


## Post-photography and the media and information ecosystem of undergraduate students. A case study of Mexico and Bolivia

Postfotografía y el ecosistema mediático e informacional de los universitarios. Un estudio en México y Bolivia

A pós-fotografia e o ecossistema midiático e informacional de estudantes universitários. Um estudo no México e na Bolívia

Alejandra Olivio<sup>1\*</sup> 

Jesus Lau<sup>2\*\*</sup> 

Luz Edith Herrera Diaz<sup>2\*\*\*</sup> 

<sup>1</sup> Faculty of Plastic Arts (FAP). (Universidad Veracruzana), México

<sup>2</sup> Doctoral Program in Educational Systems and Environments (DSAE). (Universidad Veracruzana), México

\* Professor, Faculty of Plastic Arts (FAP). (Universidad Veracruzana, Veracruz), Mexico

\*\* Researcher, and professor, Doctoral Program in Educational Systems and Environments (DSAE). (Universidad Veracruzana, Faculty of Pedagogy, Veracruz), Mexico

\*\*\* Professor, Doctoral Program in Educational Systems and Environments (DSAE). (Universidad Veracruzana, Veracruz), Mexico

The authors declare no conflict of interest.

Received: 31/03/2022; Revised: 27/04/2022; Accepted: 09/06/2022; Published: 15/07/2022

*Translation to English:* Teresa Estudillo Paredes



*To cite this article:* Olivio, Alejandra; Lau, Jesus; & Herrera, Luz Edith. (2022). Post -photography and the media and information ecosystem of university students. A case study of Mexico and Bolivia. *ICONO 14. Scientific Journal of Communication and Emerging Technologies*, 20(2). <https://doi.org/10.7195/ri14.v20i2.1878>

## Abstract

University students carry out post-photographic practices daily, using a range of media that prioritize interaction, which affects their learning processes. This technological-social phenomenon in education is the focus of this article, which explores the relationship among photographic images, their circulation and the changes that they trigger. Social networks, on the other hand, have become the communication channels of human activity, shaping communication dynamics, where photographic images have a new logic of representation of reality. The study identified the instruments of communication and information that made up the media and information ecosystem of the surveyed students, as well as the characteristics of their post-photographic activity, based on the application of a survey to 552 students from seven public and private higher education institutions from Mexico and Bolivia. Through an empirical study with a quantitative approach, the analysis allowed us to recognize that social networks have an impact not only on the dynamics of communication and socialization, but also on common practices for accessing different types of information, including academic information. Photography is, itself, one of the main elements in the decision-making process regarding the consultation or selection of content, as well as a fundamental part of the socio-communicative processes.

**Keywords:** Postphotography; media ecosystem; information ecosystem; higher education; socialization; social networks

## Resumen

Los estudiantes universitarios realizan prácticas postfotográficas cotidianamente, empleando un abanico de medios que priorizan la interacción, lo cual afecta sus procesos de aprendizaje. Este fenómeno tecnológico-social es el objetivo del presente artículo, en el cual se explora la relación con las imágenes fotográficas, su circulación y los cambios que esto detona. Las redes sociales, por otro lado, se han convertido en los canales de comunicación de la actividad humana, configurando sus dinámicas de comunicación, donde las imágenes fotográficas tienen una nueva lógica de representación de la realidad.

En el estudio se identificaron los medios e instrumentos de comunicación e información, que conformaban el ecosistema mediático e informacional de los estudiantes encuestados, así como también se determinaron las características de su actividad postfotográfica, a partir de la aplicación de una encuesta a 552 estudiantes de siete instituciones de educación superior pública y privada de México y Bolivia. Mediante un estudio empírico de enfoque cuantitativo, el análisis permitió reconocer que las redes sociales inciden, no solo en las dinámicas de comunicación y socialización, sino también en las prácticas comunes para acceder a diferentes tipos de información, incluyendo la de tipo académico. La fotografía es, por su parte, uno de los elementos principales en la toma de decisión sobre la consulta o selección de contenidos, así como parte fundamental de los procesos socio-comunicativos.

**Palabras clave:** Postfotografía; ecosistema mediático; ecosistema informacional; educación superior; socialización; redes sociales

## Resumo

Os estudantes universitários dedicam-se diariamente a práticas pós-fotográficas, utilizando uma gama de meios que dão prioridade à interação, o que afecta os seus processos de aprendizagem. Este fenómeno tecnológico-social é o foco deste artigo, que explora a relação com as imagens fotográficas, a sua circulação e as mudanças que isto provoca. As redes sociais, por outro lado, tornaram-se os canais de comunicação da actividade humana, configurando a sua dinâmica de comunicação, onde as imagens fotográficas têm uma nova lógica de representação da realidade. O estudo identificou os meios e instrumentos de comunicação e informação que constituem os meios e o ecossistema informativo dos estudantes inquiridos, bem como determinou as características da sua actividade pós-fotográfica, com base na aplicação de um inquérito a 552 estudantes de sete instituições de ensino superior públicas e privadas no México e na Bolívia. Através de um estudo empírico com uma abordagem quantitativa, a análise permitiu-nos reconhecer que as redes sociais afectam não só as dinâmicas de comunicação e socialização, mas também as práticas comuns de acesso a diferentes tipos de informação, incluindo a informação académica. A fotografia é, por seu lado, um dos principais elementos no processo de tomada de decisões relativas à consulta ou selecção de conteúdos, bem como uma parte fundamental dos processos sociocomunicativos.

**Palavras-chave:** Pós-fotografia; ecossistema dos meios de comunicação; ecossistema informacional; educação superior; socialização; redes sociais

## 1. Introduction

Contemporary society has been rapidly transformed, especially in the last two decades, by the computer revolution, which has altered the way in which individuals relate and communicate, gradually changing academic, personal and family habits. We have noticed the supremacy of social networks, the growing digital economy, the viral phenomena and the socio-cultural changes that all this generates.

In this context, youth is currently shaped by the characteristics of their social and cultural environment, which in turn, is affected by psychological, economical, and educational aspects, among other factors. Their cultural practices and worldviews are linked to the impact of digital technologies (Crovi, 2017), in which the oversupply of these media has led to changes in cultural consumption behaviors, impacting the social, family and educational spheres (Serna et al., 2018).

