Journal of Sound, Silence, Image and Technology
Issue 6 | December 2023 | 33-46
ISSN 2604-451X

Use of mobile devices for audiovisual creation in the university classroom

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Date received: 30-06-2023
Date of acceptance: 27-09-2023
Date published: 01-12-2023

PALABRAS CLAVE: ENSEÑANZA AUDIOVISUAL | COMUNICACIÓN MÓVIL | FILMACIÓN | ENSEÑANZA SUPERIOR | PLAN DE ESTUDIOS UNIVERSITARIOS.
KEYWORDS: AUDIOVISUAL INSTRUCTION | MOBILE COMMUNICATION | FILM MAKING | HIGHER EDUCATION | UNIVERSITY CURRICULUM.

RESUMEN

Ante la mejora de los dispositivos móviles y su uso masivo en la industria audiovisual, la poca presencia de estos en las estudios relacionados con el sector es la base de una investigación que contempla comprender la percepción y el uso que hacen los estudiantes de los dispositivos móviles para la creación de contenido audiovisual. A partir de una acción formativa donde estos dispositivos son los medios protagonistas, y de una encuesta previa y posterior a esta acción, se presenta un análisis sobre el cambio en el uso y la percepción producido, indicando la necesidad de introducir estas herramientas en el aula para el beneficio que los mismos estudiantes perciben. Los resultados permiten reflexionar sobre la necesidad de repensar los planes docentes en los grados de comunicación, específicamente ante las competencias técnicas relativas a la creación audiovisual con dispositivos móviles. Los resultados relacionados con la necesidad de formación recibida por los estudiantes y su aceptación de las herramientas en un sentido profesional marca la discusión futura sobre su implementación en educación superior en medios audiovisuales.

ABSTRACT

In view of the improvement in mobile devices and their massive use in the audiovisual industry, their scarce presence in related studies is sufficient reason to undertake research to understand student perception and use of mobile devices for creating media content. An analysis regarding the change in the use and perception of mobile devices is presented, by way of a training action involving mobile devices as the main media and a survey before and after the action. This shows the need to introduce these tools in the classroom for the benefit that the students themselves perceive. The results allows us to reflect on the need to rethink teaching plans in communication degrees, specifically in terms of technical skills related to audiovisual creation with mobile devices. The results related to the need for training received by students and their acceptance of the tools in a professional context indicate a discussion is necessary concerning their implementation in higher education in audiovisual and media studies.

Introduction

The film industry is not oblivious to the constant evolution that has taken place in some basic elements of our daily lives: mobile devices (Goggin, 2010). Tablets and smartphones have become a meta-medium (Márquez, 2017) encompassing existing media and the generation of content that adapts to its specific environment.

Specifically, in the audiovisual field, mobile devices are now tools which are available for creation, production, dissemination, and communication across all media, from cinematography to content for social media (Schleser, 2021). The emergence and integration of these devices within the audiovisual sector respond to two fundamental issues: the ability to capture content (production) and the ability to use various tools on a single device through available apps (pre-production, post-production, and distribution). In this regard, the hybridization of these technologies within the audiovisual sector has brought about profound changes in how the industry organizes new production and its mode of operation (Suárez-Rodríguez, 2016).

Similarly, the constant changes in this technology necessitate continuous reflection and analysis (Scolari et al., 2012) in order to demonstrate the relationship between technological changes and their applications in the specific practices of the audiovisual sector. One of the most significant elements in this regard is the technological improvement of the cameras integrated into these devices (Delbracio et al., 2021). It is no coincidence that many advertising campaigns emphasize this aspect as a differential element of a specific model or brand of smartphone or tablet. Consequently, in the realm of audiovisual creation, the most striking aspect tends to be the production of content using a mobile device for its capture.

In this manner, focusing on the cinematic and audiovisual sector, the use of mobile devices has transitioned from having experimental and/or artistic purposes – during the early 21st century (Berry, 2016; Keep, 2014; Berry & Schleser, 2014; Berry, 2017) – to becoming a tool which is fully integrated into all the different processes of production due to the proliferation of applications for various procedures related to production phases (Aguado & Martínez, 2008; Miller, 2014; Castillo-Pomeda, 2016; Schleser, 2021). This indicates that audiovisual creation extends far beyond mere camera capture and that different departments and tasks require distinct tools (Aguado et al., 2015).

