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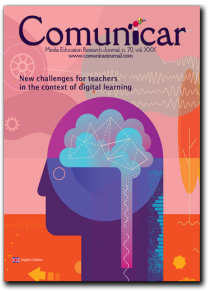

Critical media literacy to improve students' competencies

Alfabetización mediática crítica para mejorar la competencia del alumnado

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ABSTRACT

Media literacy training is an urgent need of our time. Educational institutions must stand as fundamental domains to collectively address reflection on digital and media environments and prepare school-age citizens to constructively deal with the impact of the media. To do so, a paradigm shift to approach the issue is required: a critical awareness of the new scenarios created by the media and a broad reflection on their characteristics. A new framework where the spotlight is on the media, the surrounding environment is an essential reference point and training proposals are based on results and evidence. This study is part of a Design-Based Research, aimed at the creation, implementation and evaluation of a Critical Media Literacy program for high school students at the Escuela Normal Superior del Putumayo (Colombia). In this paper we present the results obtained by applying the Alfamed media competence "pre" and "post" questionnaire to the students participating in the program. The results obtained show a significant improvement both in the overall level of students' media competence and in four of the six dimensions that make up the theoretical reference model ("Technology", "Language", "Ideology and Values" and "Production and Dissemination").

RESUMEN

La formación en las competencias mediáticas constituye una necesidad urgente en nuestra época. La escuela debe posicionarse como un entorno fundamental donde abordar de manera colectiva la reflexión sobre los entornos digitales y mediáticos y la preparación de los ciudadanos en edad escolar para afrontar de forma constructiva el impacto de los medios. Para ello, se impone un cambio de paradigma en el abordaje de la cuestión: una conciencia crítica ante los nuevos escenarios que crean los medios y una reflexión amplia sobre sus características. Un nuevo marco en el que lo mediático se torne central, el entorno próximo sea un referente imprescindible y las propuestas formativas se apoyen en resultados y evidencias. El trabajo que se presenta es una parte de una Investigación Basada en Diseño, orientada a la creación, implementación y evaluación de un programa de Alfabetización Mediática Crítica para el alumnado de bachillerato de la Escuela Normal Superior del Putumayo (Colombia). Se presentan los resultados obtenidos mediante la aplicación "pre" y "post" del cuestionario de competencias mediáticas Alfamed al alumnado participante en el programa. Los resultados obtenidos muestran una mejora significativa tanto en el nivel global de competencia mediática del alumnado, como en cuatro de las seis dimensiones que configuran el modelo teórico de referencia en el que se apoya el estudio ("Tecnología", "Lenguaje", "Ideología y Valores" y "Producción y difusión").

KEYWORDS | PALABRAS CLAVE

High school, media literacy, instructional design, educational innovation, educational research, media.
Bachillerato, competencia mediática, diseño instructivo, innovación educativa, investigación educativa, medios de comunicación.

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1. Introduction and state of the art

At present, media deployment impacts relationships and forms of human socialization in such a way that it is difficult to imagine a space untouched by the media. As Floridi (2016) points out, we have become inhabitants of an "infosphere" which is often influential and means more than just analog reality. In the lives of adolescents, screens play a central role and alter the ways of perceiving, feeling and constructing the notion of reality (Serres, 2016). In this new technosocial environment, the school must promote learning spaces and opportunities to aid young people in the development of a critical and broad perspective of these phenomena. The necessary transformation of educational institutions to adapt to the times, as well as the difficulties in adaptation derived from the regulatory rigidity and austerity policies practiced in the last decade, have led to wide criticism about its role in modern societies, even going so far as to predict its disappearance. This discourse is reinforced by some in the big tech sector, naively underestimating the social function of the school and directing it towards a model that would lead to the "uberization of education" (Adell-Segura et al., 2018). This approach is based on the idea that a large portion of human problems (regardless of their complexity) can be solved exclusively by technology, that is, a kind of technological solutionism (Morozov, 2015).

The COVID-19 pandemic has highlighted how simple these approaches are and the crucial role played by schools as a system that guarantees equal opportunities, as well as institutions for socialization and key agents in the face of the complexity of the digital fabric in which we live (algorithms, disinformation, datafication, privacy, new learning and so on). Discourses questioning the idea that today's media environments contribute (on their own) to forging more fair and democratic societies are becoming increasingly common. Moreover, considering the turning point that the pandemic has meant in the world of both education and work, and the fact that the role of technologies has been tested, it has become more evident that the media is related to a complex network of variables and interests that relate to such issues as technological development, business, economics, politics, and human behaviors among others (Castañeda & Williamson, 2021).