The digital media and platforms youngsters use for their daily activities are changing at great speed, transforming the media ecosystem and the ways in which they access information. In addition, screens, as mediators of the digital sphere, have generated an increase in visual content and the emergence of the so-called post-photographic practice

(Fontcuberta, 2020; Toro-Peralta and Grisales-Vargas, 2021). Which germinates in the context of social networks by transforming the ways of communicating, socializing and sharing through images.

How do social networks affect the search processes and access to information? What is the role of photography within the dynamics of communication, socialization and information? What characterizes students' post-photographic activity? And how do social networks intervene in this process? These are the questions that guided the present study.

Thus, this phenomena was assessed through a digital survey applied to 552 students from public and private universities from Mexico and Bolivia. The objectives of this work were to identify the means and instruments of communication and information, which make up the undergraduate student's media and informational environment, and to determine the characteristics of their post-photographic activity.

The university student communities reconfigure their educational, communicative and social practices, based on the means at their disposal. The role of the latter and digital technologies, in their interaction dynamics, are extremely important, since "media consumption practices speak of the social construction of reality that students carry out in their decision-making processes" (Serna et al., 2018, p. 28).

In this sense, photography is a historically disruptive media instrument at an artistic level, but also at a communicative, social and cultural level. These types of images have manifested themselves within digital culture with such strength, that today various social phenomena can be observed, disrupted and modified by their presence in the media and information scene. It must be said that much of the information, communication and socialization is carried out and circulates through images, mostly photographic (Malik et al., 2016; Bañuelos, 2017; Bell, 2019).

## **1.1. Information in a mediated society**

Information and communication technologies (ICT) have caused transformations at the social, political and economic levels, impacting the way in which people interact and communicate, as well as disrupting the productive sectors. The United Nations Educational, Scientific and Cultural Organization (UNESCO) states that "these developments have changed or are changing the ways in which people access, receive, evaluate, create and communicate their views and ideas" (UNESCO, 2013, p.26). In this sense, it is evident how the technological advances of web 2.0 in digital culture have allowed the Internet to be used in a more social, interactive and collaborative way (Reyna et al., 2018).

Information and knowledge have also become, on the other hand, one of the most important economic assets for development worldwide (OECD, 2019). However, complex

social changes have also been generated, since in mediatized societies, information is ubiquitous, accessible in any space, generated by anyone and potentially shared at any time to millions of people in different corners of the planet. This generates various situations that range from information saturation (Romero-Rodríguez et al., 2016) to the dissemination of false information, which have managed to change citizens' ideologies, beliefs and certainties.

From this, "technological developments are reducing the boundaries between media and information, as formally defined by both fields. Media is increasingly becoming part of formal academic studies" (Lau and Grizzle, 2020, p. 96).

In this vein, a mediated society gives rise to a participatory culture (Van-Dijck, 2016), linked to Internet properties to generate connections that make up digital communities, appropriating the potential use of technology to transform platforms into more social media. This media and digital ecosystem of social platforms hosted on the web is dynamic, volatile and changing, constantly adapting to the needs of users and the market.

## **1.2. Mobile technologies in higher education: Skills and media ecosystem**

Media ecosystems of individuals, particularly those of young people, have undergone rapid changes, where the technologies and devices, regularly used for communication and socialization, build media environments that affect the users (Scolari, 2015 ; Islas, 2015), by modifying their behaviors and the ways in which they approach their environment.

Digital technologies have been a watershed in the ways in which communication and socialization now take place. Likewise, mobile devices are inserted in all spaces of the social, but also of the informational, blurring the dividing lines between formal and informal education (Burbules, 2012; Pereira et al., 2019), since "the production cost has been reduced [...], the content becomes ubiquitous and is constantly updated" (Marta-Lazo et al., 2019, p. 540). In this sense, social media and the digital platforms that make them up have been evolving and changing as the network becomes more friendly, accessible and customizable, capturing more and more daily activities and taking them to digital environments.

These digital socialization practices "undoubtedly altered the nature of public and private communication" Van-Dijck (2016, p. 14), changing the way in which social relations, interpersonal communication and being part of a community are conceived. This is due to the fact that communication networks integrate and reconfigure social microsystems, turning them into environments of permanence that condition "the social macroenvironment in which cultures, beliefs and values are established" (Marta-Lazo et al. , 2019, p. 541).

Despite this media reconfiguration of communication, socialization and information, a classic vision of education still persists at faculty level, leading students to develop their own learning strategies, environments and techniques and their corresponding socialization (Pereira et al., 2019).

Consequently, various studies have addressed the appropriation of digital and mobile technologies in educational environments, in part because of their inevitable irruption in all spheres of life, and also, because of the pedagogical potential that these devices have in the context of higher education (Mateus et al., 2017; Lozano-Ramírez, 2020). At the same time, this democratization of content access and creation demands skills and competencies for information and media management and use (Romero-Rodríguez et al., 2016; Cuervo, 2017; Aparicio et al., 2020), since it has been proven that there is a lack of media skills for education, which contrasts with the self-perceptions that university students have about the skills they possess (Aparicio et al., 2020). This is due to the natural appropriation of digital media and their constant use that allow them to develop certain basic technical skills, but in fact, they lack critical, analytical and discursive skills (Romero-Rodríguez et al., 2016; Bañuelos, 2017).

The above evidences the need to continue deepening the analysis of the appropriation of digital media and mobile technologies in the context of higher education by changing "the conception of the network as a merely technological instrument, beginning to consider its dimension human, pedagogical and communicative" (Marta-Lazo et al., 2019, p. 549), at a time when the student media ecosystem is constantly being reconfigured.

### **1.3. Post-photography in the social media environment**

Post-photography is a term derived from photography, but some differences have been attributed and some characteristics, which emphasize the changes in the symbolic processes of representation of our contemporary society, have been added. The term was first coined in 1988 by David Tomas, who noted that "postphotography is based on the premise that critical and strategic transformations in the cultural dimensions of photographic modes of production lead to the development of alternative representational practices" (1988 , p. 64).

Therefore, post-photography can be understood from the transformations that photographic activity undergoes, no longer centered on the tradition of the image that sustained photographic theory for more than a century, but rather on the relationship that images have with their context and with the society where they are usually used. Starting from distancing from the technique of photographic representation, regardless of its digital support, post-photography must be understood "as a device of social and artistic meaning that inhabits other spaces and territories in our days, and at the same time generates other forms of interaction and socialization" (Toro, 2017, p. 37).

