

The simulation diagram describing the stochastic-equation-based causal connections and feedback-relations within the system is provided in the Appendix 1.

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Visual perception in art education. Gender and intercultural study

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Abstract

This communication reflects research in education from the perspective of gender and multiculturalism implemented in the autonomous city of Melilla, on the visual perception applied to artistic and visual, so important in the new presentations of ICT language. To do this, we determine the ability of students / inferred as compared to the results of a test of attention and visual perception and scientifically contrasted if students perceive the similarities and differences partially ordered stimulants models finally checking whether there are significant differences or not, in relation to the variable and the variable "cultural origin" "sex". Methodologically applied our experimental design is based on a multi-method approach, understood as a form of research in which two or more methodological procedures for the investigation on the same object of study through the different moments of the course of the investigation are used. The conclusions lead us to affirm that globally there are no significant differences regarding the variable "sex", although significant differences do get in terms of visual perception measured by our instrument among students of cultural origin Berber and European cultural background.

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1. Introduction

With the implementation of this research in the autonomous city of Melilla, we try to determine the possible differences in the degree of visual perception in the field of art education from a cultural perspective (European / Berbers) and a gender perspective .The research was operationalized in two approaches, focusing on theoretical and practical study (a test) and educational classroom observation. In the perceptual process, the sense of sight is the most important, because most of the information we receive is visual people, hence its great value for learning and knowledge building. Arts Education is fundamental to the education of all people, allowing them to expand and diversify their creative, their sensitivity deploy and expand their communicative expressive possibilities, so that national culture can only be understood as a multicultural reality. The system is able to relate perception, abstracting, generalizing. One of the relationships between art and perception are the feelings and emotions that "we perceive" in the works of art. Therefore, we find it convenient to question a series of questions, such as:

Are there cultural differences in the methods and results in visual perception in students? Are we realizing teachers if there are differences? Are there gender differences? Are there significant social differences in relation to the visual arts? Does culture influences the Visual Arts and perception?

2. State of the question

We must work arts education and especially through school, with the values of multiculturalism and inclusion, as very difficult to find groups where no students from different cultures today as in any society and not in school. Also it is standardized finding common cultural or social characteristics, ethnic. To understand better we should make a distinction between the multicultural aspect and the cultural aspect, the first is the set of factors that coexist practically no relation to each other and make the everyday landscape of any border city or ethnic or cultural differences.

3. Research objectives

Determine the skills required by students under study to quickly perceive similarities and differences of stimulating patterns partially ordered and contrast and possible differences based on gender or cultural background of the students.

4. Methodological design

This study may be incardinated within the multi-method approach (EMM) which can be treated as a research strategy in which two or more procedures for inquiry on the same phenomenon or object of study are used throughout the different stages of the process research. Together with a qualitative approach, we have implemented a methodological design explicitly of a comparative-causal nature. In such designs the researcher-to pretend they determine whether or not statistical differences between two or more levels of a variable crossed with one or more dependent variables. The fundamental feature that characterizes this type of design is that the independent variable can not be manipulated, can only be selected. In our case, the type of ethnicity is the variable with two levels: European vs Berber and will act as an independent variable. Besides, complementarily we also included the gender variable for the purpose of verifying the existence or nonexistence of statistically significant differences. Graphically this design, may be expressed as follows:

Table 1. Research Design

Groups	N	Origin	Criteria variable
Group class	50	European	OPDA
Group class	50	Bereber	OPDA

4.1. Variables to consider

The fundamental feature that characterizes this type of design is that the independent variable can not be manipulated, but can only be selected. In our case, the type of ethnicity variable is the variable with two levels: European vs Berber will act as an independent variable. And the dependent variables are attention and differentiation. Besides, complementarily also contemplate the gender variable for the purpose of verifying the existence or nonexistence of statistically significant differences.

Independent variables:

- a. Type of ethnic origin of the students: European vs Berbers
- b. Student gender: male vs. female.

Dependent variables:

Attention and differentiation: the ability of the individual to understand things or an objective, take it into account or consideration, understanding it as a psychophysiological process that has to be subject to selection, differentiation and targeting of certain stimuli and information in their perceptual field. It helps the ability to retain and select graphical differences and similarities in the test of "Faces" (Thurstone, 1973). Analyzing whether the attention which is assessed in the beginning of this study influences the plastic expression of the student. The nomenclature used in the research is PDA.

4.2. Collection of information: instruments

For the development of this study we used: a standardized test and participant observation.

- Test differences of perception and attention (PDA): Perception of Differences ("Faces").
- Test: Signalize a different face
- Author: L.L. Thurthone
- Reworking and Spanish adaptation: M. Yela
- Duration: Three minutes
- Meaning: Its use is for assessing fitness to perceive quickly and correctly, similarities and differences and stimulating patterns partially ordered.
- Categorization: Scales for School and professionals (men and women).
- Editorial: TEA editions. Madrid 1997 (8th edition).
- Categorization research. PDA.

4.3. Sampling process and sample characteristics

We used a probabilistic multistage cluster type sampling with two stages: primary and secondary, In the first stage we began to select two schools from the autonomous city of Melilla at random, considering two groups: one with European majority and one with Berber majority.

In the second stage, we selected randomly two groups from each.