In this sense, schools as spaces for alternative and critical views must play a prominent role for reflection on these processes. In the words of Simons and Masschelein (2014), schools could position themselves as spaces of "suspension" that summon and sustain a type of relationship that surpasses other spaces (family, social), articulating a deep relationship with knowledge. Schools, throughout their historical evolution, have been linked to «the technological»: where the pedagogical was at times given special privilege and at other times, center stage was given to technologies in the teaching and learning processes were given center stage.

1.1. Mediatization and new challenges in media literacy

The mediatization of society often causes a normalization of very critical nuances, which is also reinforced by the opacity in how the media is configured. The same dizzying speed of interaction that occurs with screens leaves little room for thoughtful analysis. Likewise, positions emerge from moralistic discourses that do not help the analysis and debate required by the complexity of these issues. In this sense, media literacy must necessarily address key questions of our time such as phenomena affecting personal autonomy and decision-making capacity that promotes the development of a critical awareness of the new scenarios created by the media, and a broad reflection on their characteristics. We acknowledge that there are many voices alerting the decline of media education precisely when the need to train a critical citizenry in the face of the media is most urgent (Gutiérrez-Martín & Torrego-González, 2018). In other words, it is imperative to forsake the approach that is aimed at learning which is merely focused on the proper handling of devices. Media skills are an urgent necessity in our time. Schools must position themselves as fundamental environments in which to collectively address the reflection on these surroundings and constructively prepare school-age citizens to face the impact of the media.

The studies by Dussel and Trujillo-Reyes (2018) and Valdivia-Barrios (2010) highlight that, in their interactions with the media environment, adolescents prioritize and uncritically assume the language and aesthetics proposed in the media. Thus, students' practices replicate much of the logic sustained in these environments (now even more incumbent after mediatization and algorithms) and little do they approach

other types of perspectives and spaces for reflection. In the daily relationship of adolescents with the media, there are few alternative references to this trend. The education system should call for other perspectives, as well as other ways of relating to media environments, favoring the education of a citizenry with a critical mind when dealing with technology and media, and as content creators (Buckingham, 2016; Dussel, 2010).

The figures outlined in the latest DANE study (2019: 23) allow us to accurately reflect of the extent to which mediatization has been growing in importance in Colombia. This study highlights that the main device by which people tend to maintain some kind of connection with the Internet is through cell phones (84,9%). Dussel and Trujillo-Reyes (2018: 71) point out that "cell phones are probably the devices that have most disrupted the socio-technical landscape in recent years, perhaps only comparable to the revolution that the plane represented at the beginning of the twentieth century". Likewise, it highlights that the main use that people make of the Internet is limited to social networks (82,2%). Secondly, we find uses associated with the search for information (59,3%) followed by inherent uses in electronic messaging.

In this vein, Winocur (2013) proposed questioning the idea that citizens who are constantly connected to several screens and devices and interacting with their networks simultaneously do not necessarily become more critical of reality and more open to difference. Assuming that students are guaranteed knowledge, making them "digital natives", just because they were born, raised and surrounded by the media means leaving aside many situations of analysis and neglecting the responsibility of the educational system in the media education of the young. Being surrounded by, and constantly using the media, does not guarantee the development of a complex and critical understanding of it. Although it is true that they have more skills to adapt to these environments, it is necessary above all to address with them basic processes of information management, deep analysis of messages and the processes of safe interaction with the media and the contents they convey (Cabrera-Hernández, 2017). Most often, they show a greater development in instrumental skills related to playful and social aspects with very noticeable deficiencies in the understanding of their language and impact. Educational institutions must promote the reflective look that is scarce in most media practices, putting values that are transferred in the media into perspective, from the popular to the widespread, as well as on the processes of homogenization (aesthetic, cultural) that are fostered from these environments (Jiménez, 2019).

One of the main efforts made in the promotion of media literacy in school environments is led by UNESCO (Wilson et al., 2011) by designing a curriculum for teachers in this field. However, this proposal requires a revision that encourages in-depth reflection on current conditions while going beyond the understanding of these languages and their creation. This revision involves addressing the critical reading about information structures as a way of grouping the media into certain media groups or conglomerates and the relationships that unite them with other structures and superstructures. In other words, it involves studying the relationships between "media-business power and messages" (Alcolea-Díaz et al., 2020: 112). Understanding the complexity of the media means constantly reviewing these approaches.

