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CHARACTERIZATION OF MEDIA CULTURE IN UNIVERSITY STUDENTS FROM THE PHYSICAL ACTIVITY AND HEALTH PROFILE

CARACTERIZACIÓN DE LA CULTURA MEDIÁTICA EN ESTUDIANTES UNIVERSITARIOS DEL PERFIL DE LA ACTIVIDAD FÍSICA Y LA SALUD

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ABSTRACT

This study investigates the development of media culture (MC), which serves as an essential pillar within the framework of higher education. The objective is to characterize MC in university students specializing in physical activity and health. A random sampling of participants was combined with the Bootstrap method, resulting in a final sample of 300 students across first to fourth academic years, including male and female students aged 18 to 21 years. Peer observations were conducted on educational activities that incorporated the use of ICT, and the variables of interest related to MC were recorded using a purpose-built observation guide. The theoretical analysis identified three dimensions aligned with the observation guide: communicative expressiveness, holistic interpretation, and logical achievement of hypermedia content, processes justified by the emergence of hypermedia as a new textual form. Comparisons across academic years for each dimension using the Mann-Whitney test revealed significant differences in all paired comparisons, with the greatest effect sizes observed between extreme academic years (1st vs. 4th and 2nd vs. 4th), favoring the development of MC. Robust regression analysis and comparisons of performance results (insufficient vs. adequate) showed a favorable shift in MC learning during the 3rd academic year.

RESUMEN

El presente estudio tiene como objeto de investigación la formación de la cultura mediática (CM), por constituir esta un pilar esencial en los marcos de la educación superior, en consecuencia, se plantea como objetivo caracterizar la CM en estudiantes universitarios del perfil de la actividad física y la salud. Para llevar a cabo la investigación se realizó una selección

Palabras clave:

formación, cultura mediática, interpretación, expresividad	aleatoria de participantes que se combinó con el método de Bootstrap para conseguir una muestra final de 300 estudiantes de primero a cuarto curso académico, incluyendo hombres y mujeres, de 18 a 21 años de edad. Se les realizó una observación por pares a actividades docentes que incluían el uso de las TIC y se registraron las variables de interés de la CM incluidas en una guía de observación para este propósito. El análisis teórico aporto tres dimensiones en correspondencia con la guía de observación: expresividad comunicativa, interpretación holística y consecución lógica del contenido hipermedia; procesos que se justifican por la aparición de un nuevo texto, el hipermedia. El contraste entre los cursos para cada una de las dimensiones, empleando la prueba de Mann-Whitney mostró diferencias significativas en todos los pares comparados, hallándose mayor magnitud del efecto entre los cursos extremos (1 vs 4) y (2 vs) a favor del desarrollo de la CM. El análisis de regresión robusta y un contraste de comparación de resultados (insuficientes vs bien) mostraron que en el 3er curso se producía un cambio favorable del aprendizaje de la CM.

Introduction

The Cuban University, in its historical development, shows a continuous improvement of its substantive processes in response to the changes occurred in the national and international environment and, consequently, Pedagogy and Didactics of this educational level are developed as a theoretical corpus to objectively direct the training of professionals, with pertinently configured modes of action, in correspondence with the complex and dynamic social context marked by globalization in which contemporary man coexists.

Information and Communication Technologies (ICT), in the referred scenario, constitute an educational support of global scope, bearers of new forms of communicative expressions, which transform the teaching environment by providing new mediations to represent didactic entities that legitimize the apprehension of socio-cultural instances.

In the formative processes, the irruption of a new communicational architecture marked by interactivity and the integration of symbols of different sensorial and documentary nature, resulting in complex textual constructions, is evident.

The above confirms that it is not enough for the student to have the skills to operate information technologies, but that it is necessary to incorporate new knowledge, referring to how to sequence and interact rationally with the media content to appropriate the didactic information, i.e., a media culture is required that consequently favors the training of the professional and his or her development.

Contemporary universities pay special attention to media culture as a form of social awareness that enables students, from their worldview, to assume a critical and selective attitude towards the system of codes that move the discourses of learning environments, from different cultural backgrounds.

Educational organizations in different territorial locations see the development of media culture as an immediate need to be solved, and direct their research in this direction, as shown in the scientific works of the following authors: Dongo-Mejía et al. (2022), Hernando-Gómez et al. (2022), Pérez (2019), Gómez-García et al. (2020), Cabrera (2017), González (2016), Instituto Nacional para la Educación Superior en Latinoamérica y el Caribe (2010), Montero (2006), Cátedra Unesco de Comunicación (2001) and Gómez (2000) among others.

The scientific productions of Ramasubramanian et al. (2020) show that the effects of media culture transcend the critical apprehension of the social and cultural reality expressed in the media, and are projected to the conditioning of the new forms of social relations in which the individual must coexist for his integral development, that is to say, these conditions express new modes of interaction with communicational support and whose management is the responsibility of the subject in his daily "coexistence".

The aforementioned has caused several researchers in Sociology, Semiotics and Pedagogy to agree in promoting, in the field of education, the search for new theories, methods and strategies that favor the construction of the media education of the professional. Consequently, the European Union, taking on board these considerations of the experts, suggests including media education as a subject in the curricula, which is stated in European and American publications, among which we find: Yazon et al. (2019), Law et al. (2018), Pérez Tornero (2010) and Elpaís.com (2008). In accordance with this position, UNESCO, in several of its educational guidelines -Mateus et al. (2022), Alcolea-Díaz et al. (2020), UNESCO (2009) and Cátedra UNESCO de comunicación (2009)- also

establishes such intentionality supported by solid practical and epistemological arguments.

The guiding documents of higher education in Cuba, which regulate the design and implementation of study plans in its different stages - Ministerio de Educación Superior. Cuba (2022), Artola Pimentel et al. (2019), MES (2003) and (Álvarez de Zayas, 1988), declare with incremental emphasis, implicitly in the former and explicitly in the latter, the need for the construction of media culture.

The educational praxis of the university, in its contextual singularity, has promoted the insertion of Information and Communication Technologies in the different professional profiles for more than three decades. Today this practice, based on media culture, is essential in the training of professionals. Didactics, throughout this period, has gone through epistemological steps of ascent to perfect this knowledge and has knotted factual reasons that elevate it to a generalized social need. However, the theoretical foundations and the degree of mastery of the media culture related to these technologies have not been studied in sufficient depth.

For this reason, the present study *aims* to characterize from a holistic approach the media culture in the university context of Granma province in Cuba.

The following two specific objectives are derived from the general objective.

