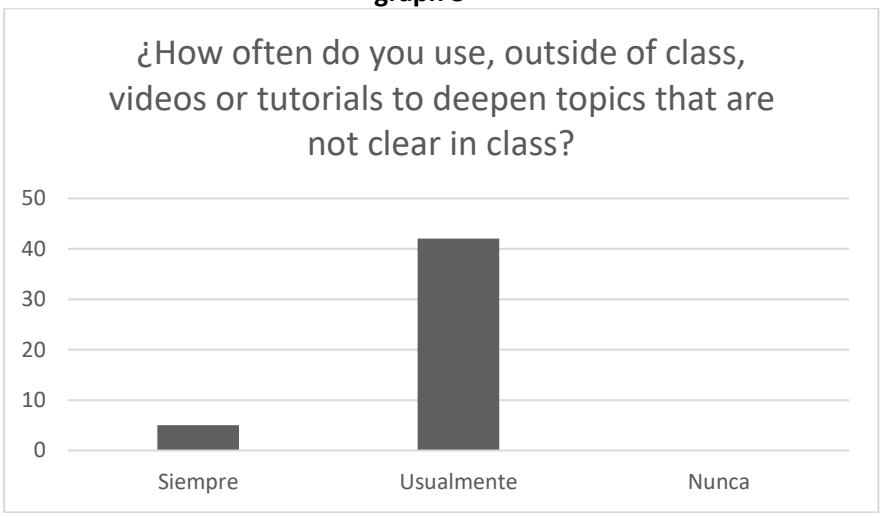


Source: own elaboration (2023).

On the other hand, to inquire about the value that students give to this type of resources to improve their learning processes; He went on to ask about his particular perception about how these videos can contribute, in addition to knowing if they are used as a study technique of autonomous choice, in their extracurricular spaces.

100% of those surveyed value the effectiveness of videos as audiovisual resources for their learning processes, finding in them a viable outlet that allows improving training processes. These results, not minor, not only revalidate the taste of young university students, but are presented as an input for the generation of didactic strategies by teachers, based on the preferences of their target audiences.

graph 3

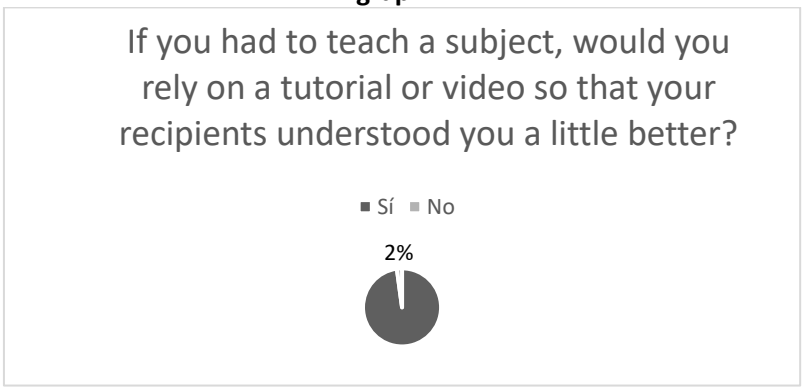


Source: own elaboration (2023).

Based on the results of the survey, represented in graphs 2 and 3 of this manuscript, 100% favorability is ratified about the perception that the students consulted have about the improvements in their learning processes, based on consumption. audiovisual resources within their training processes; At the same time, it is revealed that the use of these educational tools are not only considered habitual in class moments, but also recurrent in their individual study spaces, for the review of topics seen in class.

On the other hand, with two additional questions, it was sought that the surveyed students not only show their perception from the role of recipients of the teaching-learning process, but also consider their pedagogical actions, in the case of being issuers (teachers), within the same process in the classroom. From this, they were directly consulted to find out if they would use audiovisual resources such as videos or tutorials, to teach a topic in a classroom.

