Sinergias Educativas

Article

Incidence of arts education on cognitive development. Case study: Eduardo Laredo Institute

Incidencia de la educación artística en el desarrollo cognitivo. Estudio de caso: Instituto Eduardo Laredo

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Abstract

Recommendations for education in the 21st century focus on the need to incorporate the arts into school education programs as a way to strengthen interculturality and citizenship. There are also experimental trends that link the arts with intellectual and cognitive development. An empirical study on the subject is presented here, showing the first evaluation results of the incidence of the arts on cognitive development, in an educational institution that combines them with the official programs of formal education, in a political and administrative context of education, which historically has not formally recognized arts education for children and adolescents. The case study of the experience of the "Eduardo Laredo" Institute of Cochabamba - Bolivia, allows us to reaffirm the positive impact of incorporating the arts in regular education, as an element of intellectual/cognitive development and social being.

Keywords: Arts, education, cognitive development, intellectual development

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Sinergias educativas
July - Septiembre Vol. 9 - 3 - 2024
http://sinergiaseducativas.mx/index.php/revista/
eISSN: 2661-6661
revistasinergias@soyuo.mx
Page 69-95
Received: January 10 , 2024
Approved: June 11, 2024

Resumen

Las recomendaciones para la educación en el siglo XXI se centran en la necesidad de incorporar las artes a los programas de educación escolar como forma de reforzar la interculturalidad y la ciudadanía. También hay tendencias experimentales que vinculan las artes con el desarrollo intelectual y cognitivo. Se presenta aquí un estudio empírico sobre el tema, que muestra los primeros resultados de evaluación de la incidencia de las artes en el desarrollo cognitivo, en una institución educativa que las combina con los programas oficiales de educación formal, en un contexto político y administrativo de la educación, que históricamente no ha reconocido formalmente la educación artística para niños y adolescentes. El estudio de caso de la experiencia del Instituto "Eduardo Laredo" de Cochabamba - Bolivia, permite reafirmar el impacto positivo de la incorporación de las artes en la educación regular, como elemento de desarrollo intelectual/cognitivo y del ser social.

Palabras clave: Artes, educación, desarrollo cognitivo, desarrollo intelectual.

Introduction

In 2006, UNESCO held the World Conference on Arts Education in Lisbon. Its objectives were to analyze ways to enrich the processes of education for creativity and the exercise of an inclusive interculturality. This conference was the platform for the discussion of ideas that recommend the large-scale promotion of educational programs that include artistic activities in their formal content. Some of the questions that were raised there were the following:

- Does art education serve only to appreciate art or should it be considered as a means to enhance the learning of other subjects?
- Should art be taught as a discipline, for its intrinsic value, for the body of knowledge, skills and values it conveys, or for both reasons?
- Should arts education be aimed at a few students who are especially gifted in very specific disciplines or at all students in general (cf. UNESCO, 2006).

These issues generated a consensus that we consider fundamental as a background. In the first place, the importance of academic and scientific contributions to demonstrate the effectiveness of arts education and serve as an argument for political decision-making

processes in the field of education was emphasized. Although it is generally assumed that creative capacities and cultural awareness must be fostered in the 21st century, it is necessary to strengthen the theoretical scaffolding to support this assumption. It is therefore necessary to promote the collection of data and cases that will form a body of information aimed at influencing the formulation of policies that integrate the arts into education systems (Cf. UNESCO, 2006).

Along these lines, the UNESCO report mentions a series of current programs focused on the relationship between the arts and formal levels of education in different countries as a starting point for the development of theories and future recommendations, and mentions numerous specific experiences originating in different countries around the world. In general, the need to foster cognitive development, in its intellectual, social and cultural dimensions, by improving formal education through the arts was recognized.

For its part, the Organization of Ibero-American States for Education, Science and Culture, in its Educational Goals 2021 (OEI, 2014) considers it important to improve the curricula of formal public education, for which the arts are fundamental, due to their importance in human development. In this sense, school spaces constitute a great opportunity to contextualize the knowledge and practices of the arts, in their functions for citizen culture, human development and cultural diversity (Marchesi, 2009). "The development of creative capacity, self-esteem, willingness to learn, the ability to work in teams and the development of abstract thinking, find in arts education a powerful strategy to achieve it" (Marchesi, 2009: 126).

In this sense, in this article we seek to note preliminary results of a research guided by the question: Can the arts influence human cognitive development in a way that formal education alone does not? In order to approach an answer, we focus our attention on an initiative undertaken in the city of Cochabamba (Bolivia), specifically that of the "Eduardo Laredo" Institute, where formal education is integrated with arts education. Based on sequential mixed methods (surveys, interviews, focus groups and application of the Wechsler WAIS IV test), we seek here to give a brief sample of the positive impact of arts education on cognitive development.

The development of this article is structured in two parts: in the first part we briefly outline a general panorama of the teaching of the arts in the formal educational system of Bolivia, with a particular section

for the case of the "Eduardo Laredo" Institute (hereinafter, IEL), which is different from the general one. In the second part, we present the results of the field work undertaken in order to verify whether arts education has an impact on cognitive development.

Regular education and arts education.

In this section we will briefly describe the situation of formal education in Bolivia with respect to arts education, on the one hand, and the educational model applied by the IEL, on the other hand, in order to summarize the preliminary results of the field study.

Education policy in Bolivia

As in the Latin American context in general, literacy (of adults), the optimization of access to school and the permanence of children and youth in the educational system are also problems in Bolivia that are accentuated by deep socioeconomic, gender and ethnic-cultural inequalities. These structural problems are aggravated by the inefficiency of the state bureaucratic apparatus, obsolete legislation and educational reforms that are insufficient to propose long-term solutions. Most of the scarce resources allocated to the field of education by the States are allocated to the basic needs of the education systems and there is no room for discussion of the benefits that art brings to society.