- To analyze, from a theoretical approach, the process of formation of media culture in the university context.
- To empirically diagnose the current state of the level of development of media culture in the university context.

Due to the nature of the objectives, the study is empirical-theoretical and is classified as cross-sectional, observational and descriptive.

Theoretical Analysis of the Media Culture Formation Process in the University Context

The present epigraph responds to the first specific objective, it is focused on revealing the theoretical references that support the methodological and empirical approach to Media Culture, as the main theoretical contribution it is proposed to provide a redefinition of the concept and its dimensions.

Method

The Dialectical Hermeneutic Method was used to *understand* the accumulated theoretical bases of Media Culture, to *explain* the new relationships between its theoretical constituents in the contemporary conditions of socio-technological development and, as a result of the *interpretation*, to provide a synthesis definition of the existing perspectives adjusted to contemporaneity.

Results

Culture is a category whose presence is becoming more and more frequent in the works of Pedagogy and Didactics. Specialists in these branches of knowledge pay special attention to this category because of what it represents for the processes under study in these sciences.

This concept has been approached by different sciences such as Philosophy, Sociology, Psychology, Aesthetics, Linguistics, Anthropology and Semiotics, among others, each one of which has given it meaning from its theoretical referents at different moments of the social historical evolution, which favors a more complete and contextualized elaboration of the referred category. Such contributions have become solid references that complement the theoretical vision of culture as an essential element in the formative process of higher education and make possible its singularized completeness in this

domain of social activity and condition new milestones in its historical development (Macías Reyes et al., 2010; Universidad de Almería, 2010).

Learning within the framework of culture is understood as a dichotomous process, that is, it presents two modes of execution: the first, informal, when it is developed spontaneously, arising from the social subjects themselves due to their needs and interests, and the second is formalized, with the intervention of institutions that regulate and manage the process, as expressed by Heersmink (2023).

Culture is concretized in the social interaction of the subjects, since it is supported by learning; therefore, it is inherent in the communicative activity from which the subjects, by exchanging their ideas in the form of messages, transform each other and in turn contribute to the development of culture as a social product. From this assumption, communication is assumed to be an essential process for culture, considered as a form of social consciousness (Echenique, 2023; Marcuse, 1967).

The research of Montoya Rivera (2005) formalizes this category, for the formative context, by framing it in three spheres: accumulated results, constant creations, and projects and goals, which gives it a dialectical and didactic nuance.

In the referred study, from this consideration, human activity is redefined as a whole constituted by the dialectic relations between the transforming activity and the cognitive one, dynamized and synthesized by the valuative activity and mediation.

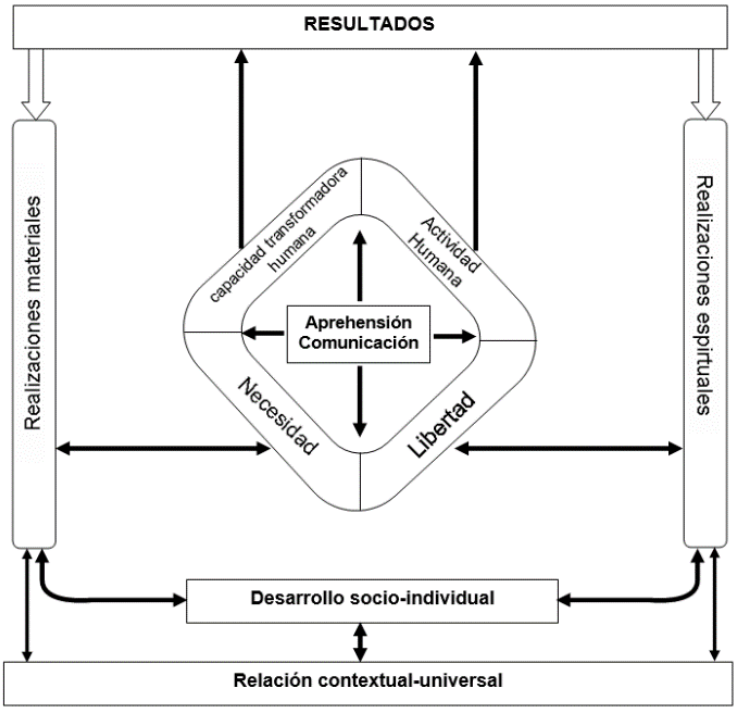
Based on the above references, in this research, culture is understood as:

> A totality of complex character configured by the human transforming capacity in relation to human activity and its results, routed by the need and freedom possessed by the subjects in their material and spiritual realizations, which are expressed in the continuous process of individual and social self-development on the basis of *apprehension* and *communication* in which the contextual and the universal are integrated in a specific historical stage (Pérez Lozada, 2011, p.13).

Communication, in this context (Figure 1), becomes a form of mediation, which allows us to penetrate the interstices of phenomena to find their essence, since it not only exists between subjects, but also occurs as an internal process of the subject (Vygotsky, 1981).

When the theses of the Human and Cultural University, from Fuentes González (2008), are incorporated into the training process, then substantial transformations are generated in its design and projection, in the dynamics, in the evaluation and in the results that as praxis confirm the theory. Such a position implies recognizing that university education is a process that develops human capacities, in which man must be seen as the center, where he acquires an eminently active role that leads him to "prepare himself throughout his life for life". It then suggests a level of greater concreteness of the training process and the adoption of new methods in correspondence with the theoretical corpus, to confer the leading role of the professional at each level of systematicity foreseen with the pertinent mechanisms of regulation and correction.

Figure 1
Relationships of the components of culture in the formative framework



From this theoretical platform, professional training is understood as an essentially cultural and human process, which is conceived in a dialectical relationship with communication by assuming the assumption of "human activity" and the definition of culture provided, which specifies that it contains communication at its core of development (Alsina et al., 2014; Fuentes González, 2010).

This advance in the resignification of the concept of professional training associated with communication is the result of the emergence of new technological communication platforms that transform the traditional forms of human communication, where texts of different types appear, establishing multiple links with other texts as transitional routes between them, and the participation of the social subject as the protagonist of the communicative act emerges through channels that increasingly provide higher quality to the communicative forms and contents.

These new qualities of communication based on ICT make its material carrier acquire a new constitution, which is why the author identifies it with the name of hypermedia text and defines it as a text made up of codes of different formats and sensory nature, containing links that emerge from its structure and that enable relational polymorphism with other texts, media objects and subjects, configuring the gnoseological content as a whole from the relationships that are established between the nodes of communicational information.

Thus, the practices of -reading and reconstruction- have been addressed in different works, among whose authors are Ancízar Narváez (2021), Pérez Tornero (2010) and Orozco Gómez (2001), who agree in referring to them under the name of media culture, pointing to the need for their intentional formation.