We must recognize the lack of this training in our environment together with the evidence of the significant influence of the media in the daily lives of students. We must also assume that, considering that one of the fundamental missions of the *Escuelas Normales Superiores* in Colombia (ENS) is teacher training, it is urgent to work towards the goal of teachers incorporating new phenomena, languages and resources derived from the media environment into their reflections and practices. This concern has led us to ask ourselves the following questions to frame this research: how do we incorporate critical media literacy in the context of ENS in Colombia? What elements should be taken into consideration to develop an effective critical media literacy program at the high school level? How do we implement it from the didactic point of view to guarantee the development of the basic media skills that a future teacher requires?

2. Material and methods

To answer the questions raised, a Design-Based Research (DBR) was conducted, focusing on the design, implementation and evaluation of a training program for the development of media competences of students from the Escuela Normal Superior del Putumayo (ENS). De-Benito and Salinas (2016)

point out that DBR is a type of research that centers on educational innovation, whose fundamental characteristic is the introduction of a new element to transform a situation. Wang and Hannafin (2005: 6) describe DBR as a "systematic but flexible methodology that aims to improve educational practices through successive approaches in analysis, design, development and implementation, based on collaboration between researchers and participants in real contexts, leading to design principles and context-sensitive theories". These authors stress, among other characteristics of this research methodology, pragmatism and a contextualized, iterative and flexible character.

The choice of this methodology and the reason for implementing it in the context of the ENS were motivated by the conviction that it was necessary to transform the school's approach to media education, which could clearly be improved. Since it could not be handled systematically from a merely instrumental standpoint, it was therefore necessary to incorporate in the training curriculum of the ENS the social and cultural impact of the media and the approach of educational skills, to help students interact critically and constructively with the media environment. The research was therefore conceived as a construction of media training based on a rigorous study whose results supported the proposal with scientific evidence. With this in mind, the research problem was defined in four objectives:

- To know the level of media skills in ENS students, and their educational needs in this field.
- To identify the ENS teaching staff's uses of digital media in the classroom and the ENS students' uses both in the classroom and outside it.
- To design, implement and evaluate a training program for the development of media skills in the ENS.
- To identify general design principles for future similar activities (transfer to the context of other ENSs in Colombia).

All the actions developed in the first phase of the study formed the basis of the program together with the proposed theoretical approach guided by the premise that in the face of the new scenarios created by the media it is necessary to form a critical awareness and a broad reflection of its characteristics. The program is therefore oriented to the education of a citizenry with a critical mind when dealing with technology and media, and as content creators (Buckingham, 2016; Dussel, 2010). The improvement of media skills in Critical Media Literacy (CML) programs focused on four dimensions: (a) student competencies, encouraged in the activity; (b) a particular media product; (d) the participation of the members of the group. In general terms, the training program was configured around the following contents directly related to the six dimensions of the theoretical model of reference in the study (Ferrés & Piscitelli, 2012):

- Case analysis: Cambridge Analytica (Dimensions 1 Technology, 2 Language and 4 Ideology and values).
- Media languages. Transitions and alterations to visual culture (Dimension 2 Language).
- Fake news and disinformation (Dimensions 1 Technology, 2 Language and 4 Ideology and values).
- Does anyone know what an image is? (Dimensions 1 Technology and 2 Language).
- Audience and interaction processes (Dimension 3 Interaction processes).
- Analysis of aesthetics within the same genre. The selfie (Dimension 6 Aesthetics).
- Information search processes (Dimensions 1 Technology, 2 Language and 5 Production and dissemination processes).
- Media creation processes: scriptwriting and audiovisual language (Dimensions 1 Technology, 2 Language and 5 Production and dissemination processes).
- Processes of media creation: one eye on the camera and the other on the script, filming all the scenes (Dimensions 1 Technology, 2 Language and 5 Production and dissemination processes).
- Processes of media creation: editing (Dimension 5 Production and dissemination processes).
- Reflection on an episode of the series created by Charlie Brooker (Dimension 4 Ideology and values).
- Digital identity. How do we build our identity in media environments? (Dimensions 1 Technology, 2 Language, 3 Interaction Processes and 4 Ideology and values).