However, a systematic inclusion of the arts in formal education can be of help in responding from resilience and creativity to needs arising from the context, as evidenced by various experiences. An example of this is the Venezuelan experience of the social musical training project El Sistema, which, being outside the formal education system, included thousands of children and young people in alternative spaces in music education programs in order to reduce delinquency, generating a positive impact in their context (Cf. UNESCO, 2016).

Given that the arts have the capacity to contribute positively to society, the need for comprehensive arts education is explicitly mentioned among the goals established by the OEI: "The learning and experience of art in schools constitute the most powerful strategies for the construction of citizenship. The presence of art in education, through arts education and education through art, contributes to the integral and full development of children and young people" (OEI, 2014, p. 147).

Despite the recommendations of international organizations regarding arts education, the inclusion of the arts in school curricula

has not advanced significantly in the region. In the Bolivian case, in the history of the different educational policies implemented in the country, the arts have not been treated as a relevant element of curricular competence. Arts education subjects are seen as a space for technical learning and a civic vehicle for the ideological reproduction of values of the different political hegemonies (Cf. Arze, 2015).

The economic and social conditions also did not allow for the consolidation of another approach. The different educational reforms focused on other problems rather than on artistic content. For example, the education reforms of 1955, within the framework of the national revolution, reflected other circumstances and their main challenge was to enable access to education for the majority of the population and "to expand the ruralization of Bolivian education. The results were meager. In 1966 an evaluation was made with UNESCO and other international organizations, and only 40 percent of the rural school population had been covered, after 10 years of implementation" (Galindo, 2023, p. 250).

The 1994 reform, through Law No. 1565, incorporates for the first time elements of evolutionary, structural and social psychology, conceiving the child as a being in cognitive development and not as a recipient of content. Law N°070 of 2010 on educational reform gives continuity to this line. However, in both cases, no progress has been made in new perspectives in traditional education, nor has it been thought of establishing a change of scenario that contemplates the inclusion of artistic training in formal education. An example of this is that the hourly load of the music subject for schools is from one to two weekly periods of 40 minutes, time dedicated to the repetition of civic songs with anachronistic contents.

On the other hand, certain contents drawn from isolated experiences and/or private initiatives that, under the structure of the Ministry of Education in force since 2017, have become part of the higher education subsystem of the Vice-Ministry of Higher Education and Vocational Training. This means that the few places where it is possible to reach to cover an acceptable minimum of contents for a training that can be considered artistic -in the areas of music, theater, dance, plastic arts and cinema-, are exclusively destined to students graduated from schools of the schooled education system of the Vice-Ministry of Regular Education, being their access requirement to be high school graduates over 18 years old.

At present, the arts are recognized as a technification or craftsmanship, as it was in Bolivia during the 19th century, with the difference that nowadays the prerequisite of the baccalaureate is established to formally access a training in arts in the higher levels that the formal system recognizes: Medium Technician and Higher Technician. The instances in which this training can be accessed are under the responsibility of the Directorate of Technical, Technological, Linguistic and Artistic Formation, which in turn refers the responsibility to a small and hard-working group of people surrounded by the general bureaucracy of the ministry with the impossible task of supplying the five branches that they requisition and administer: music, dance, theater, cinema and plastic arts.

We mention this scenario with the intention of illustrating the scant importance given to the arts in the framework of formal school education in Bolivia. The political changes in the different administrations of the Bolivian State have not generated and even less consolidated an education focused on the optimization of the teaching-learning process, but rather an education of reproduction of the political forms of the moment. Part of the problem is a unionized and pragmatic teaching profession that, focused on its own interests, has not contributed - with the exception of individuals - significantly to improving Bolivian education processes. Apart from this structure, there are few initiatives emerging from civil society as a response to this shortcoming, among which the IEL stands out, as described below.

The IEL model of arts education

Located in Cochabamba - Bolivia, the "Instituto de Educación Integral y Formación Artística Eduardo Laredo", is today an internationally recognized educational model. Its foundation dates back to the 1960s, when the brothers Rafael and Franklin Anaya Arze, together with a group of citizens who supported the process, created the IEL as a response to the educational context of the time (Cf. Anaya & Del Granado, 2023). To this end, they established a regular education school that, in addition, articulated theoretical and practical principles of music, mainly choral and piano, complementing this program with some additional musical instruments and classical dance. As Bayá points out, "it is necessary to recognize that Laredo is a product of the history of its country, but also of the spirits that operated for this project to exist and be possible" (Bayá, 2012, p. 120).

Originally, the school was established with a few students and a group of teachers and artists who worked ad honorem for three years, until 1964, when it obtained state recognition and a small budget allocation. However, since its inception it has been confronted with state educational policies that put its own subsistence at risk. Being a somewhat autonomous experience and having emerged from a citizens' initiative, the school did not reflect governmental political interests or those of the teachers' union in the country, but with the passage of time it has consolidated itself as a local and legitimate response to the educational needs of its context. In this sense, it is located within the framework of circuits parallel to the formal field of state policy, that is, in the "third sector" (cf. Roitter, 2005), which is driven by associations in the exercise of citizenship.

The institutional development of the IEL has added important achievements over the decades and its educational model has been consolidated in an exceptional way in Bolivia and in the region. An example of this is, among others, Law N°123 of the Plurinational State of Bolivia in 2011, which protects this educational experience in the cultural dimension. In 2018, Law N°839 of the Department of Cochabamba was enacted, declaring the IEL Cultural and Educational Heritage. Finally, in the year 2021 the IEL obtains international recognition through the Res. 06 of the Andean Parliament of South America that presents it as a Heritage and Educational Referent of this Andean zone of countries.

The artistic training model developed by the IEL has a complete curriculum for specialized theoretical and practical training in the areas of music, dance and theater. The Music specialty contains a wide range of academic possibilities: all families of instruments are taught, there is a youth symphony orchestra and a children's orchestra, as well as choirs and lyrical singing, modern contemporary dance and performing arts in theater.