This particular culture, by consensus of those who research it, is accepted as an indispensable resource for the critical understanding of nature, society and its associated phenomena, which is conducive to healthy social coexistence and human and professional development. This layer of knowledge is unanimously considered as a pedestal in the

appropriation and development of the rest of the cultures, to the point that it is recognized as literacy in the knowledge society (Frómeta Quintana, 2017; Ricoy Lorenzo, 2006).

From the perspective of the present research, *media culture (MC)* is understood as "the integrated process of communicative practices, supported by Information and Communication Technologies, and its results, expression of the dialectic relationship between *communicative expressiveness*, *holistic interpretation* and *logical consistency* of the hypermedia content that configures, as a whole, a support for continuous human development".

Media training must be understood as a quality, expression of processes and results constituting a whole, that is, as the activities intentionally aimed at the appropriation of this culture and the degree to which it has been internalized as awareness in professionals, which conditions the way in which its professionalizing transforming capacity is expressed and emerges. From this reasoning, both, media training and professionalizing transforming capacity, are identified as dialectical pairs that mutually condition each other in their development and that of the professionals in training.

Empirical Diagnosis of the Current State of the Level of Development of Media Culture in the University Context

Instrument

The observation guide is used to obtain data for the diagnosis of media culture, the dimensions of which are explained below:

Holistic interpretation (HI) of the hypermedia text, process through which the learner identifies the communicative units of each text that participate simultaneously in the discourse, discovers their meaning, finds the relationships between them, totalizing, through successive synthesized reconstructions, a meaning in correspondence with their sociocultural referents.

Communicative expressiveness (CE) is the process by which thought, with intentionality, is translated into a symbolic system that materializes in multiple texts of different nature, interconnected as a coherent whole intended for interaction with other subjects and the support of one's own thought, whose identity emerges from the content-form link mediated by morality.

Logical sequentiality of content (LC) refers to the organized and conscious succession of technological actions, of different levels of complexity, performed by a subject with the elements of a digital communication device or tool to create, express or interact effectively with hypermedia texts.

Method

Participants

The study population was selected from the context of the University province of Granma Province in Cuba, from the profiles of physical activity and health, from the first year to the fourth year. The form of selection was stratified random to achieve a balance among the students of the different courses that participated and among the sex denominations so that it was possible to carry out statistical processing in accordance with the objectives. The sample was initially made up of 30 students, and with the Bootstrap re-sampling process, a total of 300 subjects were finally reached to carry out the study.

Sampling Instrument

The observation guide of Pérez Lozada (2011), designed to explore the level of development of Media Culture in university students, configured from the constructs explained above, was used: *Communicative expressiveness, Interpretation of the hypermedia text* and *Logical sequentiality of the content, structured* in nine observation descriptors that are rated on a 5-level scale, i.e., scores from 1 to 5.

Procedure

Prior to conducting the observation, the subjects were informed of the purpose of the exercise, making it clear that it was a voluntary and completely anonymous act, since no data would be recorded that would serve as a link to identify the participants. In this way, the observation was carried out by two teachers who independently recorded the observed activity data. To mitigate the effects associated with observation bias, strategies were established to reach consensus on discordant scores between observers on the same item.

Statistical Analysis

The data were recorded in Microsoft Excel and a validation process was performed to correct out-of-range and null data. The R language, using RStudio V20224.09.0 -build 375-, was used to complete the sample by means of a Bootstrap algorithm (with the "*boot*" library), the Kolmogórov-Smirnov tests to verify normality, the Mann-Whitney test for the comparison of measurements, the generation of graphs (tidyverse and ggplot2 libraries), the Z test for the comparison of proportions, and the Z test for the comparison of proportions.

Results

General Characteristics of the Sample

Table 1 presents the main demographic characteristics of the sample, designed to explore variations in media literacy constructs according to educational level, i.e., academic years (1st to 4th). In addition, it includes the distribution by sex and age levels of the participants (18-23 years), providing a frame of reference for interpreting the results derived from the statistical analysis.

Table 1

Descriptive variables of the study sample

variables	levels	N	%	Average E	DE	EN
Sex	Woman	139	46,33	20,68	2,297	0,195
	Man	161	53,67	20,74	1,719	0,136
Course	1	71	23,67	18,92	1,565	0,186
	2	74	24,67	19,97	1,158	0,135
	3	83	27,67	21,59	0,733	0,080
	4	72	24,00	22,5	0,839	0,099
	Total	300		20,78	1,760	0,102
Age	18	50	16,70			
	19	30	10,00			
	20	48	16,00			
	21	47	15,60			
	22	59	19,70			
	23	66	22,00			

Note. N: number of cases, ME: mean age, SD: standard deviation, SE: standard error

The selected sample exhibits a balance in the levels corresponding to each of its constituent variables: sex, academic year and age, which allows for the appropriate application of the statistical analysis tests required by the objectives of the study.

Comparison Between Dimensions in Each Academic Year

The assumptions of normality of the dimensions EC, HI, CL by strata -academic courses- are checked, given that the sample in each stratum of the variables is greater than 30, the Kolmogórov-Smirnov normality test is used, in all cases values of $p<0.05$ were obtained, so it is concluded that the sample does not have a normal distribution, consequently, a non-parametric statistical method is selected, the Mann-Whitney test to perform the comparisons.

A comparison of the differences in measures of the dimensions, including media culture, by academic courses was performed as shown in Table 2.

The referred table shows for each course (1st, 2nd, 3rd and 4th) the pairwise comparison of the dimensions (EC vs IH, IH vs CL, CL vs EC), in all cases values of $p>0.005$ were obtained (between 0.200 and 0.994), which means that no significant difference was found between the measures of the dimensions compared, according to the Mann-Whitney test.

Table 2

Comparison of dimensions by course

Year	DIM	N	Median	IQR	U	p-value	r
EC	EC	71	1,67	1,33-2,33	2615,5	0,699	0,032
	IH		1,50	1,25-2,50			
	IH	71	1,50	1,25-2,50	2329,5	0,432	0,066
	CL		1,50	1,25-2,50			
	CL	71	1,50	1,25-2,50	2619,5	0,687	0,034
	EC		1,67	1,33-2,33			
IH	EC	74	2,25	1,83-2,63	2788,5	0,847	0,016
	IH		2,25	1,56-2,50			
	IH	74	2,25	1,56-2,50	2548	0,464	0,06
	CL		2,25	1,75-2,75			
	CL	74	2,25	1,75-2,75	2887	0,568	0,047
	EC		2,25	1,83-2,63			
EC	EC	83	3,00	2,33-3,33	3130,5	0,309	0,079
	IH		3,00	2,38-3,50			
	IH	83	3,00	2,38-3,50	3447,5	0,994	0,001
	CL		3,00	2,25-3,50			
	CL	83	3,00	2,25-3,50	3703,5	0,402	0,065
	EC		3,00	2,33-3,33			

Note. Dim: dimensions, N: number of cases, IQR: quartile range 25-75, U: Mann-Whitney statistic, r: effect size.