2.1. Research stages and instruments

The study was developed in four phases following the model proposed by McKenney and Reeves (2019). The first phase focused on collectively (teachers, families, researchers) defining the elements that were perceived as problematic with respect to the approach that the ENS was taking to media education. It also allowed us to identify the main characteristics of the relationship of students with the media. In the second phase, the media literacy program was developed under the supervision of internationally recognized researchers in this field.

Table 1. Research phases/stages, instruments and objectives

Stages	Qualitative data collection tools	Quantitative data collection tools	Research objectives
STAGE 1 Identification and analysis of problematic elements	Student focus groups Family focus groups Teacher focus groups Document analysis	Alfamed media competence questionnaire (first application-Pre)	To know ENS students' level of media skills and their education needs in this field. To assess the use of digital media by ENS students in the classroom and outside of it. Identify how ENS teachers use digital media in the classroom.
STAGE 2 Critical Media Literacy (CML) Program Design			Design a program for the development of media skills in the ENS.
STAGE 3 Implementing the CML Program	Field notes/journal Student creations		Implement the educational program (12 sessions of an hour and a half in the ENS facilities).
STAGE 4 Evaluation and reflection to improve solution implementation	Semi-structured interviews (teachers and students)	Alfamed media competence questionnaire (second application-Post)	Evaluate the educational program Identify general design principles for similar future developments.

During the third phase, the training program model created in the ENS was implemented and all the necessary data for its evaluation were collected. Finally, in the fourth phase, the analysis of all the data obtained and the reflection of the process were carried out, in order to improve the designed proposal for education in critical media skills. From this analysis, a deep understanding of the process and the results was generated, drawing conclusions for the improvement of the program and its implementation, which led to the formulation of a proposal for the curricular inclusion of media education in the ENS.

The fieldwork was approached by combining five types of instruments, which produced a vast amount of data that allowed a deep understanding of the phenomena raised in the research. Table 1 synthetically presents the design and sequence of the research offering a complete view of the process and decisions taken. In this paper we will refer exclusively to the results obtained in terms of improving the skills of students through the Alfamed questionnaire.

2.2. Population and study sample

The participants of the research were selected according to the requirements and purposes of each of the phases/stages, focusing the proposal on the baccalaureate students. In the first phase, data were collected from three sources:

- The Alfamed media skills questionnaire that was answered when first handed out by all ENS students (366 students aged between 13-17 years), including the 29 who took the program and to whom the questionnaire would again later be given.
- Six focus groups (35 students, 12 teachers and nine family board members)
- Documentary analysis. The main documents and regulations existing in Colombia that guide the practices in media education (public policies and institutional policies of the ENS).

In the third phase of implementation of the CML program (September to December 2018), an intentional sampling was carried out looking for maximum variability in the representation of the students and following the recommendations of the teachers of the ENS depending on the objectives of the research. A total of 29 students aged between 14 and 15 years were involved in the Media Literacy program. In this phase, data were collected from two sources:

- The field diary of the principal investigator.
- Artifacts: student creations that collect the knowledge developed during the process.

Finally, in the fourth phase of process evaluation and reflection, data were collected from two sources in order to generate a retrospective reflection and analysis with the participants, as well as to assess the level of students' media competence after applying the program:

- Semi-structured group interviews with both students and teachers. Two interviews were conducted: one with the students (seven participants) and another with the teachers (three participants) who were selected according to criteria of interest in the program and involvement in its development.
- The Alfamed Network media skills report, which was answered the second time around exclusively by students participating in the critical media literacy program (29 students aged between14 and 15).

3. Analysis and results

To assess the students' media competence level, the Alfamed media competence questionnaire (Aguaded et al., 2018) was applied, both before and after the program, to the participating students and the scores of both samples (pre and post) were registered. This instrument, widely tested in different countries and validated in educational contexts, structures media competence around knowledge, skills and attitudes related to the six dimensions of the Model of Ferrés and Piscitelli (2012): "Technology", "Language", "Interaction Processes", "Ideology and values", "Production and Dissemination Processes" and "Aesthetics". According to the sample size (Gómez-Gómez et al., 2003) and the scale of measurement of the levels of competence of the Alfamed (ordinal) instrument, we determined the application of non-parametric statistics, specifically, the Wilcoxon Signed-Rank Test for related samples (Flores-Ruiz et al., 2017; Weaver & Etxeberria-Murgiondo, 2006). The samples studied were made up of the same participants and related for analysis.