The design of the workload combines in similar proportions the contents of formal education with the artistic training program. Currently, 7 thousand academic hours are covered in each of the specialties of Music and Dance, while the Theater specialty has an hourly load of 4 thousand academic hours. These hours per specialty are distributed over 10 years, from 3rd grade to 6th grade of secondary school, the time the student spends from entry to the formal humanistic baccalaureate.

The IEL student population is constantly exposed to the points of connection that different artistic practices offer in their daily lives.

For example, the subjects of choirs, history of the arts or history of music are spaces shared among students of the three majors. Immersed in one of the three lines of arts, the students, each with a specific artistic curriculum and parallel to the contents of the humanities (exact, human and social sciences), dedicate the morning and afternoon to cultural activities. What are the consequences of this type of training? With this concern in mind, field research has been conducted to establish the impact of this educational model on the cognitive development of students, comparing with results obtained from formal education processes that do not significantly include artistic content.

Arts education and cognitive development.

In this study, we are interested in verifying whether the arts, in addition to promoting inclusive social and multicultural processes as recommended by international organizations, can have a significant impact on formal thinking skills and cognitive development, including aspects of resilience and emotionality of being. Given that in Bolivia there is no research focused on the relationship between arts and cognitive development, it has been considered pertinent to conduct a field research as a starting point. We are guided by the objective of recommending the inclusion of the arts in educational policies and with the purpose of formulating a proposal in this sense, the experience of the IEL was investigated from an approach that we will now summarize.

Conceptual support.

The discussion on the relationship between the development of intelligence and the artistic component of education offers ample ground in 20th century psychology. Vygotsky understood the arts as the productive and creative activities of human beings, so that education in the arts is aimed at their development and maturity. Several decades later, H. Gardner mentions that arts education is fundamental for cognitive development, because it stimulates sensitive, creative, expressive and practical abilities. As a consequence, the arts should be incorporated into schools because of the existing correspondence in cognitive development among the multiple facets of intelligence.

We adhere to the definition of intelligence made by R. Sternberg, for whom intelligence is a process in constant development, where we find processes of acquisition and consolidation of skills generating different levels of mastery in a certain field of reality that in turn requires the development of certain skills (Cf. Sternberg, 1987).

Complementing this definition, we rely on Piaget, for whom intelligence is an instrumentation of the process of cognitive construction, being what is used at the moment of improvising on a given event, in reality. The evolutionary character of cognition from these perspectives is clearly evolutionary, so we speak of the cognitive development in which each individual participates. In Gardner's words:

All individuals go through the same stages of intellectual development, Piaget argued, not because we are "programmed" to do so but because, given the interaction of our innate predispositions with the structure of the world in which we live, we will inevitably formulate certain hypotheses about the world, test them, and then modify them in light of the feedback we get (in Gardner, 1997, p. 40). In this sense, we understand cognitive development as an evolutionary function of intelligence, supported by the fact that "many authors consider that the ability to learn is an important aspect of intelligence" (Sternberg, 1987, p. 21). It is a process that, like perception, responds to many different levels, both formal (as in the case of education) and cultural, depending on the experience itself in the social and physical context of individuals, i.e. in their different ways of articulating reality to intellectual processes (cf. Sternberg, 1987, p. 21).

In this line, researchers such as H. Gardner or N. Goodman have documented how the arts present a broad platform for the development of the human being, understanding it as an individuality, in which each particular gender learns in a different way and multiple intelligences are expressed in this process. That is to say, intelligence is not reduced to its logical-mathematical or verbal expression, but includes musical, kinesthetic, bodily, interpersonal, spatial and environmental aspects. The arts, added to the formal content of education systems, diversify learning and emphasize the individual, while developing cognitive capacities (cf. Gardner, 1994). With the conceptual support of the aforementioned authors, among others, this research aims to investigate the impact of the arts on cognitive development in relation to the educational process, for which we have resorted to a composite methodology that combines quantitative and qualitative approaches.

Materials and methods

Taking into account that our objective is to find elements of significant relationship in the incidence of the arts in cognitive

development, we had to assume some methodological challenges to demonstrate that what we were measuring was the incidence of the arts in cognitive development. We started by assuming the need to compare groups exposed to the arts in their educational process (coming from the IEL) with others who were not. We called the first group the "experimental group" and the others "comparative control groups".

However, it was necessary to ensure that the only variable that had a differentiated impact on the cognitive development of the groups was the arts, so it was necessary to control for other independent variables that could have an influence. Among the most important were the socio-economic and cultural origin of the students - including their parents' occupation and level of education-, access to languages, travel and contact with other cultures. Thus, for the selection of students from other schools to integrate the "comparative control groups", we investigated - based on secondary sources - the characteristics of the schools in Cochabamba, to choose those in which the students had characteristics similar to those of the "experimental group".

The second stage consisted of recognizing the existing populations, applying a general survey to describe socioeconomic characteristics and cultural belonging. We applied 250 surveys in five schools in the same district of the city -those identified in the first stage of the research- and, based on the results (which showed similar characteristics of the students in all groups, including the experimental group), we established six groups: five "comparative control groups" made up of a total of 72 students who had graduated from their respective schools and had been there for at least 10 years, without systematic and formal exposure to the arts during this time. On the other hand, the "experimental group" was made up of 46 individuals graduating from the IEL.

A third stage consisted of getting to know the social and emotional capacities of the young people through personal interviews and focal group dialogues.

In the last stage, data were collected to measure intellectual and cognitive development through the Wechsler Adult Intelligence Scale (WAIS IV), to finally make a comparison of global and specific results between individuals and groups in terms of cognitive development, that is, personal and social abilities to identify differences in the development of the different skills addressed.