Along the same lines, Fontcuberta (2020), a contemporary photographer and theoretician who has been approaching and developing the concept, conceives a society immersed in a visual order that has changed, characterized by the immateriality and transmissibility of images, their excess and availability, and their contribution to communication, where post-photography “refers to photography that flows in the hybrid space of the digital society and that is a consequence of visual superabundance” (p. 7). This confirms that, if photography is linked to truth and memory, post-photography breaks with these conceptions, discrediting the veracity of the camera and displacing photographic uses to unexplored terrain.

The accessibility and omnipresence of cameras and screens build an effect of visual saturation inherent in the globalized and hyperconnected world. In addition to this, a mediated individual emerges, which Fontcuberta (2020) calls *Homo photographicus*, who is characterized by always carrying a mobile device with a camera easy to handle, that produces photographs massively, at no cost, and with an uninterrupted access to social media in which images are shared and consumed.

However, although the essence of the post-photographic image is not on its digital support, this is a necessary condition for it, since it can be acknowledged that the transformations in photographic practice are due to changes in its circulation. This indeed obeys to the digital medium, which has brought structural consequences in its operation from the outbreak of amateur photography, leading to be at the service of communication (Carlón, 2016). That is why:

In a certain sense, all the photographs that currently circulate on cell phone networks, through services such as WhatsApp or social networks (Instagram, Twitter, Facebook, etc.) are contemporary, because they are affected by the new conditions of discursive circulation (2016, pp. 48-49).

In summary, from the Internet and information and communication technologies, the world has changed and with it, the essence of photographic practice. Even though it could be thought the other way around, it is the image that constitutes the basis of this new world (Hand, 2020; Zulli, 2018). Post-photography is no longer just a photographic image, it is now a combination of cultural practices that go around communication, mediation, information, socialization, ubiquity, immateriality, massiveness and connectivity (Carlón, 2016; Fontcuberta, 2020; Toro-Peralta and Grisales-Vargas, 2021).

In this way, post-photography poses a transformation of the visual paradigm, which goes hand in hand with changes in media and information habits. Therefore, photographic images have changed their nature and functioning, inserting themselves in all social spaces, being a common practice that is part of the dynamics of the media ecosystem of young users.

## 2. Materials and method

The theoretical and conceptual arguments in the previous sections were the framework under which the methodological design of this exploratory empirical work was carried out. In this section, we describe the research method, which based on a quantitative approach, aimed to identify the media and information ecosystem of university students, as well as the characteristics of their post-photographic practice.

The selected populations were student communities from the Universidad de las Américas Puebla (UDLAP), the Benemérita Universidad Autónoma de Puebla (BUAP), the Universidad Popular Autónoma del Estado de Puebla (UPAEP), the Universidad Cristóbal Colón (UCC), and the Universidad Veracruzana (UV), all of them from Mexico, as well as from the Universidad Católica Boliviana San Pablo and the Universidad Mayor de San Andrés (UMSA) from Bolivia. The inclusion criteria for the sample were: 1) be an active student in one of these higher education institutions; 2) be studying a bachelor's degree program or equivalent and 3) have an electronic device with internet connection and be able to access it. No other specific criteria were established since the unit of study, the undergraduate student, tends to have a heterogeneous profile.

An online questionnaire was designed with 22 closed-response questions, its application was carried out from March 14 to 26, 2022. The survey invitation was sent to approximately 1,130 students, and 580 answered it. However, 28 participations were eliminated due to inconsistencies in the data provided, such as the lack of identification from the institution of origin or having completed undergraduate studies at the time of the survey. This resulted in 552 students surveyed through a non-probabilistic convenient sampling, given the limitations to identify and access the whole population (Leavy, 2017).

Similarly, the current context of health contingency and the institutional policies of each university affected access to student populations, so the size of the sample varies in some cases, depending on the type of distance learning activities, which facilitated or hindered data collection. However, it was possible to have representation of the academic areas in which a university program can be taken, thereby achieving variety in the disciplinary profile of the subjects surveyed.