3.1. Evolution of the global level of student media competence after applying the CML program

In order to obtain evidence of the progression of the global levels of the students' media competence, the Wilcoxon signed rank-test was applied to related samples taking the results obtained in all dimensions into account. To know if the global level of media competence of the students varied after applying the CML program, the following hypotheses were formulated:

- Ho. There are no differences between the levels of student media competence before and after the program.
- Ha. There are differences between the levels of student media competence before and after the program.

Table 2. Wilcoxon signed-rank test (pre & post). Media competence

		N	Average rank	Sum of ranks
Post_MC - Pre_MC	Negative ranks	0a	.00	.00
	Positive ranks	12b	6.50	78.00
	Ties	13c		
	Total	25		
Test statistics				
		Post_MC - Pre_MC		
Z		-3.357 [b]		
Asymptotic sig. (bilateral)		.001		

The result of the test (sig=0.001<0.05) showed differences in the level of student media competence before and after applying the Critical Media Literacy program. The program therefore led to an improvement in the level of the participants' overall media competence.

3.2. Evolution of the level of media competence in dimension 1 "Technology"

To obtain evidence of the progression of levels of competence in the "Technology" dimension, which focuses on knowledge, skills and attitudes related to the use of technological and communicative tools, the same test was applied by formulating the corresponding hypotheses (Ho: There are no differences in dimension 1. Ha: There are differences in dimension 1).

Table 3. Wilcoxon signed-rank test (pre & post). Technology Dimension				
		N	Average rank	Sum of ranks
Post_Dim1- Pre_Dim1	Negative ranks	3[a]	5.00	15.00
	Positive ranks	9[b]	7.00	63.00
	Ties	13[c]		
	Total	25		
Test statistics				
		Post_Dim1 - Pre_Dim1		
Z		-1.979[b]		
Asymptotic sig. (bilateral)		.048		

The result (sig=0.048<0.05) showed differences in the level of student competence before and after the implementation of the program, suggesting an improvement in the level of competence in the 'Technology' dimension.

3.3. Evolution of the level of media competence in dimension 2 "Language"

To obtain evidence of the progression of levels of media competence in the "Language" dimension, which focuses on knowledge, skills and attitudes related to the interpretation of the various codes of representation and messages as well as the capacity for expression, the same test was applied by formulating the corresponding hypotheses (Ho: there are no differences in dimension 2. Ha: There are differences in dimension 2).

Table 4. Wilcoxon signed-rank test (pre & post). Language Dimension				
		N	Average rank	Sum of ranks
Post_Dim2- Pre_Dim2	Negative ranks	1[a]	5.00	5.00
	Positive ranks	10[b]	6.10	61.00
	Ties	14[c]		
	Total	25		
Test statistics				
		Post_Dim2 - Pre_Dim2		
Z		-2.653[b]		
Asymptotic sig. (bilateral)		.008		

The result (sig=0.008<0.05) showed differences in the level of student competence before and after the program, suggesting an improvement in the level of competence in the 'Language' dimension.

3.4. Evolution of the level of media competence in dimension 3 "Interaction processes"

To obtain evidence of the progression of levels of media competence in the "Interaction processes" dimension related to knowledge, skills, and attitudes in the interaction *with* and *through* the media as well as self-regulation of use, the same test was applied by formulating the corresponding hypotheses (Ho: There are no differences in dimension 3. Ha: There are differences in dimension 3).

The result (sig=0.206>0.05) showed no differences in the level of student competence before and after the program. Thus, it meant there was no improvement in the level of competence in the 'Interaction processes' dimension.

3.5. Evolution of the level of media competence in dimension 4 "Ideology and values"

To obtain evidence of the progression of levels of media competence in the "Ideology and values" dimension related to knowledge, skills, and attitudes in the critical analysis of the media, their intentions and how these modulate opinions and identities, the same test was applied by formulating the corresponding hypotheses (Ho: There are no differences in dimension 4. Ha: There are differences in dimension 4).