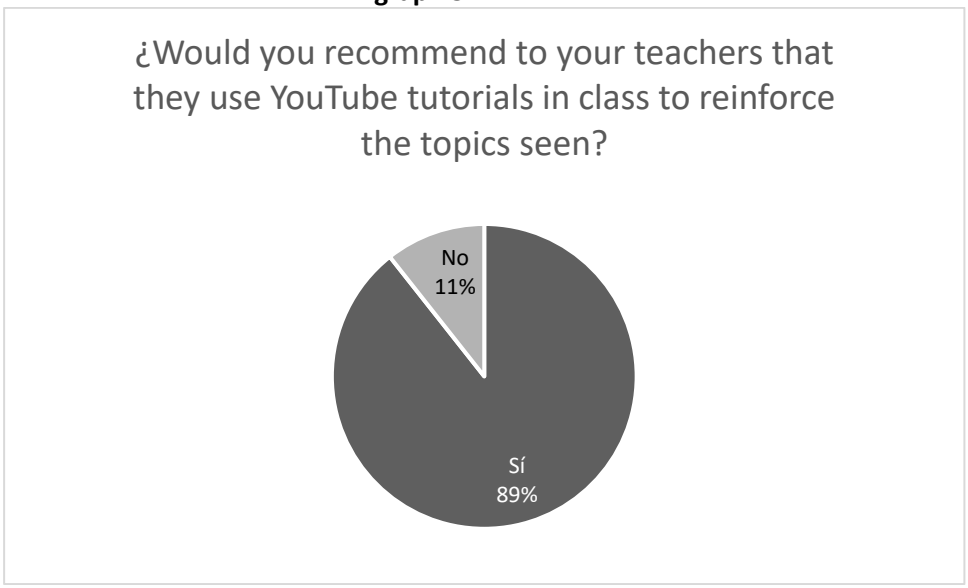
graph 4



Source: own elaboration (2023).

For this fourth question, it should be noted that 99% of the students responded in correspondence to the results presented in the previous questions, 2 and 3, taking into account that the 47 engineers in training consulted not only see value and relevance in the use of audiovisual resources such as tutorials and videos for their learning processes, but rather they make use of these to clarify doubts or delve into specific topics or topics of interest to them. At the same time, considering the supposed change of roles proposed in the question, only one person would not agree to use this type of audiovisual resources, to make themselves understood in a better way by the recipients of the information.

graph 5



Source: own elaboration (2023).

Finally, a last question was formulated to find out the intentionality of the respondents, compared to their ability to exchange good practices, in order to recommend to their teachers the use of this type of tool, to improve spaces for interactivity and participation in the classroom. of class. In this sense, the research result input shown in graph five serves as a starting point for the generation of improvement plans and innovative teaching strategies, based on the opinions, experiences and expectations of the consulted representative sample of universities. Colombians in Bogota.

Conclusions

The communication process has evolved transversally and this scenario is not alien to educational environments, where the figure of the teacher continues to play a leading role as a sender, while his students present themselves as receivers of information. The changes that have occurred around the traditional exchange of information in the classroom have allowed the unveiling of new languages and forms, which really contribute to learning and with this to fundamental precepts of the same such as attention, interest and participation of students. students.

It is evident that our students think and process information in a significantly different way than their predecessors (Prensky, 2001), an issue that should not only be seen as a digital and generational gap between students and teachers, but rather as a real opportunity for academia. and its maximum ambassadors in the teaching processes: the teachers. This implies recognizing the new forms of communication in the classroom and from them generating strategies to promote true learning for life.

In this sense, the usability preferences on this type of audiovisual resources that today stand out to digital natives, are presented as a starting point to generate adequate audiovisual teaching strategies; Starting from a central premise: the teacher must create learning environments based on the learner considering: interests, motivation, previous knowledge and evaluation feedback (González M, and Huerta P, 2019), a precept that not only tunes the student with his teacher, Rather, it allows the latter to measure learning based on participation and attention, through feedback exercises with the recipient of the information.

In this way, it is not enough then to consider the tastes and preferences that university students have to receive information, as well as the validation capacity that they express from their learning experiences, some autonomous, as a result of the usability of audiovisual resources. , to the point of referring and recommending their practicality and relevance, so that their teachers take them into account when

promoting reinforcement strategies on the topics covered; result of value evidenced in the survey carried out with 90% approval.When faced with the ongoing uncertainty brought on by the pandemic and the pressure to keep costs down, companies will need to realign their "where to play" choices across geography, consumers, and goods to maximise returns and make wise business decisions to sustain long-term survival. In order to thrive, companies will need to adopt customer-centric, supply chain, and operations management methods that emphasise flexibility and long-term viability.

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