Results

Once the population that would make up the sample for the fieldwork was selected, the second stage began, consisting of the application of surveys that allowed us, at first, to select and distribute the sample with homogeneous individuals in terms of age, access to services, type of family and cultural relevance. With this information, constant personal and family traits were identified (e.g., access to languages, travel abroad, use of social networks, free time and concerns), elements that -among others- provide the predominant identity components in both groups. This is important to establish an approach to material and cultural contexts leaving the arts as a relevant and objective variable that can be identifiable and associated with cognitive development.

Table 1. *Characteristics of the study groups with a standardized survey*

	Control Groups	**Experimental group**
Number of individuals	72	46
Age	Average age: 17 years, 5 months and 16 days.	Average age: 17 years, 6 months and 14 days.
Place of birth	87% Cochabamba - 96% Total Bolivia (including CBBA), 4% Foreign.	92% Cochabamba - 100% Bolivia (including CBBA), 0% Foreign.
Access to basic services	Water - Electricity - Sewerage - Gas Internet - Transportation	Water - Electricity - Sewerage - Gas Internet - Transportation
Parental vocational training	79%	88%
Institutional origin	Prestigious private schools in the city of Cochabamba.	Institute of Integral Education and

		Eduardo Laredo" Artistic Formation.
Institutional characteristic	10 years in the educational institution, without systematic exposure to art education.	10 years in the educational institution, with systematic exposure to art education.

Source: Own elaboration, 2024.

As a second moment, autobiographical surveys were applied, which, as qualitative research methods, place the individual in a situation in which he/she produces discourse with his/her own words, spoken or written, expressing his/her evaluations of something determined, from dialectical relationships (such as the daily negation between fantastic ideal and reality, aspiration and possibility, creation and acceptance), to obtain perspectives of behavior and understanding of the social and cultural context that the individual will face in the immediate future (Ruiz, 1999). The autobiographical account is considered one of the best methods to know how people perceive the world around them (Hernández, 2009).

In this way, data were collected through questions and the answers were classified into categories and components according to the frequency and belonging to each of the thematic axes established for each question. This experience has generated valuable material about the particular phenomenology, behavior, skills, social and resilient abilities of each of the participants. Table 2 shows the questions asked and the categories used to classify the answers.

Table 2. *Structure of the biographical survey*

Categories	Questions
1. Problem/Conflict resolution.	How you felt and what you thought when you wanted to solve a difficult problem or problematic situation.
2. Adaptability.	Tell how you are when you find yourself in a new, uncomfortable, difficult or surprising situation. Write extensively, explain in detail without omitting what seems to make no sense.

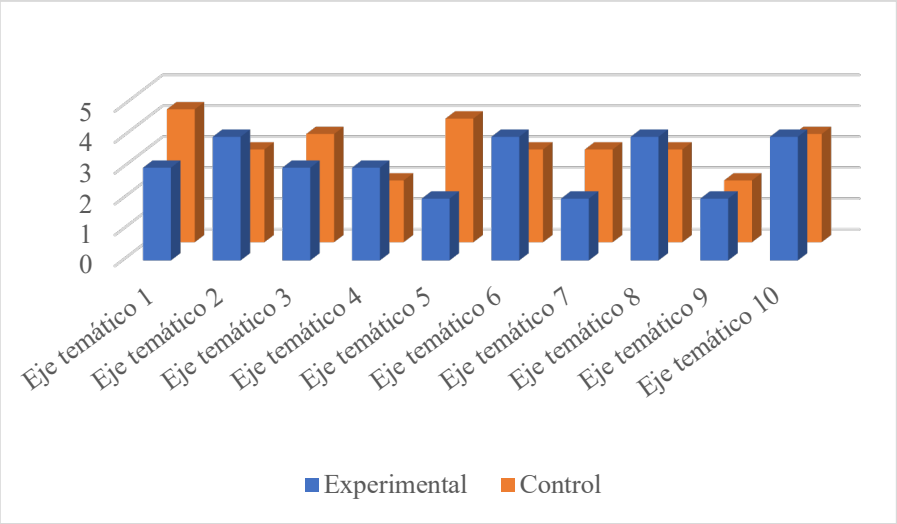
3. Perception of the perception of the Other.	How do others (your friends or teachers) see you? Write and narrate as if someone else were writing about you, when you have to express and describe how you are when you are dealing with a conflict or problem.
Thematic axes	**Categories**
Negative feelings and thoughts when facing a problematic situation. 2.	Low self-esteem. Components: - Anguish - Insecurity - Anxiety and frustration - Stress - Low frustration tolerance
2. Feelings and thoughts of security and practical ability in problem solving.	Positive self-perception (Emotion). Components: - Extroversion - Search and adaptation to new situations - Socialization capacity - Optimism - Emotional/rational attunement
3. Diffuse and confused feelings and thoughts, and dispersion of contents in the face of problems.	Insecurity. Components: - Feeling of abandonment - Feeling of disqualification - Pressure, guilt - Self-disqualification - Avoidance
4. Feelings and thoughts joy, well-being and opportunity in problem solving.	Safety. Components: - Positive attitude and optimism - Analytical skills - Satisfaction with a task performed - Self-confidence - Adaptation
5. Negative or impoverished self-perception of oneself when faced with a new, uncomfortable, difficult or surprising situation.	Negative self-perception (Emotion). Components: - Introversion - Shyness - Social isolation - Emotional ambivalence - Anguish and Guilt
6. Self-perception of self-confidence and well-being when facing a new, uncomfortable,	Positive self-perception (Emotion). Components: - Extroversion - Search and adaptation to new situations - Socialization capacity

difficult or surprising situation.	- Optimism - Emotional/rational attunement
7. Confused self-perception or dispersion of contents when facing a new, uncomfortable, difficult or surprising situation.	Negative self-perception (cognition). Components: - Denial - Avoidance - Disintegration - Impulsivity
8. Self-perception of integration and association of contents when facing a new situation.	Positive self-perception (cognition). Components: - Acceptance - Assimilation - Integration - Balance
9. Negative or impoverished perception.	Dystonia. Components: - Ephemeral - Unpleasant/antipathetic - Mistrust/ insecurity - Unable - Vulgar
10. Positive perception.	Empathy. Components: - Leadership/smart/analytical - Pleasant/sympathetic - Friend - Nice - Solidarity - Optimistic/self-confident

Source: Own elaboration, 2024.