Table 5. Wilcoxon signed-rank test (pre & post). Ideology & values				
		N	Average rank	Sum of ranks
Post_Dim4- Pre_Dim4	Negative ranks	3[a]	5.50	16.50
	Positive ranks	12[b]	8.63	103.50
	Ties	10[c]		
	Total	25		
Test statistics				
		Post_Dim4 - Pre_Dim4		
Z		-2.568[b]		
Asymptotic sig. (bilateral)		.010		

The result (sig.0.010<0.05) showed differences in the level of student competence before and after the program, suggesting an improvement in the level of competence in the 'Ideology and values' dimension.

3.6. Evolution of the level of media competence in dimension 5 "Production and dissemination processes"

To obtain evidence of the progression of levels of media competence in the "Production and dissemination processes" dimension related to knowledge, skills, and attitudes of and towards the systems and techniques of production and dissemination of media content, the same test was applied by formulating the corresponding hypotheses (Ho: There are no differences in dimension 5. Ha: There are differences in dimension 5).

Table 6. Wilcoxon signed-rank test (pre & post). Production & dissemination processes				
		N	Average rank	Sum of ranks
Post_Dim5- Pre_Dim5	Negative ranks	2[a]	12.25	24.50
	Positive ranks	17[b]	9.74	165.50
	Ties	6[c]		
	Total	25		
Test statistics				
		Post_Dim5 - Pre_Dim5		
Z		-2.984[b]		
Asymptotic sig. (bilateral)		.003		

The result (sig=0.003<0.05) showed differences in the level of student competence before and after the program, suggesting an improvement in the level of competence in the 'Production and dissemination processes' dimension.

3.7. Evolution of the level of media competence in dimension 6 "Aesthetics"

To obtain evidence of the progression of levels of media competence in the "Aesthetics" dimension related to knowledge, skills, and attitudes associated to aesthetic quality and mobilization of emotions, the same test was applied by formulating the corresponding hypotheses (Ho: There are no differences in dimension 6. Ha: There are differences in dimension 6). The result (sig.=0.035<0.05) showed differences in the level of student competence before and after the program, but the sum of negative ranks in this case was higher than that of positive ranks, so the results indicated worse levels in this dimension.

4. Discussion and conclusions

This research is based on two fundamental ideas that are widely shared by education and communication specialists. After two decades into the twenty-first century, the attention given to these ideas by educational administrations in their strategies for the digitization of education has been found wanting. On the one hand, digital technologies and media environments alone do not contribute to a fairer and more democratic society. On the other hand, the mere widespread use of the media does not guarantee the digital and media skills that twenty-first century citizens need. Preparing young people to understand with a critical perspective the techno-social environment and the phenomena associated with it and successfully face the impact of the media on all dimensions of life, is today a fundamental component of the right to education and an inexcusable duty of educational systems. In the last two decades, much has been written about this right, the basic corpus of this literacy has been conceptualized and systematized

and, in short, progress has been made in its conceptualization. Moreover, its systematic incorporation into official educational curricula or teacher training plans has not been consolidated.

The pandemic that we are experiencing has further demonstrated the urgency of extending this right, placing the emphasis on the fact that digital technologies can and should play a role in the transformation of education. However, the social polarization that we are experiencing on a global scale, and the role that the media are playing in this phenomenon, are bringing to light the risks that a permanent media exposure entails and without the most basic tools that allow for a broad understanding of its impact from a critical perspective. The problem addressed in this study is how to transform this body of knowledge around media literacy into relevant training proposals to ensure the acquisition of skills in compulsory education. For this reason and convinced that educational innovation must be based on evidence, we face this problem in a specific educational context. We developed a study that allowed us to design in context a program of critical media training with the intention that it be institutionalized in the curriculum. We experimented and evaluated the whole process in an iterative dynamic to hone a proposal for its inclusion in an educational curriculum.

As can be perceived, the development and evaluation of the proposal far exceeds the approaches and results that we have been able to present in this article, but in our opinion, it should be the object of interest of the scientific community to know, together with the multiple monographs, the reflections and experiences developed in all these years on the issue, to provide proposals supported by evidence that allow us, through rigor, to open paths both in the task of incorporating media literacy in official curricula and in the training of teachers.