Consequently, the presence of apps and mobile devices for content capture within the industry (Isikman, 2018) demands the questioning of their integration into higher education related to audiovisual creation and even journalism, where so-called Mobile Journalism (MOJO) is increasingly relevant (Salzmann et al., 2020). In the context of university education in audiovisual content, it is essential to note that the need to review the competencies of students in degrees related to audiovisual creation has been highlighted for over a decade (Ferrés & Piscitelli, 2012). However, various studies (Mateus et al., 2017; Martínez-Rodrigo et al., 2019; Suárez & Grané, 2019) indicate the contrary; the educational require-

ments demanded by the audiovisual industry are not being met.

Additionally, concerns have been raised about whether teaching staff have up-to-date training (Lena-Acebo et al., 2022; European Schoolnet & Digital Europe, 2014, p. 13), and there is a need to dedicate significant hours to train both teachers and students in these new technological tools in order to address this issue (Benítez & Stepanian, 2012, p. 131). Furthermore, insufficient development of professional competencies in university studies has been noted (Universia-Accenture, 2007, p. 113), along with a mismatch between the vision of industry professionals and the existing curriculum regarding the most important competencies (García et al., 2012, p. 414).

All these aspects prompt a reflection on the need to introduce, among other things, competencies related to audiovisual creation using mobile devices. This specific aspect, focused on the context at hand, remains a widespread demand emphasizing the advantages that the use of these devices can bring to higher education. For instance, the ability to manage activities for large teams, portability for accessing information and organizational elements, and the ability to work in groups – characteristics inherent in the audiovisual sector (Sung et al., 2016; Salcines-Talledo et al., 2022). Additionally, it is crucial to actively use mobile devices in the classroom as elements in the learning process, within a model that emphasizes research and practical work (Suárez et al., 2018). This aligns with placing the devices themselves at the centre of discourse regarding audiovisual creation with mobile devices (Mascarell, 2020).

This context leads us to carry out a project that, through a training action using mobile devices, allows students to acquire competencies in this area and enables an analysis of whether their inclusion in current audiovisual studies is necessary.

Methodology

The present article presents results obtained from an educational innovation project in higher education aimed to verify the use and perception of mobile devices as tools for audiovisual creation among students. In addition to this primary element of analysis, the intention was to ascertain whether there was a change in both use and perception of students following a training action through the use of surveys completed before and after said training action.

The results aim to address the following specific objectives:

1. Analyse students' use of mobile devices for audiovisual creation in personal and academic settings.
2. Analyse students' perceptions regarding the use of mobile devices for audiovisual creation in the professional field.
3. Determine if it is necessary to include competencies related to the use of mobile devices for audiovisual creation in audiovisual studies.

These objectives correspond to the following research questions:

4. [R1.1] What use do students make of mobile devices for audiovisual content creation in personal settings?
5. [R1.2] What use do students make of mobile devices for audiovisual content creation in academic settings?
6. [R2] What perception do students have regarding the use of mobile devices for professional audiovisual creation and its potential in their future careers?
7. [R3] Is it necessary to include mobile devices in the curriculum of audiovisual studies?
8. [R4] Is there a change in the use and perception of students after using mobile devices for audiovisual creation at university?

To address these questions, a quasi-experimental methodology with a quantitative nature (complemented by a methodological approach) was employed, focusing on program evaluation techniques (Alvira-Martín, 2002). For this purpose, a survey instrument was developed to assess students' use, knowledge and perception regarding the use of devices and mobile applications for audiovisual creation. This questionnaire was implemented in both pre-test and post-test formats. The pre-test was conducted at the beginning of the teaching period in a subject focused on camera procedures, followed by a training action that targeted the studied variables of audiovisual creation using industry-specific apps for production (Filmic Pro) and pre-production (Shot Designer). At the end of the teaching period, a post-test was administered to students to compare their responses before and after the training. The only difference between the two questionnaires was the addition of a question in the post-test requesting participants to evaluate the training action.
The study sample made up of students from a second-year Audiovisual Media studies subject. Specifically, the initial data collection phase involved 76 students and the final phase had 71 participants. All participants took part voluntarily and anonymously.
Regarding questions based on the variable under study, the dimensions represented in Table 1 were utilized.

Dimensions	*Questions Description*
Sociodemographic and Contextual Data	Year of Birth, Gender, Operating System of Personal Mobile Devices, Subject Group (morning or afternoon).
Use of Mobile Devices for Audiovisual Creation	Creation in personal, academic, and professional settings; frequency of use for audiovisual content creation; production phases in which devices are used; specific apps used.
Perception Regarding Mobile Devices for Audiovisual Creation	Types of content students consider suitable for mobile devices; contexts where devices are considered valid (personal, academic, professional); future prospects of mobile devices in the professional world.
Educational Training in Mobile Devices for Audiovisual Creation	Training received during their higher education; opinion on the importance of integrating such training.