After systematizing the data, qualitative differences could be appreciated between the comparative control groups and the experimental group, although not significant in the general average, which has remained close to a high mean. However, sufficient data were obtained to perform a contrast analysis between the groups, once the responses were established and distributed according to their evaluation, as shown in Table 3.

Figure 1: Biographic Surveys



Note: Compare Table 2 to identify the theme of each axis. Own elaboration, 2024.

The score of the number of responses categorized by quality shows the experimental groups above the degree achieved in the comparative control groups with respect to elements such as self-esteem, emotional and rational resources, effectiveness in stress management and distress when facing new situations.

Beginning the third stage, we worked with focus groups, a method of collecting group data or social construction narratives. This technique, widely used in qualitative social research, consists of a group dialogue led by a moderator. The objective is to provoke the participation and dialectic interaction of the individuals in the group in order to generate information about the subject matter - experienced and shared by the participants - of interest (Cf. Ruiz, 1999).

During the discussions, opinions were presented by thematic axes and generated the exchange of ideas and, at times, the consensual precision of a given idea or appreciation. This does not mean that divergent interventions were not taken into account; all opinions were taken into account, since consensus was not sought, but rather the social exposure, construction and evaluation of each element presented at the dialogue tables.

In order to encourage the dialogues, we established six discussion factors, each one composed of categories based on the responses

highlighted during the dialogues. Table N° 4 shows the factors and categories:

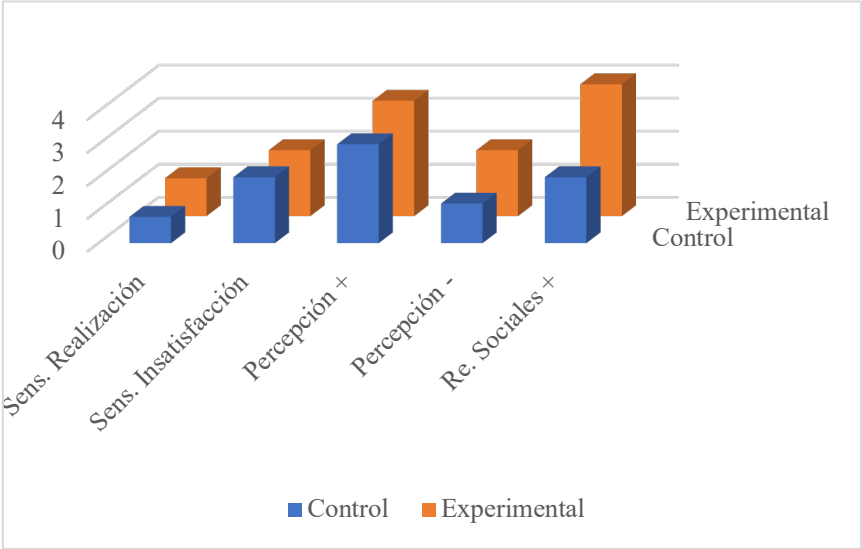
Table 3: *Thematic and dialogic structure of the focus groups*

	1	2	3	4	5	6
Factors	Perception of training experience in the last six years	Self-perception, sense of belonging and social relations.	Perception preparation for the future	Proposals for improvement: What would improve your education?	Listening sensation	Problem-solving skills
Categories	Feeling of satisfaction and accomplishment (liking)	Feeling of satisfaction and accomplishment (liking)	Feelings of security	Teachers	Positive listening sensation	Positive perception
	Feeling of dissatisfaction	Feeling of dissatisfaction	Feelings of insecurity	Contents	Negative listening sensation	Negative perception
	Perception of positive academic training	Perception of positive academic training		Environments		
	Negative perception of academic training	Negative perception of academic training		Educational system		
	Positive social relationships	Positive social relationships				

Source: Own elaboration, 2024.

Taking into account response trends in each focus group, interpretative analyses of the dialogues were carried out, given that each focus group elaborated a different narrative that encompasses the values that are finally accounted for and contrasted between the experimental and control groups.

Figure 2: Focus groups, factor 1: Perception training

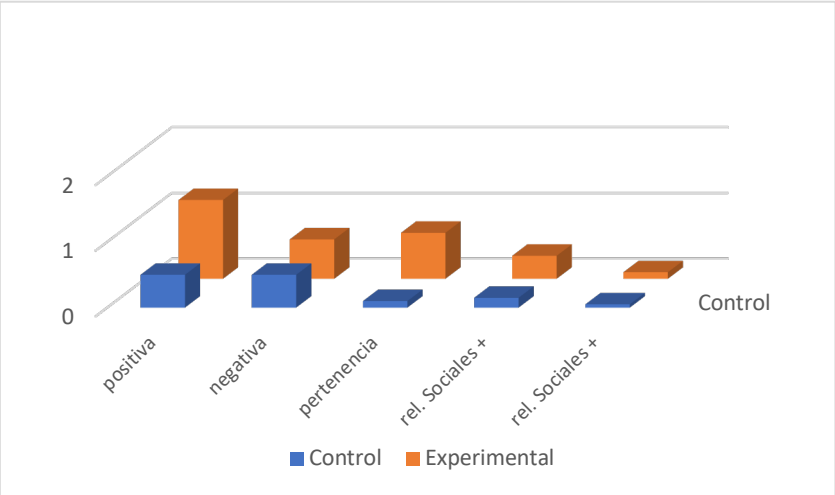


Source: Own elaboration, 2024.