Comparison Between Academic Years in Each Dimension

The assumptions of normality of the dimensions in each of the academic years (1st, 2nd, 3rd and 4th) are checked

the Kolmogórov-Smirnov normality test was used, given that the sample in each stratum of the variables is greater than 30. In all cases, values of $p<0.05$ were obtained, so it is concluded that the sample does not have a normal distribution; consequently, a non-parametric statistical method, the Mann-Whitney test, was selected for comparisons.

EC Dimension

Figure 2

Median and interquartile ranges of CD

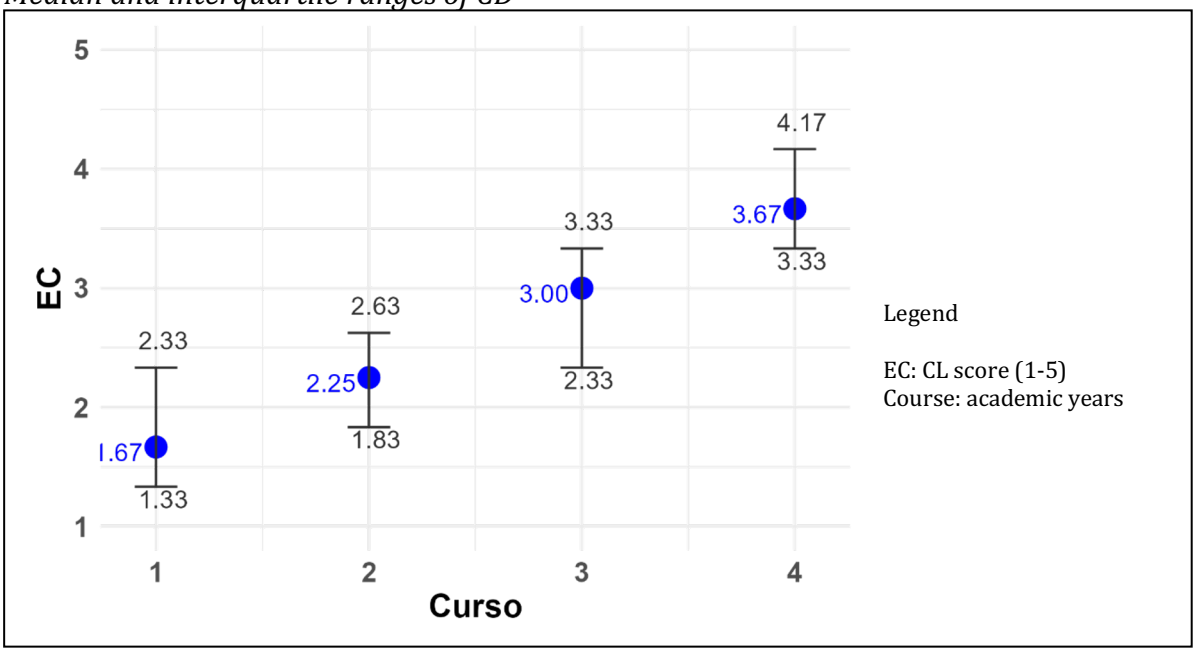


Figure 2 illustrates the median and interquartile ranges (Q1-Q3) of the CE dimension by academic years. It is observed that academic year 1 presented the highest median (4.17), while academic year 1 had the lowest median (1.50). These differences are consistent in all pairwise comparisons, as confirmed by statistical analyses. In courses 1 and 4 there is a shift of the median concentration towards Q1.

Table 3

Comparison of academic courses in EC

Dimension	Comparison	U	p-value	r	rc
EC	Course 1 vs Course 2	1639,00	***	0,326	moderate
	Course 1 vs Course 3	852,00	***	0,613	grande
	Course 1 vs Course 4	218,50	***	0,791	grande
	Course 2 vs Course 3	1431,50	***	0,462	moderate
	Course 2 vs Course 4	301,00	***	0,767	grande
	Course 3 vs Course 4	1166,50	***	0,527	grande

Note. u: Mann-Whitney statistic, r: effect size, rc: qualitative coding of effect size.

The results of the pairwise comparisons are presented in Table 1. All pairs of courses showed statistically significant differences (p<0.001). This indicates that *CE* distributions differ among all courses. Effect sizes (r) ranged from moderate to large, with distinctive values in pairs: Course 1 vs Course 4 (r=0,791) and Course 2 vs Course 4(r=0.767).