Table 1. Analysis Dimensions

The questionnaire underwent a process to ensure its validity, objectivity, and reliability (Hernández et al., 2010), through expert judgment (Torrado, 2014) involving researchers selected for their experience and knowledge in creating questionnaires, as well as expertise in the context of audiovisual creation and mobile devices.
Regarding the statistical analysis of the data, it was conducted using SPSS software. Starting with an initial descriptive analysis, a comparison between the results obtained in the pre-test and post-test responses was performed to observe the changes resulting from the training. Additionally, a Student's t-test (with a significance threshold of $p < .05$) was executed to assess whether the changes observed between the pre-test and post-test responses could be considered statistically significant.

Analysis and Results

The following paragraphs present the results obtained regarding the objectives set through the three main variables: usage, perception, and training concerning mobile devices for audiovisual creation.

Use of Mobile Devices for Audiovisual Creation

The questions related to audiovisual creation begin with a dichotomous inquiry focused on determining whether students use mobile devices to create audiovisual content in two different settings: personal and academic. They are also asked about the professional field, but these responses are not taken into consideration for the presentation of results due to the research's focus on their university stage.
The percentage of creation in the personal sphere shows similar values in both the pre-test and post-test, being 96.1% (n=73) in the pre-test and 95.8% (n=69) in the post-test.
However, in the academic setting, the percentage of students indicating the use of mobile devices for audiovisual creation in the pre-test is 43.4% (n=33). Through the training action, a change in trend has been observed in this aspect, increasing the percentage of students creating academic content with mobile devices to 61.1% (n=44). This is reiterated by checking the significance value through a t-test ($p < .031$).
The subsequent question focused on the frequency with which students use mobile devices for audiovisual creation in both personal and academic settings. In this case, the question uses a Likert scale allowing responses ranging from "Never" to "Always", including options like "Very rarely", "Sometimes", and "Frequently". In the pre-test, high percentages were obtained for creation in the personal sphere, such as "Sometimes" (27.6%, n=21), "Frequently" (27.6%, n=21), and "Always" (38.2%, n=29). In other words, 65.8% (n=50) of students claim to frequently use mobile devices for creation in the personal sphere when combining "Always" and "Frequently".
The data collected in the post-test did not vary significantly, with "Sometimes" being chosen by 18.1% (n=13), "Frequently" by 37.5% (n=27), and "Always" by 34.7% (n=25). Thus,

72% (n=52) affirm using mobile devices for creation in the personal sphere "Frequently" and "Always", compared to 65.8% in the pre-test.

In the academic sphere, the pre-test indicates that the most prominent options are "Never" (32.9%, n=25), "Very rarely" (32.9%, n=25), and "Sometimes" (25%, n=19). Thus, students indicate they do not usually use mobile devices for creation in the academic sphere in a generalized manner, with a total of 65.8% (n=50) indicating "Never" and "Very rarely".

In this case, after the training action, the post-test results show a significant change ($p < .005$), with "Sometimes" exponentially increasing to 45.8% (n=33). Despite a reduced percentage, "Never" and "Very rarely" remain as the options with the highest percentages (see Figure 1).

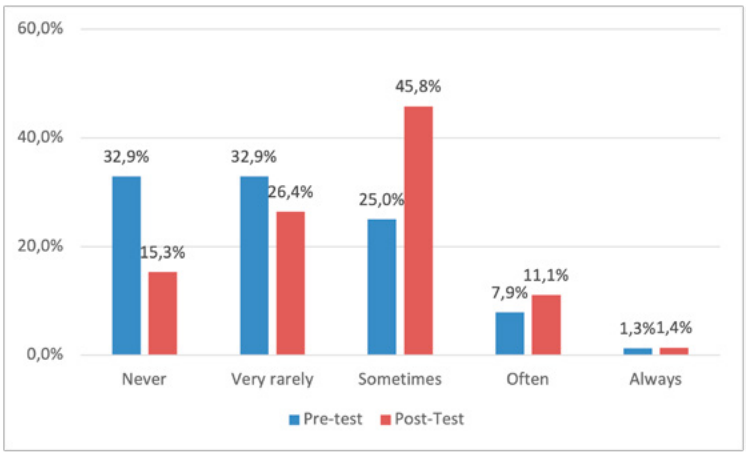

Figure 1. Use of mobile devices to create audiovisual content: academic setting. Source: own creation.