One of the concerns that most motivates narrative production is the theme of one's own training and preparation for the future, that is, the feeling of security to face new challenges of students who, due to the characteristics of the cultural environment, are heading towards higher professional and university training. In this exercise, the experimental group responded with a higher degree of accomplishment and positive perception of the formative process, showed a greater capacity for socialization and a lower sense of dissatisfaction than the comparative control groups.

Figure 3 shows the results obtained in the dimension of self-perception, belonging and social relations.

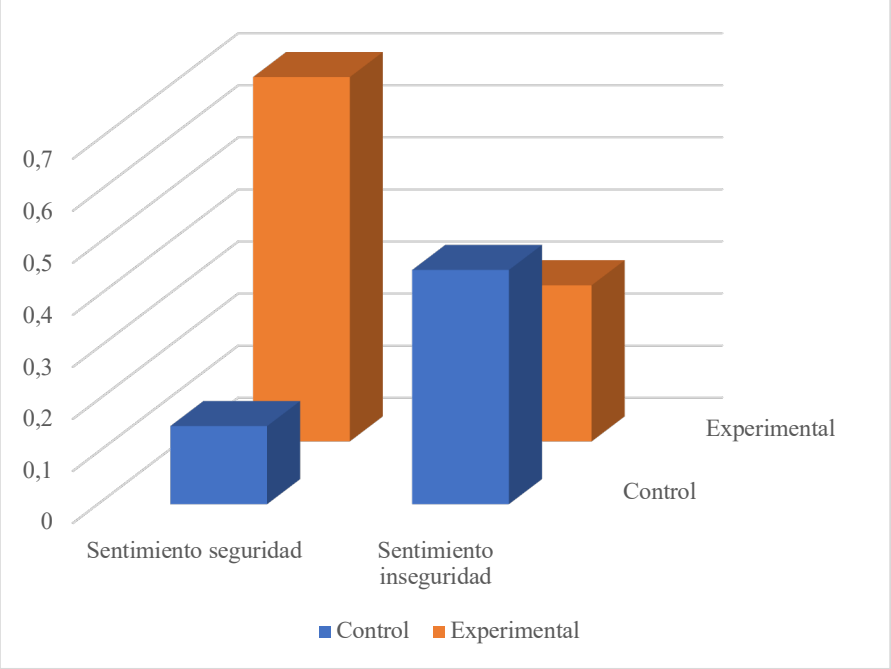
Figure 3: Focus groups, factor 2: Self-perception, sense of belonging and social relationships.



Source: Own elaboration, 2024.

The perception of belonging and identification with the educational institution is more pronounced in the experimental group, to which is added a greater motivation for interaction among individuals for the establishment of lasting social relationships. Undoubtedly, this is the positive emotional consequence that the student registers in the sum of his experiences with peers and spaces of academic interaction. It should be clarified that this does not define the objective quality of an educational institution, but rather the individual's subsequent perception of it in terms of an ideal.

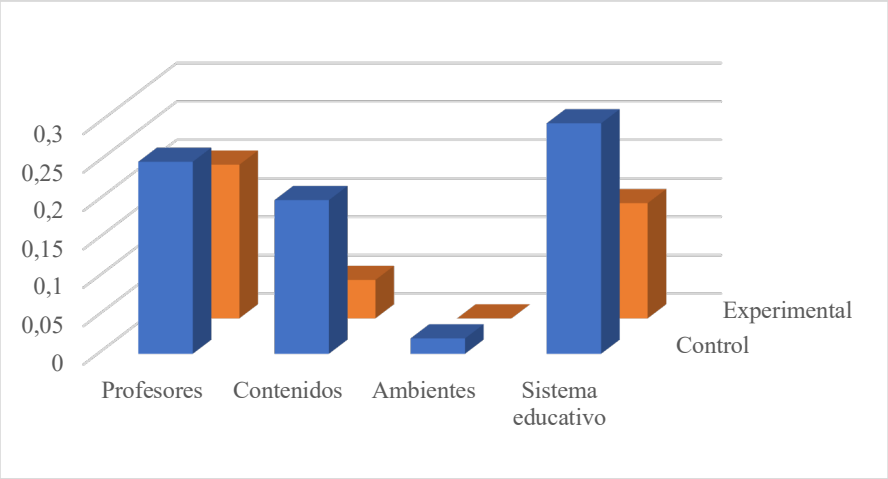
Figure 4: Focus groups, factor 3: Self-perception of academic background



Source: Own elaboration, 2024.

Figure 4 also shows the subjective and socialized feeling among the participants of both groups about the evaluation of the training they received at school and their feeling of preparation for the future. In the control groups there is greater subjective insecurity in this regard. As in the previous data, these elements are of a subjective nature, based on idealizations, but here with the component of the real situation in which the students find themselves, a situation of graduation and the consequent passage towards new experiences, which objectively question them.

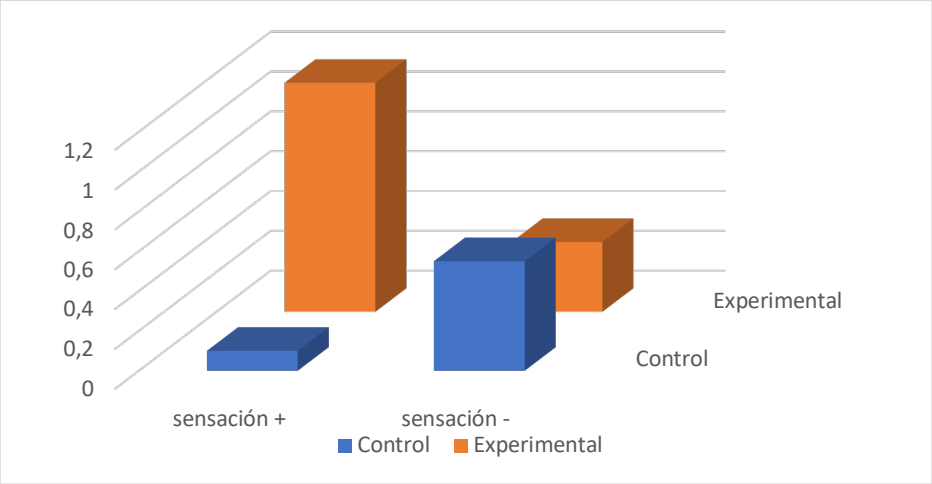
Figure 5: Focus groups, factor 4: Improvement - change education



Source: Own elaboration, 2024.