IC Dimension

Figure 3
Median and interquartile ranges of CD

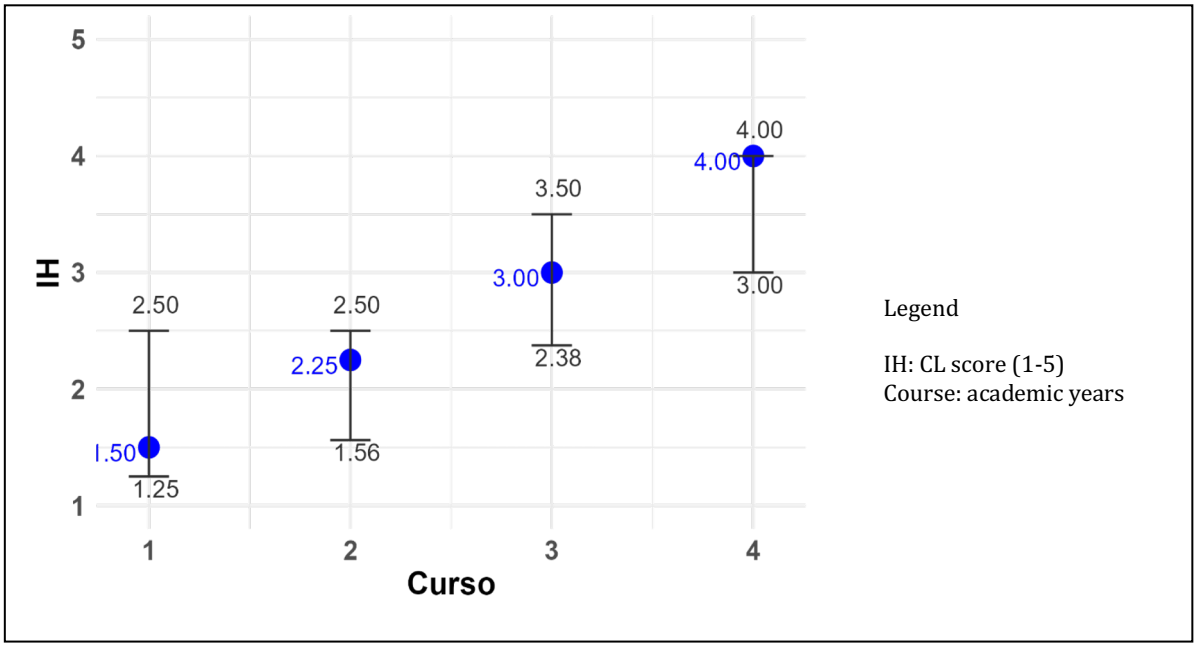


Figure 3 illustrates the median and interquartile ranges (Q1-Q3) of the CE dimension by academic years. It is observed that the 4th academic year presented the highest median (4.00), while the 1st academic year had the lowest median (1.50). These differences are consistent in all pairwise comparisons, as confirmed by statistical analyses. In courses 1 and 4 there is a shift of the median concentration towards Q1 and Q3, respectively.

Table 4
Comparison of academic courses in EC

Dimension	Comparison	U	p-value	r	rc
IH	Course 1 vs Course 2	1748,00	***	0,291	Small
	Course 1 vs Course 3	896,00	***	0,602	Grande
	Course 1 vs Course 4	488,00	***	0,703	Grande
	Course 2 vs Course 3	1463,00	***	0,454	Moderate
	Course 2 vs Course 4	638,00	***	0,662	Grande
	Course 3 vs Course 4	1889,00	***	0,319	Moderate

Note. u: Man Whitney statistic, r: effect size, rc: qualitative coding of effect size.

The results of the pairwise comparisons are presented in Table 4. All pairs of courses showed statistically significant differences (p<0.001). This indicates that *CE* distributions differ among all courses. Effect sizes (r) ranged from small to large, with distinctive values standing out in pairs: Course 1 vs Course 4 (r=0,703) and Course 2 vs Course 4(r=0.662).

IC Dimension

Figure 4
Median and interquartile ranges of CL

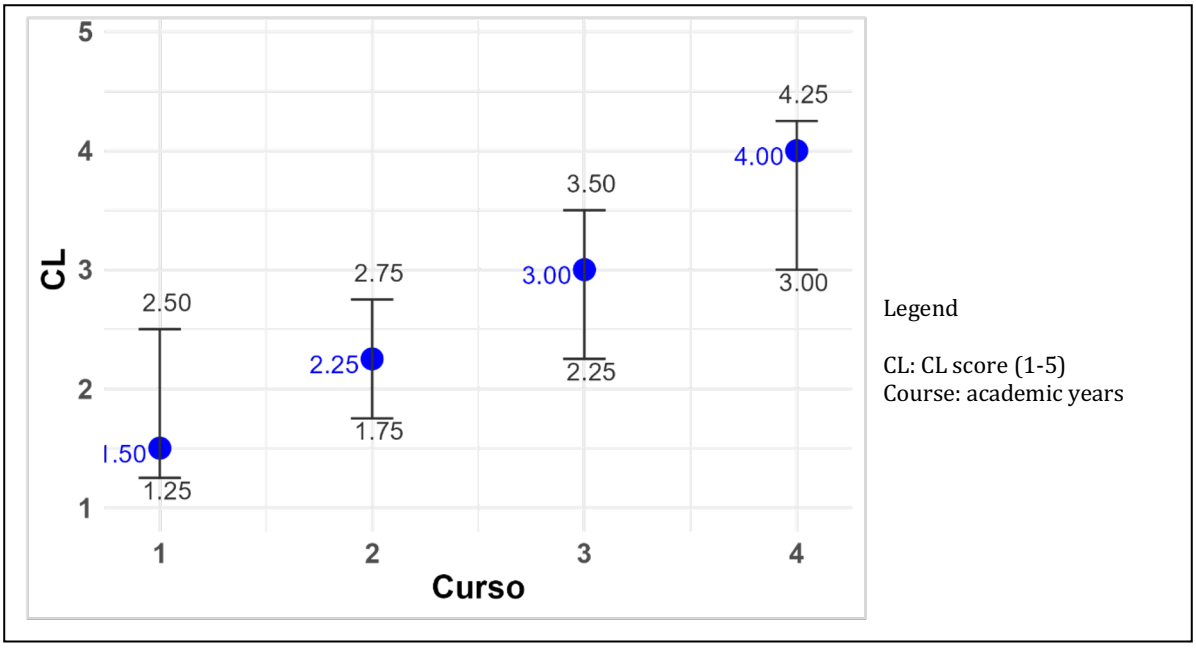


Figure 4 illustrates the median and interquartile ranges (Q1-Q3) of the CE dimension by academic years. It can be seen that the 4th academic year presented the highest median (4.25), while the 1st academic year had the lowest (1.25). These differences are consistent in all pairwise comparisons, as confirmed by statistical analyses. In courses 1 and 4 there is a shift of the median concentration towards Q1 and Q3 respectively.

Table 5
Comparison of academic courses in CL

Dimension	Comparison	U	*p*	*r*	*rc*
CL	Course 1 vs Course 2	1732,50	***	0,295	Small
	Course 1 vs Course 3	996,50	***	0,572	Grande
	Course 1 vs Course 4	493,00	***	0,699	Grande
	Course 2 vs Course 3	1722,00	***	0,380	Moderate
	Course 2 vs Course 4	760,50	***	0,619	Grande
	Course 3 vs Course 4	1833,50	***	0,334	Moderate

Note. u: Man Whitney statistic, ***: p<0.001 r: effect size, rc: qualitative coding of effect size.