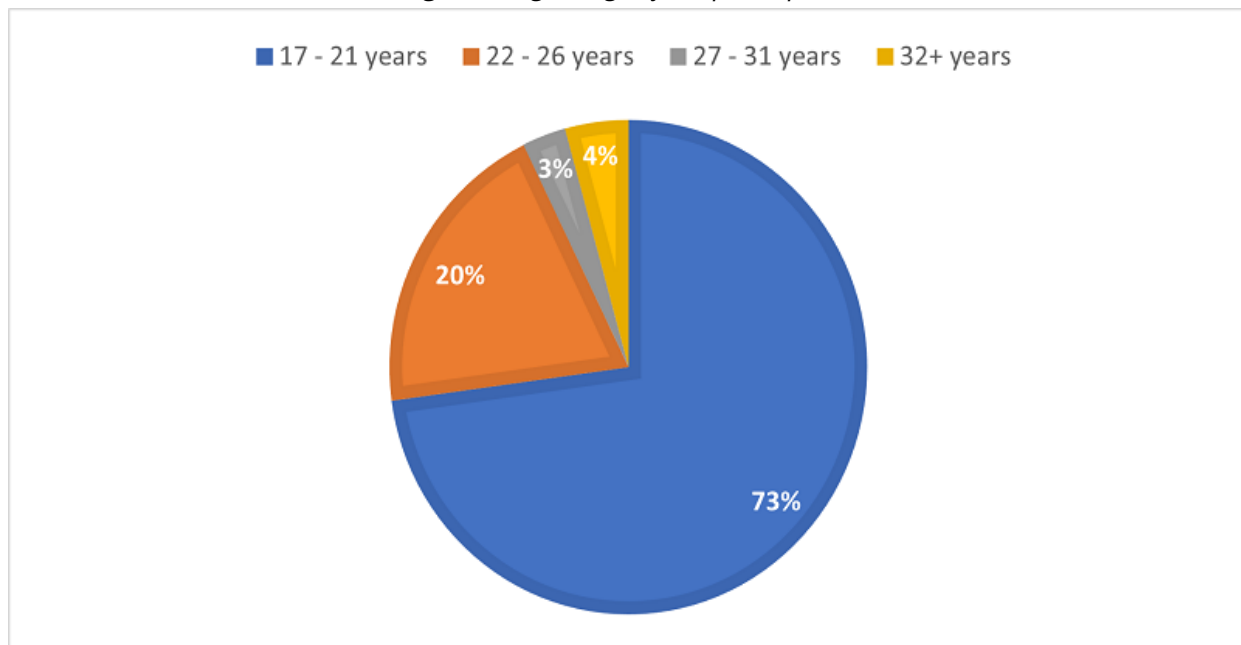
## 3. Results

The data collected allowed to obtain information that was analyzed from four fundamental aspects that correspond to the grouping of the answers in the questionnaire: a) The use of digital devices, b) The type of information and means with which it is accessed, c) The behavior around the photographic contents and d) The behavior that manifests a post-photographic activity in young students.



As mentioned before, we had the participation of 552 university students at the bachelor's level or equivalent, belonging to one of the higher education institutions that collaborated with the study. Regarding the demographic component (Figure 1), the data showed that the predominant age among the respondents ranged between 17 and 21 years (73%), followed by those between 22 and 26 years (20%). Likewise, the response from women was the majority (60.04%), above men (37.96%) and from a small fragment of respondents who preferred not to disclose their gender or assume themselves as non-binary (2%).

Figure 1. Age range of the participants



Source: self-made

As you can observe, Table 1 shows the number of participants in each of the educational institutions, regarding the number of subjects with the level or semester they were studying. In this way, it can be seen that at the UV, UPAEP, UMSA and the Universidad Católica Boliviana de San Pablo, most of the respondents belonged to the first level. This contrasts with the UDLAP, where a greater participation was found in second-year students, in the UCC, mostly third-year students and in the BUAP, the largest number of responses was obtained from fourth-year students. Therefore, the study had representation of all undergraduate study years.

Table 1. *Number of respondents by IES and level of school progress*

Country	University	1st and 2nd semester Students/%	3rd and 4th semester Students/%	5th and 6th semester Students/%	7th and 8th semester Students/%	9th and 10th semester Students/%	Total
Mexico	Universidad Veracruzana (UV)	<b>51 / 62.20%</b>	8 / 9.76%	13 / 15.85%	4 / 4.88%	6 / 7.32%	<b>82</b>
	BUAP	6 / 15%	7 / 17.50%	5 / 12.50%	<b>18 / 45%</b>	4 / 10%	<b>40</b>
	UDLAP	63 / 50.40%	<b>42 / 33.60%</b>	16 / 12.80%	4 / 3.20%	-	<b>125</b>
	Universidad Cristóbal Colón (UCC)	14 / 22.95%	15 / 24.59%	<b>17 / 27.87%</b>	15 / 24.59%	-	<b>61</b>
	UPAEP	<b>15 / 60.00%</b>	7 / 28.00%	1/4.00%	-	2 / 8.00%	<b>25</b>
Bolivia	Universidad Mayor de San Andrés (UMSA)	<b>50 / 62.50%</b>	15 / 18.75%	5 / 6.25%	7 / 8.75%	3 / 3.75%	<b>80</b>
	Universidad Católica Boliviana San Pablo	<b>64 / 46.04%</b>	18 / 12.95%	19 / 13.67%	30 / 21.58%	8 / 5.76%	<b>139</b>
<b>Total</b>		263	112	76	78		552

Source: self-made

Once the general aspects of the sample have been outlined, the results are presented below and segmented into four analysis cores, for processing purposes.

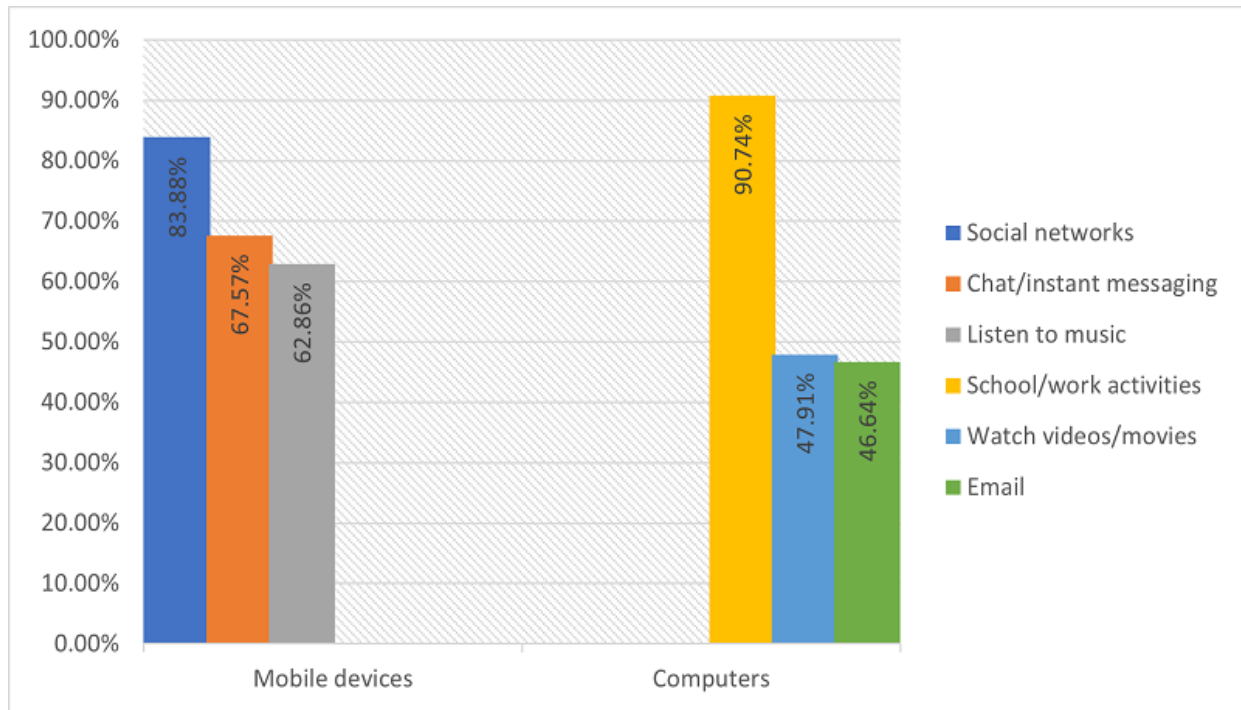
### 3.1. Use of digital devices

In this section, the uses that university students give to their equipment and electronic devices are identified, finding a contrast between the activities carried out on their mobile devices and on their computer equipment (Figure 2). On the one hand, when questioning students about the three main uses they give to their electronic tablets or mobile phones, 83.88% mentioned social networks in first place, showing chat and instant messaging in second place (67.57 %) and listening to music (62.86%) in the third. In this way, it can be recognized that mobile devices are predominantly used for digital socialization, communication and entertainment activities.