The results obtained in the first application of the Alfamed questionnaire to all high school students of the ENS, showed that a majority of students acquire their digital and media literacy from self-learning (85.2%) and almost half have not received any training in audiovisual education (49.2%). Hence the urgency of systematically introducing media literacy into the educational curriculum so that the school is positioned as a space for media literacy, as proposed by Simons and Masschelein (2014). Our Critical Media Literacy program was the first step towards that goal: designing it and demonstrating its impact. In general terms, taking into account the results presented, it can be said that the program designed to improve the media competence of high school students of the Escuela Normal Superior del Putumayo had a significant impact on the levels of student media competence performance, and that the participating students significantly improved their level of overall media competence. If we focus with greater precision on the six dimensions that make up media competence in the model proposed by Ferrés and Piscitelli (2012), the results obtained show a significant improvement in the level of competence of the participating students in four of the six dimensions. Thus, the 'Technology' dimension improved the skills for handling the technological innovations that make multimodal and multimedia communication possible, and the understanding of the role played in society by media environments and their repercussions on society as a whole.

In the "Language" dimension, they augmented the skills to interpret and evaluate the various codes of representation and the role they play in a media message. They also strengthened their capacities to express themselves through a wide range of systems of representation and significance. In the "Ideology and values" dimension, they improved the ability to detect intentions or interests that underlie both corporate and widespread productions to analyze virtual, individual, and collective identities as well as to detect stereotypes, especially in terms of gender, ethnicity and culture. In the "Production and dissemination" dimension, the students improved their abilities in production systems, programming techniques, and media dissemination mechanisms. They also incorporated skills to manage creative processes using communicative technologies.

Contrarily, in the "Interaction processes" dimension, there were no improvements in the ability to evaluate the cognitive effects of emotions, nor in the knowledge of the legal possibilities of claiming for non-compliance with the current rules on audiovisual matters and in the development of a responsible attitude to these situations. This data suggests we should review the elements of the program linked to this dimension to reformulate the training proposals and refine the proposal. Finally, in the "Aesthetics" dimension, results showed that the students' abilities to make aesthetic judgments did not improve either;

on the contrary, worse results were obtained after the implementation of the program. Therefore, in a new phase of program design, both the focus and the approach of the training activities linked to this dimension will also have to be reviewed. This result deserves to be addressed taking into account the need to respond to the problem posed by the impact of language and aesthetics currently projected by the media (Dussel & Trujillo-Reyes, 2018; Valdivia-Barrios, 2010).

Despite the limitations revealed in the results obtained and in the design of the research itself (as it is only one case), this research has thoroughly examined the context involving all agents. It has also designed, implemented, and evaluated a training program obtaining successful results in terms of improving student media competence and has calibrated the strategic value of the study in national and Ibero-American contexts. The results presented therefore represent an unyielding advance for the improvement of the proposal and the implementation of media competence in the Colombian educational curriculum and hopefully, in the near future, in the Escuelas Normales Superiores of the country.

Author Contribution

Idea, W.A.M.R., C.F.M.; Literature review (State of the art), W.A.M.R.; Methodology, W.A.M.R., C.F.M., B.C.L.; Data analysis, W.A.M.R., C.F.M.; Results, W.A.M.R., C.F.M..; Discussion and conclusions, W.A.M.R., C.F.M., B.C.L.; Drafting (original draft), W.A.M.R., C.F.M., B.C.L.; Final revisions, W.A.M.R., C.F.M., B.C.L.; Project Design and sponsorship, W.A.M.R., C.F.M., B.C.L.

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References

Adell-Segura, J., Castañeda-Quintero, L., & Esteve-Mon, F. (2018). ¿Hacia la Ubersidad? Conflictos y contradicciones de la universidad digital. *RIED*, *21*, 51-68. https://doi.org/10.5944/ried.21.2.20669

Aguaded, I., Marín-Gutiérrez, I., & Caldeiro-Pedreira, M.C. (2018). Desarrollo de la competencia mediática en el contexto iberoamericano. *Revista Letral*, *20*, 156-182. https://doi.org/10.11144/Javeriana.m10-20.cmei

Alcolea-Díaz, G., Reig, R., & Mancinas-Chávez, R. (2020). UNESCO's Media and Information Literacy curriculum for teachers from the perspective of Structural Considerations of Information. [Currículo de Alfabetización Mediática e Informacional de la UNESCO para profesores desde la perspectiva de la Estructura de la Información]. *Comunicar*, *62*, 103-114. https://doi.org/10.3916/C62-2020-09

Buckingham, D. (2016). *Aproximaciones a la educación digital- David Buckingham*. [Video]. Youtube. https://bit.ly/3xQT111