The following questions focus on frequency, specifically within different stages or processes involved in audiovisual creation: scriptwriting, pre-production, production, post-production and photography (encompassing both capture and editing). Once again, the questions allow responses on a Likert scale ranging from "Never" to "Always," including options such as "Very rarely," "Sometimes," and "Often." As the training focused on pre-production and recording with mobile devices, the subsequent results concentrate on these phases.

In the area of pre-production, in the pre-test, 32.9% (n=25) of the students indicated they "Never" use mobile devices, 15.8% (n=12) "Very rarely," 28.9% (n=22) "Sometimes," and 18.4% (n=14) "Often." The results from the post-test do not demonstrate a notably significant change, except for the "Never" option, which decreases to 26.4% (n=19). This indicates that despite the training, there haven't been noticeable shifts in students' usage patterns in this area.

Regarding the production phase, a similar change occurred between the pre-test and post-test. The "Never" option decreased, and the "Sometimes" option increased in the post-

test. Specifically, in the post-test, the "Never" option decreased to 22.2% (n=16), and "Sometimes" increased to 31.9% (n=23) (see Figure 2).

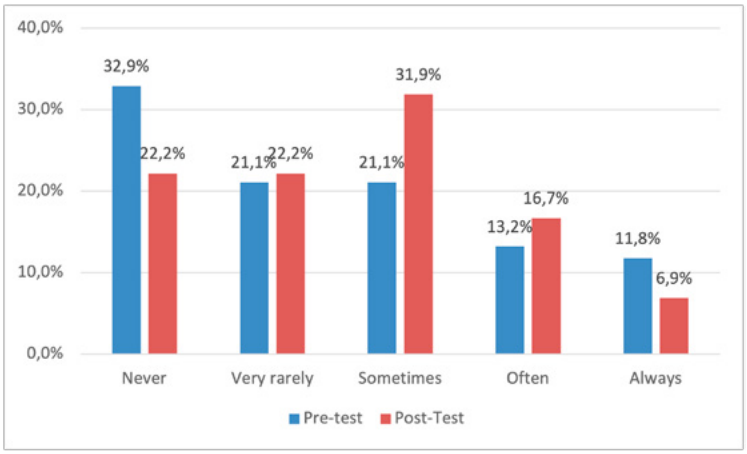

Figure 2. Use of mobile devices to create audiovisual content: frequency in production processes. Source: own creation.

De nuevo, los resultados muestran que, en el caso de uso, los porcentajes aumentan, pero no se producen cambios significativos entre los usos anteriores y posteriores a la acción formativa.

The results once again show that, in terms of usage, the percentages increase, but no significant changes are observed between the usage before and after the training action.

For perception regarding the use of mobile devices for audiovisual creation and the possibility of using them in their professional future, there were two questions. In both cases, these are binary questions that allow the student to indicate a third option if they have no opinion on the matter ("I don't know").

The first question explores the suitability of the tools offered by mobile devices based on the type of content to be generated: content for social media, Internet advertising, TV advertising, documentaries, feature films, short films, and music videos.

In the pre-test, categories where a higher percentage of students consider that mobile devices can be used include: Music videos (57.9%, n=44), Short films (51.3%, n=39), Documentaries (40.8%, n=31), Internet Advertising (80.3%, n=61), and Social Media Content (98.7%, n=75). However, the responses are divided, except for Internet Advertising and Social Media Content. Concerning Feature Films, the negative option is predominant: only 17.1% (n=13) consider mobile devices as valid tools for production of films compared to 64.5% (n=49) who do not. For TV advertising, 48.7% (n=37) do not consider mobile devices valid compared to 32.9% (n=25) who do.

In the post-test, significant changes occur. Firstly, only Feature Films continue to have a higher percentage of negative responses: 51.4% (n=37) still indicate that mobile devices are

not valid tools compared to 36.1% (n=26). Secondly, the acceptance of mobile devices for creation in different types of products grows in all areas and exceeds 50% acceptance: for creating music videos and short films, it reaches 75% (n=54); documentaries are at 55.6% (n=40), and TV advertising at 51.4% (n=37). Internet Advertising (88.9%, n=64) and Social Media Content (95.8%, n=69) also maintain a clearly affirmative trend (see Figure 3).