Unlike these results, 90.74% identified activities related to school or work as the main purpose of computers, in second place, they chose to watch videos or movies (47.91%), and reading and/or sending emails (46.64%) in the third. Consequently, it is possible to

appreciate a trend towards activities related to the search, access and use of information, displacing the dynamics related to social interaction to the eighth, ninth and tenth place of preference, for this type of equipment.

Figure 2. *Main uses of mobile devices and computers*



Source: self-made

### 3.2. Information and means of access

Regarding the type of information consulted through the electronic devices that students have, the search preference is headed by entertainment/fun content (36.31%), selecting educational/fun information in second place, school (26.35%). It should be noted that the majority of those surveyed placed journalistic information/news in the last places of search preference.

Table 2 shows the responses obtained regarding the type of information they consult and the position that the respondents assign to it, with 1 being the content they seek the most and 5 the least.

Table 2. *Information most frequently consulted through digital devices*

<b>Type of information</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Educational / School	32.53%	<b>26.35%</b>	20.76%	11.18%	9.18%
Scientific / Academic	12.60%	24.60%	<b>26.60%</b>	23.80%	12.40%
Journalism / News	8.82%	13.03%	19.44%	<b>25.05%</b>	<b>33.67%</b>
Entertainment / Fun	<b>36.31%</b>	21.23%	17.26%	13.49%	11.71%
Cultural / Artistic	12.38%	18.16%	18.16%	24.35%	26.95%

Source: self-made

Regarding the means used for communication, the instant messaging applications (64.16%) stand out, followed by calls through mobile telephone (27.01%) and direct messages through social networks (22.75%). Similarly, the digital media that the student uses the most to consult educational or academic content are web search engines, which were the option selected by 67.82% of the cases. Academic databases (51.82%) and educational channels or videos (51.64%) were also mentioned as some of the most recurrent means of accessing this type of information.

Regarding the search for informative or journalistic content (Table 3), the web pages of newscasts, media outlets or reporters (67.95%), their social networks (66.12%) and their video channels (60.26%) stood out, with almost equal preference. This allowed us to observe that the media have managed to structure an informative ecosystem, in which the university students are inserted when consulting this type of content.

Finally, regarding entertainment content, in 86.73% of cases social networks are accessed, 65.27% consult videos and tutorials, while 59.45% of all respondents selected streaming platforms as the preferred media for consulting these contents.

Table 3. Main media selected for the search and access to content

Contents	1st	2nd	3rd
Communicative	Instant messaging (WhatsApp, Telegram, Messenger)	Cellular/mobile phone calls	Direct message (DM) on <b>social networks</b> (Instagram, Twitter, Snapchat, etc.)
Educational	Web browsers (Google, FireFox, Safari)	Academic databases (Dialnet, Scielo, Redalyc, Google Scholar)	<b>channels and/or videos</b> (YouTube, Tik-tok, Vimeo)
Informative	Websites of news, media or reporters	<b>Social networks</b> of news, media or reporters	<b>Video channels of</b> news, media or reporters
Entertainment	<b>social networks</b> (Facebook, Twitter, Instagram, Tik Tok, Snapchat)	<b>Video and tutorials</b> (YouTube, Tik-Tok, Twitch, Vimeo, Pinterest)	Streaming platforms (Netflix, Prime, HBOMax, Disney+, etc.)

Source: self-made

### 3.3. Photographic content

In this core analysis, it was possible to identify the main motivations that university students have to decide to open a note or publication through digital media and devices. It was found that the most stimulating is the title, being mentioned by 80.87% of the cases, followed by the photographs that accompany the publication (58.11%) and the source of the information (48.27%).

On the other hand, when questioning university students about the types of content they share, the most popular were instant messaging applications, and asking them to identify with the number 1 the element they use the most and 6 the one they use the least (Table 4), it was possible to notice that text messages occupy the first position (73.17%). However, photographs are the option chosen by 36.02% of the sample, as the second most shared content in these media, added to 30.46%, which also places it as the third most shared

element, with videos in fourth place (31.94%). In this way, the presence of photographic elements in communication processes is evident.

Table 4. *Main contents shared through instant messaging*

<b>Contents</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
Text messages	<b>73.17%</b>	5.63%	3.19%	3.00%	3.75%	11.26%
Photographs	7.28%	<b>36.02%</b>	<b>30.46%</b>	12.26%	10.73%	3.26%
Videos	2.18%	8.53%	23.41%	<b>31.94%</b>	21.43%	12.50%
Audio	3.00%	27.20%	22.20%	24.40%	12.20%	11.00%
Memes/GIF	7.16%	14.91%	11.93%	17.30%	<b>27.83%</b>	20.87%
Website links	8.33%	8.72%	9.11%	12.60%	24.03%	<b>37.21%</b>

Source: self-made

Similarly, regarding the content published on social networks, Table 5 shows that photography was the most used element (39.22%), followed by videos in second (29.86%) and third places (29.24%).