Cabrera-Hernández, J.I. (2017). Nativos digitales que no lo son tanto. *Revista de Estudios de Juventud*, *117*, 199-207. https://bit.ly/3xN2bf0

Castañeda, L., & Williamson, B. (2021). Assembling New toolboxes of methods and theories for innovative critical research on educational technology. *Journal of New Approaches in Educational Research*, *10*(1), 1-14. https://doi.org/10.7821/naer.2021.1.703

DANE (Ed.) (2019). *Indicadores básicos de tenencia y uso de las tecnologías de la información y la comunicación en hogares y personas de 5 y más años de edad*. Departamento Administrativo Nacional de Estadística. https://bit.ly/32KNqLP

De-Benito, B., & Salinas, J.M. (2016). La investigación basada en diseño en tecnología educativa. *Revista Interuniversitaria de investigación en Tecnología Educativa*, *0*, 44-59. https://doi.org/10.6018/riite/2016/260631

Dussel, I. (2010). *Los nuevos alfabetismos en el siglo XXI: Desafíos para la escuela*. https://bit.ly/3xlkvfq

Dussel, I., & Trujillo-Reyes, B.F. (2018). ¿Nuevas formas de enseñar y aprender? Las posibilidades en conflicto de las tecnologías digitales en la escuela. *Perfiles Educativos*, *40*, 142-178. https://doi.org/10.22201/iisue.24486167e.2018.Especial.59182

Ferrés, J., & Piscitelli, A. (2012). Media competence. Articulated proposal of dimensions and indicators. [La competencia mediática: propuesta articulada de dimensiones e indicadores]. *Comunicar*, *38*, 75-82. https://doi.org/10.3916/C38-2012-02-08

Flores-Ruiz, E., Miranda-Novales, M.G., & Villasís-Keever, M.A. (2017). El protocolo de investigación VI: Cómo elegir la prueba estadística adecuada. Estadística inferencial. *Revista Alergia México*, *64*(3), 364-370. https://doi.org/10.29262/ram.v64i3.304

Floridi, L. (2016). *Las noticias falsas y un problema de 400 años: Necesitamos resolver la crisis de la postverdad*. Red Ética Segura. https://bit.ly/3ayu5lm

Gómez-Gómez, M., Danglot, C., & Vega-Franco, L. (2003). Sinopsis de pruebas estadísticas no paramétricas. Cuándo usarlas. *Revista Mexicana de Pediatría*, *70*, 91-99. https://bit.ly/3zf5yvl

Gutiérrez-Martín, A., & Torrego-González, A. (2018). Educación mediática y su didáctica. Una propuesta para la formación del profesorado en TIC y medios. *Revista Interuniversitaria de Formación del Profesorado*, *91*, 15-27. https://bit.ly/2VQlhBE

Jiménez, J. (2019). *Crítica del mundo imagen*. Tecnos.

Mckenney, S., & Reeves, T. (2019). *Conducting educational design research*. Routledge. https://doi.org/10.1007/978-1-4614-3185-5_11

Morozov, E. (2015). *El solucionismo tecnológico*. Katz editores. https://bit.ly/2UoaDTy

Serres, M. (2016). *Pulgarcita*. Fondo de Cultura Económica de Argentina.
Simons, M., & Masschelein, J. (2014). *Defensa de la escuela. Una cuestión pública*. Miño y Dávila editores. https://bit.ly/3kzS1ul
Tejedor, F.J., & Etxeberria-Murgiondo, J. (2006). *Análisis inferencial de datos en educación*. La Muralla.
Valdivia-Barrios, A. (2010). *Ni tan lejos, ni tan cerca. Adolescentes mediáticos y diversidad cultural en la escuela de hoy*. [Doctoral Dissertation, Universidad católica de Chile]. https://bit.ly/3wPaxl1
Wang, F., & Hannafin, M.J. (2005). Design-based research and technology-enhanced learning systems. *Educational Technology Research & Development*, *53*, 5-23. https://doi.org/10.1007/BF02504682
Wilson, C., Grizzle, A., Tuazon, R., Akyempong, K., & Cheung, C.K. (2011). *Alfabetización mediática e informacional. Curriculum para profesores*. Unesco. https://bit.ly/2TiGu7x
Winocur, R. (2013). ¿Estar todo el tiempo conectados vuelve a los ciudadanos más críticos frente al poder y tolerantes con los diversos? *Convergencia y escenarios para una televisión interactiva*, (pp. 71-84).