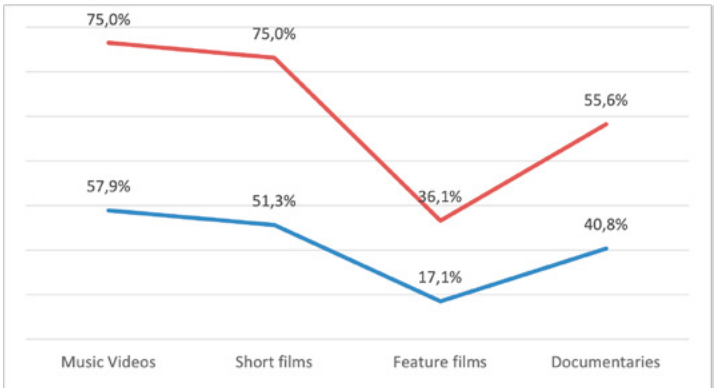

Figure 3. Perception of Mobile Devices as Being Valid for Creating Audiovisual Content. Source: own creation.

The t-test indicates significant changes in the following fields: Short Films ($p < .006$), Feature Films ($p < .017$), and Television Advertising ($p < .011$). Meanwhile, the Documentary category falls near the threshold ($p < .057$).

In the subsequent question, students were asked about the validity of devices in various previously addressed areas (personal, academic), and also in the professional realm. Again, this was a dichotomous question allowing a third option to indicate uncertainty ("I don't know"). In this case, beyond the personal sphere (where the percentage is unanimous and there is no significant difference in the validity of both in the pre-test, 96.1%, n=73, and post-test, 97.2%, n=70), attention should be drawn to the change observed in both the academic and professional domains after the training.

In the academic domain, in the pre-test, 46.1% (n=35) considered mobile devices as valid tools for creating content, while 36.8% (n=28) disagreed. In the professional context, 36.8% (n=28) considered them valid, and 43.4% (n=33) did not.

In the post-test, in the academic realm, the percentage considering mobile devices as valid tools for creating audiovisual content stands at 77.8% (n=56) compared to 12.5% (n=9) who disagreed, while in the professional realm, positive responses amount to 55.6% (n=40) versus 22.4% (n=15) who disagreed.

In this case, the significant difference using the t-test indicates significance in the academic domain ($p < .001$), whereas in the professional sphere, although there is an increased confidence in their use, the difference cannot be indicated.

Training in the use of mobile devices and apps for audiovisual creation at the university

The questions centred on training are divided into two objectives: training received during their university studies on one hand, and their opinion regarding the importance of introducing these competencies on the other. In both cases, they are questions with Likert scale responses ranging from "None" to "A lot," with intermediate values such as "Little," "Normal," and "Quite a bit."

In the question related to the training received during their university studies, the participating students responded in the pre-test with 51.3% (n=39) indicating that they have received "None" of the training. 28.9% (n=22) indicated they have received "Little," 11.8% (n=9) responded with "Normal," and 7.9% (n=6) selected "Quite a bit." No student indicated "A lot." Hence, more than 50% indicate that they have not received any training, and when combined with those indicating they received little, the amount reaches 80%.

In the post-test, the results varied significantly since it was conducted after the training intervention. Values indicated under "None" decreased to 2.8% (n=2), while responses indicating "Little" remained at a similar percentage of 23.6% (n=17). For "Normal," the percentage increased to 29.2% (n=21), and for "Quite a bit," it rose to 31.9% (n=23). Finally, 12.5% (n=9) indicated "A lot" regarding the training received after the intervention. A significance was confirmed via the t-test ($p < .000$).

Regarding the importance students place on acquiring competencies and knowledge related to the use of mobile devices for audiovisual creation, it's evident even in the pre-test that they consider it highly important. The option "Quite a bit" was the most selected with 39.5% (n=30), followed by "A lot" with 36.8% (n=28). In the post-test, the numbers remained consistent, with the option "A lot" moving to the first position at 40.3% (n=29), followed by "Quite a bit" at 33.3% (n=24). Therefore, it's evident that the training intervention wasn't necessary to generate this perception.

Discussion

The obtained results show that the proposed objectives have been addressed with various outcomes to discuss.

Firstly, concerning the first objective regarding the students' use of mobile devices for audiovisual creation, both the pre-test and post-test reveal that a significant percentage use them extensively in personal contexts. This was expected, so the lack of a significant difference between the two questionnaires is not considered problematic. Conversely, in the academic sphere, there was the intention of inducing change through the intermediate training intervention, and a significant shift was observed. More students now use mobile devices for audiovisual creation in academic settings following the training intervention. Understanding the possibilities of these devices directly translates into a transformation in their academic usage.