Table 5. *Main content published on social networks*

<b>Contents</b>	<b>1st</b>	<b>2nd</b>	<b>3rd</b>	<b>4th</b>	<b>5th</b>	<b>6th</b>
Text	23.08%	18.15%	18.74%	18.54%	10.45%	11.05%
Photographs	<b>39.22%</b>	23.73%	15.10%	7.65%	8.43%	5.88%
Videos	6.13%	<b>29.86%</b>	<b>29.24%</b>	18.40%	11.66%	4.70%
Audio/ music	3.96%	8.75%	11.04%	<b>23.54%</b>	<b>26.25%</b>	26.46%
Memes/GIF	21.66%	11.34%	14.57%	17.41%	20.04%	14.98%
Website links	7.16%	10.22%	10.43%	14.11%	22.90%	<b>35.17%</b>

Source: self-made

### 3.4. Photographic activity

The last group of items was focused on recognizing and characterizing the student's post-photographic practice, based on their interaction with the photographic elements. In this sense, their main motivation for taking or sharing photographs is 'to express themselves

creatively', which was mentioned as the first motivation by 36.44% of the sample; to 'remember an event' was identified as the second reason in 25.93% of the cases, and 'for communication or wanting to show something to another person' was chosen by 31.40% of the respondents as the third reason.

In order to identify the scenarios in which photographic content circulates, students were asked to choose three social networks in which they share these images. It was found that Instagram is the option indicated by 80.44% of the cases, WhatsApp by 71.66% and Facebook by 50.46% of the participants. Likewise, 50.18% of undergraduate students stated that most of the photographs they publish are their own, against 6.79%, who said they almost always share content created by others, and 43.23%, who are in the middle, between disseminating own or other people's photos.

Regarding the type of interventions carried out on the photographs, it was identified that in 52.58% of the cases, the main edition that is carried out is to cut the image, 49.08% manipulate lighting aspects and 32.84% apply filters to photography in general. Along the same lines, the external elements that are added to most of the publications of a photograph are 'descriptive comments on the image' (54.76%), 'labels to other people' (42.72%), and 'emoticons or emojis' (32.78%).

Finally, regarding photographs published on social networks by other people, undergraduate students tend to interact more with photography on 'everyday life' themes (58.09%), followed by 'creative or artistic' images (47.43%) and 'entertainment or memes' (44.85%); whereas the type of interaction with these contents are usually 'reactions or emoticons' (81.80%), 'text comments' (67.10%) and 'Stickers' (36.40%).

From the above, it was possible to draw a general cartography on the photographic dynamics of the students in the arena of social networks, constituting what has been defined as post-photographic activity.

## 4. Discussion and conclusions

From the results obtained in this exploratory research, the means and instruments of communication and information used by the undergraduate students, as part of their daily dynamics, were identified. These resources, in turn, make up the media and informational ecosystem that shape the educational, social, communicative and participatory processes of young people, who move around digital and physical spaces with complete naturalness, adopting the means at their disposal ( Crovi, 2017).

It was found that the characteristics and nature of the digital devices that the students use determine the type of behaviors and activities that are carried out with them. This was evident when observing how mobile devices tend to be used for activities related to

digital socialization, communication and entertainment (Figure 2), which is understandable due to the accessibility to this type of equipment and its ubiquity, coinciding with the idea of Romero-Rodríguez et al. (2016) and Riffo (2015) about the media effects of the use of mobile devices. In this sense, instruments such as the computers are predominantly used in activities related to the search, access and use of information, that is, they are devices designed for less social activities.

It should be noted that, although the results show a more social use of mobile devices, these are also inserted in educational spaces, as they are part of the practices that the students develop informally (Pereira et al., 2019), whether these are complementary or independent from their formal education.

Regarding the second core of the analysis on the different types of information that undergraduate students consult and the ways in which they seek and obtain it, the results allow us to agree with Serna et al. (2018), who find a strong tendency towards social interaction content. This is ratified by the preference of those surveyed for entertainment content (Table 2) who, in turn, point to social networks as their preferred type of entertainment (Table 3), as also stated by García-Ruiz and Pérez- Scoda (2019).

On the other hand, it is evident that social networks affect common practices to access different types of content (Table 3), proving that these digital platforms have been inserted in all areas of the social and informational (Leaning, 2017; Covi, 2017 ; Van-Dijck, 2016). It should be added that locating instant messaging applications and direct message sections of social networks, as the main communication channels of the university, is significant in the context of the continuous reconfiguration of its media ecosystem.

Access to video channels or video tutorials to consult educational content or the broad structure that the media have set up to disseminate their news content (Table 3) are indicative of the immersive flows of social networks. This opens the discussion on the excessive digital consumption of young people, the lack of media and information skills to deal with the large amount of information to which they have access and the spread of pseudo-information (Romero-Rodríguez et al., 2016).

Thus, the Internet has become a powerful platform for accessing and disseminating information, but at the same time, it's inappropriate use can become a risk for infoxication or disinformation, especially in young users (García-Ruiz and Pérez-Escoda, 2019). This supports the urgency to analyze the media phenomenon based on the skills that university students must have, which has been addressed by several studies within the Spanish context (Mateus et al., 2017; Cuervo, 2017; Aparicio et al., 2020), This has raised issues about the adoption of digital media as a strategy for academic and social development (Pereira et al., 2019; Marta-Lazo et al., 2019). From this, it would be convenient to delve into future research in the Latin American context, in the logic of identifying differences, coincidences and new perspectives.



In the third core of results, it was observed that photography is one of the main elements in decision-making on information consultation, as well as in communication and socialization practices (Table 4 and Table 5). It is known that, in many cases, students do not read the complete information from a source before sharing it, and that a similar phenomenon occurs in social networks (Romero-Rodríguez et al., 2016). However, the data showed that one of the main motivations is the photographic elements that accompany the notes or publications.

Regarding the insertion of photographic images within the processes of communication and socialization, the results indicate the boom that these visual elements are having in social networks, configuring themselves as an integral part of the means of social interaction (Russmann and Svensson, 2017; Hand, 2020). This denotes a turn towards a visual culture, which transforms the ways in which the students relate to the world, to their community, as well as to their self-representation and self-perception (Saunders et al., 2020; Bell, 2019).

Lastly, the fourth core analysis allowed the identification of various processes around the interaction between media and social networks with the photographic practice carried out by the undergraduate students. This is why these socialization and communication spaces were classified as the media platforms in which the student carries out his post-photographic activity.

Various studies indicate that the motivations for students' sharing photographs on social networks, besides their aiming to be an active part of a community, are based on affection, attention seeking, revelation, habitual hobby, exchange of information and social influence (Malik et al., 2016; Banuelos, 2017). In that order of ideas and derived from the results obtained, we propose to add to this list of reasons those ones related to expression, creativity and memory. This allows to observe that the reasons for producing photographic images diversify reciprocally to the expansion of image functions.