Figure 5 shows the expression of students in terms of the desire for change in teachers, content, environments and the educational system itself. The control groups expressed less conformity and greater desire for change, while in the experimental group, students expressed greater conformity.

Figure 6: Focus groups, factor 5: Improvement - change education

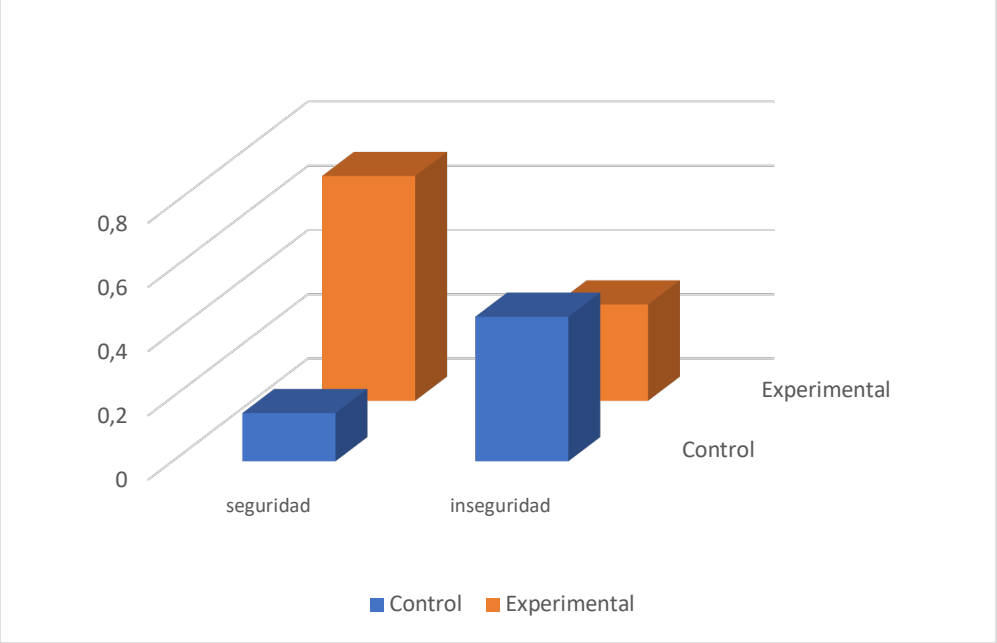


Source: Own elaboration, 2024.

The positive feelings of self-esteem and security in the context, both cultural and educational, were expressed in the experimental group with a greater sense of security of being listened to in an assertive and positive manner; in the control groups, the demand for a space

in which to acquire greater legitimacy from listening and greater significance in relation to the Other was identified.

Figure 7: Focus groups, factor 6: Problem-solving chapter



Source: Own elaboration, 2024.

Figure 7 shows the ability to solve new problems presented in different contingencies exposed playfully in the focus groups. The results show a greater sense of security to face and solve problems on the part of the experimental group.

Once the surveys were completed, we applied the intelligence test on the Wechsler WAIS IV scale, a cognitive measurement and evaluation instrument to describe the functioning of these abilities in persons between the ages of 16 and 90. This test was considered relevant because its conceptual and practical conception is current and understands intelligence as the consequence of cognitive development by stages with capacities distributed by age groups, integrating the different intellectual dimensions. The Wechsler WAIS IV test is also highly sensitive to creative and emotional abilities, and provides quantitative data in the measurement of intelligence and qualitative data in its expressive form.

The test is divided into 11 subtests (plus 4 optional subtests) and basic functions of intelligence that, in turn, make up 4 structures: Verbal Comprehension Index (VCI), Working Memory (WMI), Perceptual Reasoning (PRI) and Processing Speed (PVI). The set

presents an overall result, the total IQ, which is expressed as the final weighted between indexes.

Table 5: *Structure of the Wechsler WAIS IV Intelligence Scale*

WAIS IV SUBTEST STRUCTURE	
Verbal Comprehension Subtests (VCI)	Similarities
	Vocabulary
	Information
	Comprehension
Working Memory Subtests (WMT)	Digit retention
	Arithmetic
	Succession of numbers and letters
Perceptual Reasoning Subtests (PTR)	Designs with cubes
	Matrices
	Visual puzzle
	Curved weight
	Incomplete figures
Processing Speed Subtests (PVI)	Symbol search
	Keys
	Cancellation

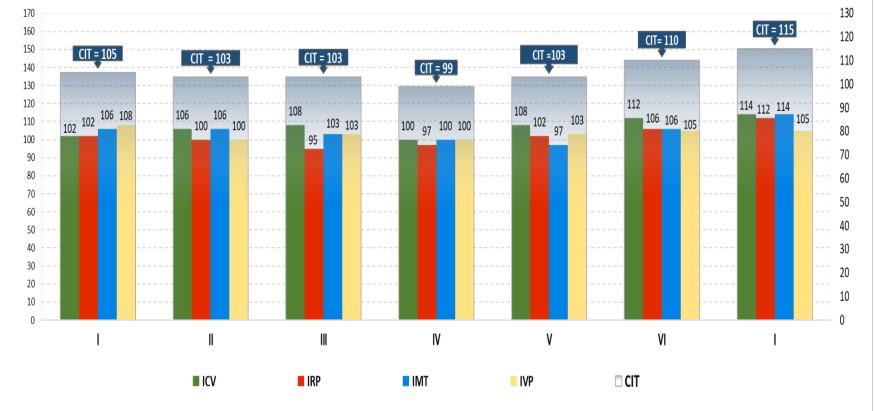
Source: Own elaboration, 2024.