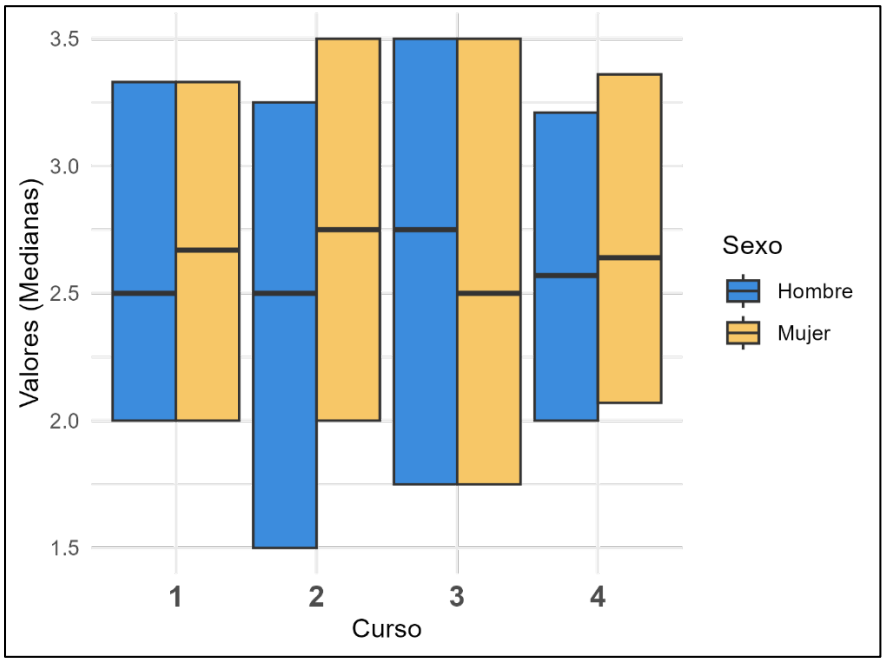
The results of the pairwise comparisons are presented in Table 5. All pairs of courses showed statistically significant differences (p<0.001). This indicates that *CL* distributions differ across courses. Effect sizes (r) ranged from small to large, with distinctive values standing out in pairs: Course 1 vs Course 4 (r=0,699) and Course 2 vs Course 4(r=0.619).

Comparison of Media Culture Measures by Academic Year

We compared the measures of Media Culture, which integrates the values of EC, HI and CL, between men and women in the academic years (1, 2, 3 and 4) using the Mann-Whitney test because the samples violate the assumption of normality (p<0.05) according to the Kolmogórov-Smirnov test.

Figure 5

Medians of media culture by academic year according to sex



Paired medians (Female, Male) were obtained by year: 1st (2.50 vs 2.67), 2nd (2.50 vs 25), 3rd (2.75,259) and 4th (2.57 vs 2.64) with the respective interquartile ranges as shown in Figure 5. The Mann-Whitney test provided *U*-values (10068-11665) and *p*-values (0.535-0.133), since *p>0.05* in all cases indicates that there is not enough statistical evidence to conclude that there are significant differences between the medians of men and women, so it is assumed that the medians of women are equal to those of men.

Association Between Media Literacy and Academic Courses

Given that the Kolmogórov-Smirnov test, in the verification of the normality of the data provided values of p<0.05, then it is assumed that the data do not have a normal distribution. In this situation, robust linear regression methods are chosen to perform a regression analysis, specifically, the MM-estimators due to their excellent response to outliers and non-normal distributions. (Maronna et al., 2019; Smucler, 2016)

In this analysis, CM was chosen as the dependent variable, which was calculated in each case according to the dimensions EC, IH and CL; and *academic year* was taken as the predictor variable.

Using the MM-estimator algorithm method, it presented a robust R^2 of 0.7007, indicating that the model explains approximately 70.07% of the variation of CM, The adjusted R^2 was 0.6997, providing a consistent fit. The quality of the fit was assessed by the residual robust standard error, which was 0.4291, indicating good accuracy in the model predictions. Information on the model's predictor variables is included in Table 6.

Table 6
Model regression coefficients

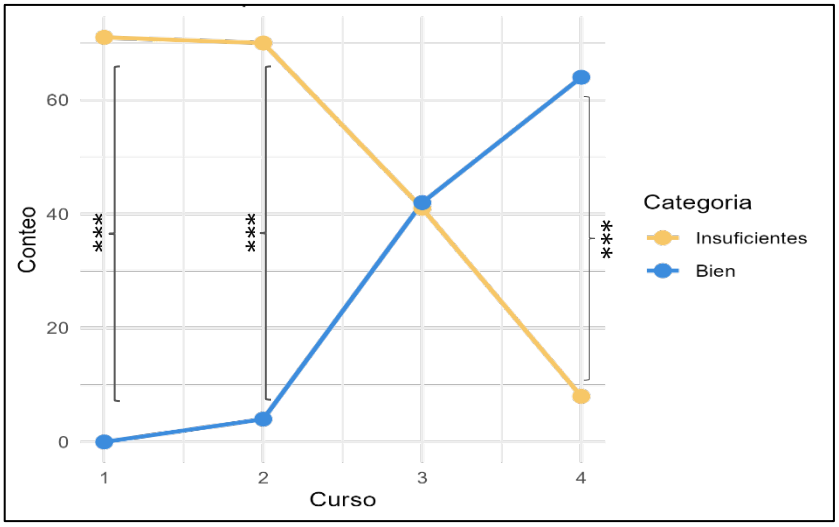
	Estimator	EE	*p*
Interception	1.14301	0.05952	***
Course	0.60600	0.02320	***

Note. EE: standard error, ***: $p<0.001$

General Condition of the CM

In the general study of the state of development of MC, the cut-off points are established according to the Cuban evaluation system, which establishes the following quantitative-qualitative coding: Excellent (5 points), Good (4 points), Pass (3 points), Fail (2 points) (MES. Cuba, 2022).

Figure 6
Behavior of the MC by academic years



Note. ***: pvalue < 0.001

When comparing the proportions (insufficient vs. well) using a Z-test, the count by course, showed significant differences in the MC in the 1st course (0 vs. 71, z=14.01, p < 0.001) in favor of the insufficient count, as well as in the 2nd course (4 vs. 70, z= 12.58, p < 0.0001); however, in the 3rd course the values were similar without significant differences in the count (41 vs. 42) and in the 4th course the differences were significant in favor of the Well status. (8 vs 64, z=-10,92, p<0.001).

Discussion and Conclusions

This study analyzed, from a theoretical approach, the process of formation of media culture in the university context, providing a system of pedagogical categories and the redefinition of the concept of media culture with its constituent dimensions. In addition, an empirical *diagnosis* of the current state of the level of development of media culture in the university context was carried out, which revealed insufficiencies in its development in the first three courses, and in the fourth course, results were recorded that are located in the lowest levels of the satisfactory condition. Thus it is *characterized,* from a holistic approach -theoretical, multidimensional and empirical-, the media culture

in the sampled university context of Granma province in Cuba, revealing that the theoretical dimensions -EC, IH- in their empirical concretion, require immediate attention.