As for the preferred social networks to access and share photos, Instagram and Facebook continue to head the lists (Bell, 2019; Zulli, 2018; Malik et al., 2016). However, it is worth the mention of WhatsApps one of the digital spaces in which the photographic image travels the most, even above Facebook. What endorses Carlón's approaches (2016) on the new conditions of discursive circulation of photographs through this type of instant messaging applications, which are hosted on mobile phone networks. This opens the analysis not only on the diversification of an intrinsically communicative medium, which now has some social network attributes, such as WhatsApp and instant messaging applications, but it would also be necessary to reflect on the character of communicational immediacy that the photographic image has when traveling on these platforms.

As regards the authorship of the photographs that are shared and published, the perspective of the user as content producer is maintained, becoming an already generalized habit (Lobinger et al., 2020; Malik et al., 2016). Along these same lines,

image editing practices, as well as the elements that are added to the photograph for publication, are consistent with the operating characteristics of the networks in which they are inserted. It is recognized that these tend to be retouched or manipulated, creative and even aesthetically complex; features promoted, to a large extent, by the image editing facilities that social media such as Instagram and Snapchat have provided (Bell, 2019). However, image editing cannot be analyzed only from the point of view of selective self-representation to please an audience, rather, the motivations for sharing and intervening in photographs vary and diversify.

Similarly, interacting with the photographs published by others is part of the socialization and communication dynamics that characterize post-photographic activity, since what is now observed in the images is not their material or formal characteristics, but the meaning attributed to them and to the elements that interact with them, based on the spaces in which they circulate (Toro-Peralta and Grisales-Vargas, 2021).

In conclusion, we can assert that this exploratory research work focused on identifying the means that students use to develop their communication, socialization and information processes, verifying that social networks have a decisive impact on all processes of students' social interaction. Likewise, the significant role of photographic images that are almost omnipresent in all spheres of human activity is reaffirmed.

The Latin American context, in which this research was framed, coincides in many of the general aspects that studies from other latitudes have traced. However, it would be convenient to promote other approaches that allow contrasting the reality of the different media, informational and visual scenarios, in order to enrich the discussion.

It will also be pertinent that future studies address the debate about the risks of the indiscriminate use of images, mainly in different social sectors, such as students' communities that are most likely to be deceived by the unethical use of such images, since, being a mass information medium, explicit and direct, can be used to manipulate and misinform (Domínguez-Rigo, 2020).

Last but not least, it is to be considered that the immediacy and proliferation of images, in addition to the circulation spaces provided by social networks and their operating logic, produce an ideal space for the emergence of a photographic activity that transcends theoretical, semantic and pragmatic limits, mutating into a practice that can be considered post-photographic.

## Data availability

<https://data.mendeley.com/datasets/6gyhbb8yyv/2>

## Authors' contribution

**Alejandra Olivio:** Conceptualization, Methodology, Validation, Formal Analysis, Research, Resources, Data Processing, Writing-Original Draft, Writing-Review and Edition, Visualization, Supervision, Project Management.

**Jesús Lau:** Conceptualization, Methodology, Validation, Formal Analysis, Resources, Writing-Review and editing, Project Management.

**Luz E. Herrera Díaz:** Conceptualization, Methodology, Writing-Review and Editing. All authors have read and accepted the published version of the manuscript.

## References

- Aparicio, Daniel; Tucho, Fernando and Ivory-Carmona, Rafael. (2020). The dimensions of media competence in Spanish university students. *Icon14*, 18 (2), 217–244. <https://doi.org/10.7195/RI14.V18I2.1492>
- Banuelos, Jacob. (2017). Mobile photography and social networks: Production and socialization practices in university students. *Icon14*, 15 (1), 1–22. <https://doi.org/10.7195/ri14.v14i2.999>
- Bell, Beth. (2019). “You take fifty photos, delete forty nine and use one”: A qualitative study of adolescent image-sharing practices on social media. *International Journal of Child-Computer Interaction*, 20, 64–71. <https://doi.org/10.1016/j.ijcci.2019.03.002>
- Burbules, Nicholas. (2012). Ubiquitous learning and the future of teaching. *Education Meetings*, 13 (2), 3–14. <https://dialnet.unirioja.es/servlet/articulo?codigo=4100463>
- Carlón, Mario (2016). Record, upload, comment, share: photographic practices in the contemporary era. In P. Corro and C. Robles (Eds.), *Aesthetics, media and subjectivities* (pp. 31–54). Pontifical Catholic University of Chile. [https://semioticaderedes-carlon.com/wp-content/uploads/2018/04/02\\_mario-carlon-registrar.pdf](https://semioticaderedes-carlon.com/wp-content/uploads/2018/04/02_mario-carlon-registrar.pdf)
- Crovi, Delia. (2017). Students facing the appropriation of digital spaces. In P. Avila Muñoz and C. Rama Vitale (Eds.), *Internet and education: loves and heartbreaks* (p. (131-153)). INFOTEC. <https://www.infotec.mx/work/models/Infotec/Publicaciones/Internet-y-Educacion-a-mores-y-desamores.pdf>
- Cuervo, Sandra. (2017). *Intervention for the development of media competence and the decoding of values in adolescents* [University of the Basque Country]. <https://addi.ehu.es/handle/10810/22705>
- Dominguez-Rigo, Miguel. (2020). Visual literacy as a defense against fake news. *Journal of Learning Styles*, 13, 85–93. <http://revistaestilosdeaprendizaje.com/article/view/2012>
- Fontcuberta, Joan. (2020). *The fury of images. Notes on Postphotography* (6th ed.). Gutenberg galaxy.
- García-Ruiz, Rosa and Pérez-Escoda, Ana. (2019). Empower citizens through media education. *Hamut'ay*, 6 (2), 7–23. <https://doi.org/10.21503/hamu.v6i2.1771>
- Hand, Martin. (2020). Photography Meets Social Media. Image Making and Sharing in a Continually Networked Present. In G. Pasternak (Ed.), *The Handbook of Photography Studies* (pp. 1–30). Routledge. <https://doi.org/https://doi.org/10.4324/9781003103974>