The main characteristics of the sample are as follows:

- Scope: Local. Autonomous City of Melilla, Spain.
- Population: Primary Stage. Third level. (6th grade)
- Size of the sample: 100 students. 45 men and 55 women.

CBC school:

- 51 students (25 boys and 26 girlss)
- Culture of European Origin
- Social Level Medium-High

CME school:

- 49 students (20 boys and 29 girls)
- Culture of Berber origin
- Social level medium-low

4.4. Data collection instruments

This section describes two types of parameters: the standardized instrument and observational type. Concerning the standardized instrument we have seen only the reliability, the validity parameters are properly spelled out in the administration notebooks of the instrument. Therefore, we have calculated the coefficient of reliability as an internal consistency measure, since we have only a single administration of the instrument.

With this aim, we have calculated the Cronbach's alpha coefficient. The results of this coefficient in this instrument is: test PDA: Face Test differences Cronbach of .83.

As shown, we have achieved reliability coefficient moderately high, denoting the consistency and internal consistency of the scores achieved in this test.

4.5. Data collection instruments

The standardized instrument and observational: This section describes two types of parameters are distinguished quality. The standardized instrument have seen only the reliability, validity obviating parameters, properly spelled out in the notebooks of administration of the instrument. Therefore, we have calculated the coefficient of reliability as internal consistency, since we have only a single administration of this instrument. To this end, we have calculated the Cronbach's alpha coefficient. The results of this coefficient in this instrument is as follows: PDA Test: Test faces differences Cronbach of .83. As shown, have achieved high reliability coefficient moderately, denoting that consistency and internal consistency of the scores achieved in this test

4.6. Data analysis

For the data analysis of the information collected through the various instruments we have used the SPSS v.22 program and in a complementary way, the Excel spreadsheet. We have implemented descriptive and inferential analysis consistent with the objectives of the research proposed.

Thus, the data analysis with their respective comments and discussion are presented in the next chapter.

5. Results

To meet the objective: Determine the skills required by students under study to quickly perceive similarities and differences of stimulating patterns partially ordered and contrast and possible differences based on gender or cultural background of the students. Then we show the results of the standardized test of perception of differences (PDA) among students of different ethnic groups under analysis: European vs Berber. First, we present the histograms with a normal curve obtained by both types of students.

From these perceived differences we wonder if really these, almost 11 points separating the competence of perception to European students from the Berber are due to mere chance or, on the contrary, the status of membership of one or another ethnic group. To unravel this task, we have implemented the Student t test for independent samples, assuming the parametric assumptions of homoscedasticity, independence and normality. The results in this regard are as follows:

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Table 2. Results of Student's t test to comparing test score ethnicity x PDA

Checking homocedasticity ➡		Levene test for equal variances				
Associated statistical test T		F	Sig.	t	gl	Sig. (bilateral)
PDA	They have assumed equal variances	,619	,433****	-6,635	98	,000**
	No assumed equal variances			-6,646	97,839	,000**

* $p < .05$; ** $p < .01$; *** $p < .001$

**** the assumption of homogeneity of variances (homoscedasticity) holds since $p > 0.05$. As you can see, the results obtained with a value of $t = -6.63$ associated with $p \leq 0.05$ indicate that indeed among the sample of students of Berber origin vs European differences are statistically significant.

Since, it is the students of Berber origin who obtained a higher average, relative to European origin, we can say that this students are the ones who obtained a greater perception of differences and that this superiority is not due to chance.

Another variable that we considered relevant to study whether there exists or not, statistically significant differences is the gender variable. To do this, as previously we implemented descriptive and inferential analysis.

What we considered, as previously, if these differences in means of 42.15 for women and 39.22 for men are due to chance or condition of membership in either sex. To do this, also, we have implemented the Student t test for independent samples assuming parametric assumptions. The results in this regard are as follows:

Table 3. Student's t test comparing gender test score PDA

Checking homocedasticity ➡		Levene test for equal variances				
Statistics associated with the T test		F	Sig.	t	gl	Sig. (bilateral)
PDA	They have assumed equal variances			-1,493	98	,139
	They have assumed equal variances	1,441	,233****	-1,469	86,635	,145

* $p < .05$; ** $p < .01$; *** $p < .001$

**** The assumption of homogeneity of variances (homoscedasticity) is fulfilled as $p > 0.05$

As you can see, the results obtained with a value of $t = -1.49$ associated with $p > .05$ indicates that, among the sample of male vs female students we encounter no statistically significant differences.

The female students are whom obtained a higher mean, comparing to men, nevertheless the superiority is not statistically significant, it is due to chance and not by the condition of belonging to one or the other gender.

6. Conclusions

The results achieved in this research allow us to reach different conclusions. The main undoubtedly is that, globally, there are differences in visual arts in school situations concerning students of Berber and European origin.

More concisely, we can also affirm the following findings:

- Statistically significant differences in Berber vs European students in aspects of attention in classroom interaction and are obtained, affecting the plane of the visual arts in school situations. In this sense, the values of children of Berber origin in the test of attention have been higher than European children being reported statistically significant differences.
- In relation to the gender variable with didn't find statistically significant differences in terms of the visual arts in school situations among students of European culture vs Berber, although quantitatively in favor of the in females.

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