The application was carried out by a team of four professional psychologists and the work was divided into three stages. The theoretical and practical preparation included the conceptual updating and homogenization of the application techniques, minimizing the possibility of differences in the application between examiners. In the second stage, the individual application of the test was carried out in the educational institutions to which the young people in the experimental and control groups belonged. In the third stage, the protocols were reviewed and analyzed in detail.

A total of 72 tests were applied in the control groups and 46 in the experimental group, making a total of 118 tests. The application work lasted three months, similar to the time used in the process of reviewing and interpreting the data. The results allowed a considerable amount of comparisons between groups and subgroups of each institution and between the general control and experimental groups. For reasons of delimitation, only the most outstanding group and global results of the research are presented here.

The comparison between groups shows that individuals exposed to arts education have a higher development of cognitive abilities than individuals in the comparative control groups in all four indices, reaching an average IQ of 115 in the experimental group and 106 in the control group.

Figure 8: Comparison of ICV, IMT, IRP, IVP indices between control groups (separately) and experimental group.



Source: Own elaboration, 2024.

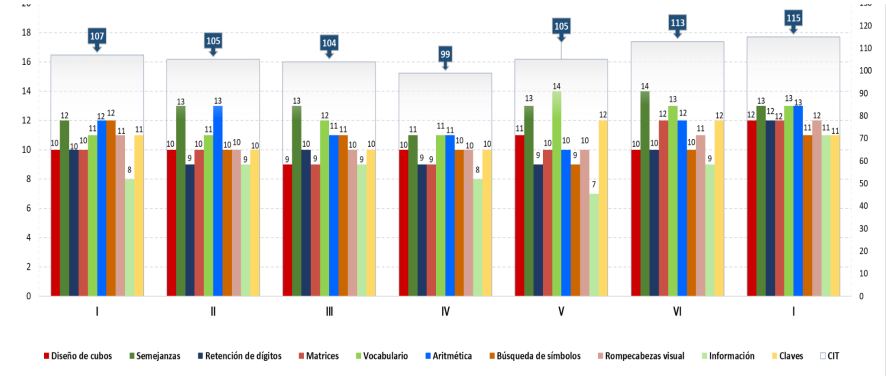
Separating the averages obtained by each of the six control groups (I-VI) into units, it is observed that in each case different contrasts are established in comparison with the experimental group. It is notable how group VI is close to the experimental group and it can be anticipated that, reviewing in detail the educational characteristics of that entity, it can be observed that it is a program that integrates a greater number of hours dedicated to the arts than the other control groups.

In all the subtests applied, the experimental group obtained higher scores; however, balance was found between groups in similarities and clues. Proximity was also found in the vocabulary and arithmetic tests, as well as in symbol search. In the subtests where two or more points of difference were found, the cognitive development score

was found to be significant. The subtests of Matrices, Digit Retention, Cube Design, Visual Puzzle and Information express this difference.

The Matrices subtest measures the ability to respond creatively to problems without resolution certainty. The Digit Retention subtest marks the ability to receive and process stimuli in a passive manner, attention capacity, flexibility of thought and negative-positive attitude to undertake a task. The Cube Design subtest expresses the ability to solve problems creatively, reveals cognitive style, creative capacity, as well as the management of anxiety when facing a new task under pressure. The Visual Puzzle subtest measures motivation and flexibility for task performance, abstract thinking, persistence and stress management. Finally, the Information subtest generates data on attention to the external world, cultural opportunities and richness of the early environment, language ability, interests and reading beyond school, curiosity and cultural interest.

Figure 9: Comparison of test scores between control groups (separately) and experimental group.



Source: Own elaboration, 2024.

The last figure shows the comparative control groups (I-VI) separately according to each educational institution. It is noteworthy that the results are higher in the experimental group, although the control groups are above the average of 90-110 on the intelligence scale, corresponding to the age group of the individuals participating in this test.

Discussion

This research took into account the recommendations of multilateral organizations for education and culture regarding the importance and potential of the arts to improve the processes of formal education. The motives that drive proposals and experimental practices in this sense are related to the growing need of societies to generate individuals with intercultural social skills and intellectual capacities that allow them to understand the whole as the synthesis of the variety that composes it. These skills must complement the analytical and reflective capacities that allow individuals to express themselves in their exercise of citizenship and in the capacity to formulate solutions to the problems that contemporary society contains in a global sociocultural paradigm in general and, specifically, in the local framework.

Everything indicates that the recommendations in this sense are pertinent, since it can be scientifically substantiated that the substantial incorporation of the arts in formal education favors the development of self-esteem, emotional resources, resilience and adaptation capacity, as well as the control of anguish and stress and critical capacity in the face of reality with a greater sense of positive social relations. Each work of art, each creation or staging integrates all possible knowledge and fosters the development of self-esteem and personality of the individual, allowing the free expression of emotions and the understanding of the space of otherness. In the same way, it is evident that the exercise of the arts has an impact on cognitive development, since it collaterally develops multiple areas of intelligence, whether it is the relationship between music and mathematics, dance and space and geometry, or theater and emotional intelligence.

Consequently, this advance in the conclusions of the research conducted highlights the importance that the arts have in the development of the cognitive and emotional capacities of the human being as a whole. It is affirmed that the arts, routinely integrated in education, enrich the contents and provide a friendly context and environment for learning. Based on this case study we suggest that the arts can contribute significantly to the human goal of achieving happiness.

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