- Islands, Octavio. (2015). Media ecology: complex and systemic metadiscipline. *Keyword*, 18 (4), 1057–1083. <https://doi.org/10.5294/pacla.2015.18.4.5>
- Lau, Jesus and Grizzle, Alton. (2020). Media and information literacy: intersection and evolution, a brief history. In S. Goldstein (Ed.), *Informed Societies. Why information literacy matters for citizenship, participation and democracy* (pp. 89–110). Facebook Publishing.
- Leaning, Marcus. (2017). The Nature of Digital Media Content. *Media and Information Literacy*, 81–99. <https://doi.org/10.1016/b978-0-08-100170-7.00005-6>
- Leavy, Patricia. (2017). *Research Design. Quantitative, Qualitative, Mixed Methods, Arts-Based, and Community-Based, Participatory Research Approaches*. The Guilford Press.
- Lobinger, Katharina; Venema, Rebecca and Kaufhold, Anja. (2020). Hybrid repertoires of photo sharing: exploring the complexities of young adults' photo-sharing practices. *Visual Communication*, 0 (0), 1–24. <https://doi.org/10.1177/1470357219894038>
- Lozano-Ramirez, Leticia. (2020). Social networks and mobile apps as a support tool in higher education. In I. Aguaded and A. Vizcaíno-Verdú (Eds.), *Social networks and citizenship. Towards a cyberconnected and empowered world* (pp. 255–262). Communicate Editions.
- Malik, Aqdas; Dhir, Amandeep and Nieminen, Marko. (2016). Uses and Gratifications of digital photo sharing on Facebook. *Telematics and Informatics*, 33 (1), 129–138. <https://doi.org/10.1016/j.tel.2015.06.009>
- Marta-Lazo, Carmen; Gabelas-Barroso, José and Ivory-Carmona, Rafael. (2019). The Relational Factor and the 3.0 ecosystem: new connectivities, new saturations. In L. Romero-Rodríguez and D. Rivera-Rogel (Eds.), *Communication in the digital scenario: current affairs, challenges and prospects* (pp. 535–569). Pearson. <https://digibug.ugr.es/handle/10481/61272>
- Mateus, Julio; Aran-Ramspott, Sue and Masanet, Maria-Jose. (2017). Analysis of the literature on mobile devices in the Spanish university. *ITEN Ibero-American Journal of Distance Education*, 20 (2), 49–72. <http://revistas.uned.es/index.php/ried/article/view/17710/16047>
- OECD. (2019). Higher Education in Mexico: Labor Market Relevance and Outcomes, Higher Education. In *OECD Publishing*. <https://doi.org/https://doi.org/10.1787/26169177>
- Pereira, Sarah; Fillol, Joana and Moura, Pedro. (2019). Youth learning with digital media outside of school: From the informal to the formal. *Communicate*, 27 (58), 41–50. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059283143&doi=10.3916%2FC58-2019-04&partnerID=40&md5=06f162fd92de416cb3925e79cd156e4c>
- Reyna, George; Hanham, Jose and Meier, Peter. (2018). The Internet explosion, digital media principles and implications to communicate effectively in the digital space. *E-Learning and Digital Media*, 15 (1), 36–52. <https://doi.org/10.1177/2042753018754361>
- Riffo, Ignacio. (2015). The media culture. Reflections and perspectives – Spain. *Communication*, 6 (2), 46–57. [http://www.scielo.org.pe/scielo.php?script=sci\\_arttext&pid=S2219-7168201500020005](http://www.scielo.org.pe/scielo.php?script=sci_arttext&pid=S2219-7168201500020005)
- Romero-Rodríguez, Luis; Torres-Toukoumidis, Angel; Pérez-Rodríguez, M. Love and Aguaded, Ignacio. (2016). Analfanauts and the fourth screen: absence of infodiets and media skills and information in young Latin American university students. *Fonseca, Journal of Communication*, 12 (12), 11–25. <https://doi.org/10.14201/fjc2016121125>
- Russmann, Uta and Svensson, Jakob. (2017). Introduction to visual communication in the age of social media: Conceptual, theoretical and methodological challenges. *Media and Communication*, 5 (4), 1–5. <https://doi.org/10.17645/mac.v5i4.1263>

- Saunders, Jessica; Eaton, Asia and Aguilar, Sabrina. (2020). From self(ie)-objectification to self-empowerment: The meaning of selfies on social media in eating disorder recovery. *Computers in Human Behavior*, 111 , 1–9. <https://doi.org/10.1016/j.chb.2020.106420>
- Scolari, Carlos. (2015). *Media Ecology: Environments, Evolutions, and Interpretations* (C. Scolari (ed.)). Gedisa.
- Serna, Andrea; Hernandez, Mauricio; Sandoval-Romero, Yamile and Manrique-Grisales, Jorge (2018). Cultural media consumption practices in young Colombian students: A pilot study. *Dixit*, 28 , 22–39. <https://doi.org/10.22235/d.v0i28.1579>
- Thomas, David. (1988). From the Photograph to Postphotographic Practice: Toward a Postoptical Ecology of the Eye. *SubStance*, 17 (55), 59–68. <https://doi.org/10.2307/3685214>
- Toro-Peralta, Kevin and Grisales-Vargas, Adolfo. (2021). Post-photography: from the image of the world to the world of images. *Art, Individual and Society*, 33 (3), 899–916. <https://doi.org/10.5209/ARIS.70435>
- Toro-Peralta, Kevin. (2017). A Look At The Concept Of Post Photography. *Edge of The Word*, 22 , 37–42. <https://revistasum.umanizales.edu.co/ojs/index.php/filodepalabra/article/view/2430>
- UNESCO. (2013). Global Media and Information Literacy Assessment Framework: Country Readiness and Competences. In *United Nations Educational, Scientific and Cultural Organization (UNESCO)*. <https://unesdoc.unesco.org/ark:/48223/pf0000224655>
- Van-Dijck, Jose. (2016). *The culture of connectivity: A critical history of social networks*. XXI century. <http://library1.nida.ac.th/termpaper6/sd/2554/19755.pdf>
- Zulli, Diana. (2018). Capitalizing on the look: insights into the glance, attention economy, and Instagram. *Critical Studies in Media Communication*, 35 (2), 137–150. <https://doi.org/10.1080/15295036.2017.1394582>