Similarly, the frequency of mobile device usage for audiovisual creation in personal contexts shows no significant alterations between the two tests, as anticipated. While there is a significant change in academic usage due to the training intervention, revealing that many more students have used mobile devices in this sphere. Hence, it's evident that students commonly use mobile devices on a personal level but do not consider them suitable for academic use until they receive specific training that highlights the potential of this medium in higher education.

Regarding the use in specific production phases (pre-production and production), despite the increased percentages, the observed change lacks statistical significance. In both cases, there's an increase in options indicating more common usage, although not as pronounced as anticipated.

Moving to the second objective concerning perceptions about the validity of mobile devices in the professional audiovisual field, regarding the adequacy of tools provided by mobile devices for generating specific content (feature films, short films, etc.), the pre-test shows that students harbour doubts about their potential. Two proposed categories yield negative results, with a significant portion of participants questioning their validity. This data reveals that only categories such as Internet Advertising and Content for Social Media have clear and widely accepted validity. In contrast, the post-test demonstrates notable changes. Internet Advertising and Content for Social Media maintain their acceptance, with Video Clips and Short Films now joining these categories. Furthermore, Documentaries also receive positive evaluations regarding the use of mobile devices for their creation. Indeed, only Feature Films maintain a negative evaluation. However, even this category demonstrates a shift in the trend towards statistical significance. Clearly, the training intervention has generated a change in the participants' perceptions regarding the validity of mobile devices for audiovisual creation.

Likewise, this shift in perception also occurs concerning students' perception in the academic sphere. The transition from the pre-test to the post-test shows a significant difference, indicating that students acknowledge the validity of these tools in their educational environment. However, this change is not as pronounced in the professional sphere, where although the percentage of students indicating their validity increases, the change lacks statistical significance.

Regarding the third objective concerning the use of mobile devices related to academic training, the results indicate that the study's training intervention is, for many, the first and only exposure to this subject.

Concerning the importance students attribute to this type of training in their studies, there is no significant change in their perception. In the pre-test, they already express a clear attitude regarding the need to use these devices in their university education for audiovisual creation. Hence, both the pre-test and post-test clearly demonstrate their recognition of this necessity, which contradicts directly with the training that has been reported as received.

Returning to the research questions, data related to usage (both personal and academic, R1.1 and R1.2) have been discussed, highlighting that academic use is the most significantly impacted space following the training intervention, as expected due to the research design. Concerning perception (R2), it is evident that students hold a positive view of mobile devices for content creation, even though there are areas where they still do not see their categorical validity, specifically in those related to the use of top-notch technology (Feature Films and Television Advertising). Regarding the need to include mobile devices in the curriculum of audiovisual studies (R3), the response is clear and categorical. Remarkably, students maintain this view both before and after the training intervention. Finally, the change in students' usage and perception (R4) is clear and relevant in specific categories, such as academic usage, the perceived validity in the same academic sphere, or in different types of content that can be generated.

Conclusions

The results allow us to determine the achievement of the proposed objectives.

There is an evolution in the perception of the possibilities of devices, directly leading to a usage that extends beyond the personal sphere. Training brings about changes in knowledge, perception, and usage. This should allow us to positively assess the training intervention since the potential of these means for young audiovisual creators is manifold. It is crucial to highlight that students are aware, even before the training, of the need to understand and use mobile devices for audiovisual creation.

Firstly, it can be asserted that including competencies related to the use of mobile devices for audiovisual creation in higher studies of audiovisual media is necessary. The audiovisual industry has implemented them for over a decade (Goldstein, 2013), making them a fundamental tool in this professional sector. Hence, it is time for these competencies to have a more prominent presence in the skills acquired during studies focused on this field. Beyond these technical competencies, the ability to work with quality tools and resources at an affordable cost for young people transcends the necessity of technical skills development and advances the transversal development of competencies linked to critical thinking, which is crucial in the present moment.

The possibilities of using mobile devices for audiovisual creation not only impact speed and cost reduction but also hold significant potential for media democratization. They enable anyone to capture, edit, and distribute stories and news. Some authors, like Mulrennan (2018), confidently consider mobile devices today as heutagogical tools (related to adult self-directed learning), where self-management for learning in the audiovisual creation process using these tools could provide a clear insight into a rapidly changing future due to the pace of innovations and the continuously transformable situation.

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