The theoretical approach was based on the contextualization of the category of culture in the framework of higher education, revealing the components that in their interrelation configure it as a totality, highlighting the essential role of communication as a dynamic nucleus of its existence in relation to the process of apprehension. This concept describes the complex web of relationships that link the different forms of human activity with the communicative activity sustained by the complex ecosystem of information and communication technologies that increasingly permeates the social fabric. In the university training process, understood as a cultural process, media culture is identified as a material support for learning and for human development, an expression of the relationship between three processes: communicative expressiveness, holistic interpretation and logical consecutivity of hypermedia content; these processes operate on the hypermedia text, a new type of text that involves new forms of writing, reading and access, of special interest for higher education pedagogy.

The empirical diagnosis was carried out on university students in the profile of physical activity and health, in a cross-sectional sample taken from students from the first to the fourth year of university.

The comparison between the dimensions (EC, IH and CL) of media culture in each course (1,2,3 and 4) did not provide significant differences in the measures, in any case (Table 2), which shows that in the academic courses the students' performance is similar in the dimensions, according to the median. These results and the references obtained from the literature consulted suggest that the formation process of media culture, from its components, is homogeneous and spontaneous, i.e., there are no subjects whose objectives explicitly specify the development of media culture, although it is stated as an intentionality (MES. Cuba, 2014).

On the other hand, performance was compared between years (1,2,3 and 4) for each of the dimensions (EC, HI and CL), as shown in Figures 2, 4 and 4, based on the contrast of the courses (1 vs 2, 1 vs 3, 1 vs 4, 2 vs 3, 2 vs 4, 3 vs), significant statistical differences were found between each of the cases studied (Tables 3, 4 and 5), finding the largest positive effect size in the comparisons (1 vs 4 and 2 vs 4). In light of the training process, the evidence suggests that the appropriation of media culture is favored with the transit of the courses, due to the indirect impact of the tasks oriented to students whose solution is carried out using ICT (MES. Cuba, 2022).

Although statistical tests do not show the development of CL of hypermedia content above the other processes (EC and IH), descriptive data do reveal it, other research also confirms it, since this process has a predominantly technological genesis, which are part of the favorite activities of the subjects of these ages, the constant use of ICT and the motivation to handle it better (Gómez Miguel et al., 2022; Melendro Estefanía et al., 2016).

The comparison of the development of MC by sex in each school year showed no significant differences between men and women, which suggests that there is homogeneity between them, as can be seen in Figure 5.

The linear regression, according to Table 6, provided the following prediction model CM= 0.606*Course+1.14301, in this case studied that defines the passing grade from 3 points (CM=3), it is convenient to know from which course it is obtained, according to the sampled data. To do so, the equation Course=(CM-1.14301) /0.606 is cleared, leaving the equation Course=(CM-1.14301) /0.606; when substituting CM in this

equation, a value of 3.06 is obtained. Which means that the CM performance is satisfactory from the 3rd course onwards.

The comparison of the proportions of CM in students, coded in two states: insufficient and well, as a way to understand the general state of this construct, according to Figure 6, in the form of a scissors, reveals that there is a tendency for students to move from the "insufficient" state to the "well" state as they progress through the academic courses.

According to the data obtained, it is suggested to develop pedagogical interventions that allow students, from the first years, to reach higher levels in CM, which serves as a support for learning the rest of the subjects. It also highlights the need to develop transversal learning strategies throughout the career to ensure the performance of CM from transdisciplinary approaches, due to its relationship with critical thinking, problem solving and professional culture.

Strengths and Limitations

The positive aspects of the present study are: a) the theoretical approach to media culture it favors, by providing an updated reconceptualization in contemporary social and technological frameworks and b) it provides an empirical diagnosis, detailed by dimensions, of the level of development of media culture in students of significant pedagogical usefulness, which, being carried out in R language, can be immediately applied to another data matrix.

However, limitations must be overcome, such as: a) the size of the sample, in order to make statistical inferences towards other similar contexts and b) in the theoretical order, the concept of media culture must be completed by incorporating a dimension of an ethical nature.

References

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. *Comunicar: Media Education Research Journal*, *28*(62), 99-109. https://eric.ed.gov/?id=EJ1239122

Alsina, M., Fortuny-Santos, J., Lao-Luque, C., & De Las Heras, X. (2014). Improving communication skills: Students' viewpoint on a content & language integrated learning project. In *2014 IEEE Frontiers in Education Conference (FIE) Proceedings*, 1-7. https://doi.org/10.1109/FIE.2014.7044179

Álvarez de Zayas, C. (1988). *Fundamentos Teóricos de la Dirección del Proceso de Formación del Profesional del Perfil Amplio*. Universidad Central de las Villas.

Ancízar Narváez, M. (2021). Educomunicación y alfabetización mediática: ¿tecnología o cultura ? ¿adiestramiento o educación? *Pedagogía y Saberes*, 155-174. http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0121-24942021000200155&nrm=iso

Artola Pimentel, M. d. L., Tarifa Lozano, L., & Finalé de la Cruz, L. (2019). Planes de estudio e en la educación superior cubana: una mirada desde la educación continua. *Revista Universidad y Sociedad*, *11*, 364-371. http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S2218-36202019000200364&nrm=iso

Cabrera, L. T. (2017). Feminismos, postmodernidad y cultura mediática en las aulas: el videoclip pop estadounidense como herramienta educativa para la discusión de

temas controversiales. *Investigaciones Feministas*, *8*(2), 493-515. https://doi.org/10.5209/INFE.54972

Cátedra Unesco de Comunicación. (2001). Entrevista a Guillermo Orozco Gómez (México). 8.

Cátedra UNESCO de comunicación. (2009). UNESCO 2009: políticas de comunicación y su cruce con las políticas culturales.

Dongo-Mejía, A. M., Aguilar-Ponce, H. R., Sánchez-Zapata, D. M., Pichardo-Simón, L. E., & Cangalaya-Sevillano, L. M. (2022). Una aproximación teórica de la literacidad mediática hacia la competencia mediática en el currículo peruano. *Investigación Valdizana*, *16*(4), 209-219. https://doi.org/10.33554/riv.16.4.1577

Echenique, R. (2023). Education in Latin America, what could we do? *Revista Boletín Redipe*. https://doi.org/10.36260/rbr.v12i4.1951

Elpaís.com. (2008, 16 de diciembre de 2008). La UE propone crear la asignatura de Educación mediática. *Elpaís.com*. http://www.elpais.com/articulo/sociedad/UE/propone/crear/asignatura/Educacion/mediatica/elpepusoc/20081216elpepusoc_1/Tes

Frómeta Quintana, E. (2017). *Interpretación teórica y praxiológica de la formación mediática universitaria*. www.monografías.com

Fuentes González, H. (2008). *La Universidad Humana y Cultural. Una mirada a la Educación Superior del Siglo XXI [Formato de Audio Digital]*.

Fuentes González, H. (2010). *La formación de los profesionales en la Educación Superior. Una alternativa holística, compleja y dialéctica en la construcción del conocimiento científico.* CEES Manuel F. Gran.

Gómez-García, S., & Carrillo-Vera, J.-A. (2020). El discurso de los newsgames frente a las noticias falsas y la desinformación: cultura mediática y alfabetización digital. *Revista Prisma Social*, *30*, 22-46. https://revistaprismasocial.es/article/view/3751

Gómez, J. L. (2000). Psicología, cine y educación. http://dialnet.unirioja.es/servlet/fichero_articulo?codigo=635626&orden=771411

Gómez Miguel, A., & Calderón Gómez, D. (2022). El ocio digital de la población adolescente.

González, S. C. (2016). Cultura mediática y cultura digital: una aproximación teórica a las influencias en las identidades digitales de los y las jóvenes. I Congreso Online Internacional sobre la Educación en el Siglo XX1,

Heersmink, R. (2023). Materialised Identities: Cultural Identity, Collective Memory, and Artifacts. *Review of Philosophy and Psychology*, *14*(1), 249-265. https://doi.org/10.1007/s13164-021-00570-5

Hernando-Gómez, Á., García-Ruiz, R., & Buenestado-Fernández, M. (2022). La UNESCO y su responsabilidad ante la alfabetización mediática: Acciones y perspectivas. *Redes sociales y ciudadanía: ciberculturas para el aprendizaje*, 671-678. https://www.grupocomunicar.com/pdf/redes-sociales-y-ciudadania-2022/Alfamed-actas-086.pdf

Instituto Nacional para la Educación Superior en Latinoamérica y el Caribe. (2010). *Enlaces: una estrategia de cooperación e integración*.

Law, N., Woo, D. J., De la Torre, J., & Wong, K. (2018). A global framework of reference on digital literacy skills for indicator 4.4. 2. https://hub.hku.hk/bitstream/10722/262055/1/Content.pdf?accept=1

Macías Reyes, R., & Peña Frómeta, R. (2010). Los estudios culturales postura epistemológica. http://www.eumed.net/rev/cccss/09/

Marcuse, H. (1967). *Cultura y Sociedad*. Editorial Sur, S.A.

Maronna, R. A., Martin, R. D., Yohai, V. J., & Salibián-Barrera, M. (2019). *Robust statistics: theory and methods (with R)*. John Wiley & Sons.

Mateus, J.-C., Jolls, T., Chapell, D., & Guzman, S. (2022). Media Literacy in Peru: Reflections and comparisons on a 10-year journey. *Media Education*, *13*(2), 55-63. https://www.torrossa.com/en/catalog/preview/5474857

Melendro Estefanía, M., García Castilla, F. J., & Goig Martínez, R. (2016). El uso de las TIC en el ocio y la formación de los jóvenes vulnerables. *Revista española de pedagogía*, 71-89.

MES. (2003). *Documentos base para la elaboración de los planes de estudios "D"*.

MES. Cuba. (2014). *Resolución No. 200/2014. El Trabajo Metodológico en la Educación Superior*. https://www.gacetaoficial.gob.cu/sites/default/files/go_o_49_2014.pdf

MES. Cuba. (2022). *Resolución 47/2022. Reglamento del proceso docente y de dirección del trabajo para la carreras universitarias. Cuba*. Oficina para América Latina y el Caribe del IIPE UNESCO https://siteal.iiep.unesco.org/sites/default/files/sit_accion_files/cuba_resolucion47-2022.pdf

Reglamento organizativo del proceso docente y de dirección del trabajo docente y metodológico para las carreras universitarias, (2022). https://siteal.iiep.unesco.org/sites/default/files/sit_accion_files/cuba_resolucion47-2022.pdf

Montero, J. (2006). Las tecnologías de la información y las comunicaciones en la sociedad y la educación. *Revista Electrónica de Tecnología Educativa*, *21*, 16.

Montoya Rivera, J. (2005). *La contextualización de la cultura en los currículos de las carreras pedagógicas* Universidad de Oriente. Santiago de Cuba.

Orozco Gómez, G. (2001). Audiencias, televisión y educación: una deconstrucción pedagógica de la 'televidencia' y sus mediaciones. *Revista Iberoamericana de Educación*, *27*.

Pérez Lozada, O. d. J. (2011). *La dinámica formativa de la interpretación holísitco simbolica del texto hipermedia* Universidad de Granma.

Pérez Tornero, J. (2010). El nuevo horizonte europeo de la alfabetización mediática. *Revista de comunicaciones Telos*. https://telos.fundaciontelefonica.com/archivo/numero079/el-nuevo-horizonte-europeo-de-la-alfabetizacion-mediatica/?output=pdf

Pérez, V. G. (2019). La educación mediática en Europa: dimensión ciudadana de la educación en medios. *La ciudadanía europea como labor permanente*, 97. https://pdfs.semanticscholar.org/96d8/33236644c947dbc115fc2d55b97054cef842.pdf?_gl=1*mpepc5*_gcl_au*MTUxMDY5NTc4OC4xNzMyODM1MTgx*_ga*MzkyMDA3ODU3LjE3MzI4MzUxODE.*_ga_H7P4ZT52H5*MTczNDIxNTM3OC4yLjEuMTczNDIxNTQ2NC40OS4wLjA.

Ramasubramanian, S., & Banjo, O. O. (2020). Critical Media Effects Framework: Bridging Critical Cultural Communication and Media Effects through Power, Intersectionality, Context, and Agency. *Journal of Communication*, *70*(3), 379-400. https://doi.org/10.1093/joc/jqaa014

Ricoy Lorenzo, M. (2006). Las TICs en la educación: potencialidades y condicionantes que presentan. *Scielo 18*(2).

Smucler, E. (2016). *Estimadores robustos para el modelo de regresión lineal con datos de alta dimensión* [Tesis doctoral, Universidad de Buenos Aires].

UNESCO. (2009). La UNESCO y la educación. *Sector de Educación*.

Universidad de Almería. (2010). Cultura y Socialización.

Vygotsky, L. S. (1981). *Pensamiento y Lenguaje*. Poligráfico José Maceo.

Yazon, A. D., Ang-Manaig, K., Buama, C. A. C., & Tesoro, J. F. B. (2019). Digital literacy, digital competence and research productivity of educators. *Universal Journal of Educational Research*, *7*(8), 1734-1743.