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The Scientific-Didactic Principles Theory for the Teaching of Geography, History and Social Sciences: A New Model of Knowledge

Coğrafya, Tarih ve Sosyal Bilimlerin Öğretilmesi İçin Bilimsel-Diazik İlkelerin Teorisi: Yeni Öğretim Modeli

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Abstract. In 1993, Dr. Antonio Luis García Ruiz (University of Granada, Spain) investigated the development of the Theory of Scientific-Didactic Principles, a new didactic model based on the contextualization of the object studied through the use of 8 principles (then will be 10), and applied to the subjects of Geography and History in the field of education. After more than 20 years of work, the theory has produced more than 80 publications between: articles, books and doctoral Tesis, now entering new fields such as the History of Art. This article is based on the knowledge of this theory at the international level and a summary of the results of this work.

Anahtar Kelimeler: Principles, Scientics, Didactics, Geography, History, Education, Theory.

Public Interest Statement. This article is based on the knowledge of Antonio Luis García Ruiz's theory at the international level and a summary of the results of this work

Öz. 1993'te Dr Antonio Antonio Luis Garcia Ruiz'in (İspanya, Granada Üniversitesi) yaptığı araştırmalar, Bilimsel-Didaktik İlkeler Teorisinin geliştirilmesinin başlangıcını varsaymaktadır; bu teori, yeni bir didaktik modelin kullanılmasıyla incelenen nesnenin bağlamsallaştırılmasına dayanmaktadır. İlkeler, daha sonra 10 olacak ve eğitim alanında Coğrafya ve Tarih derslerine uygulanacaktır. 20 yılı aşkın çalışmaların ardından teori, Makale Tarihi, Sanat Tarihi gibi yeni alanlara giren makaleler, kitaplar ve doktora tezleri arasında 80'den fazla yayın üretti. Bu makale, bu teorinin uluslararası düzeyde tanıtılmasına ve bu çalışmanın sonuçlarının bir özetine dayanmaktadır.

Anahtar Kelimeler: İlkeler, Bilim Adamları, Didaktik, Coğrafya, Tarih, Eğitim, Teori.

Toplumsal Mesaj. Bu makale, Luis Garcia Ruiz'in teorisinin uluslararası düzeyde tanıtılmasına ve bu çalışmanın sonuçlarının bir özetine dayanmaktadır.

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1. INTRODUCTION

The investigations initiated by Professor Antonio Luis García Ruiz (University of Granada, Spain), in 1993, resulted in the birth of a new theory, "the Scientific-Didactic Principles". This theory is a new didactic model based on the contextualization of the fact or object studied through the use of ten principles, which are: *Universality, Temporality, Spatiality, Conflict-Consensus (Modality), Activity-Evolution, Intentionality, Interdependence, Causality, Identity and relativity*.

It is highly complicated to summarize here, in this space -necessarily brief- the foundations, the characteristics, the dimensions and the importance of the Scientific Principle-Didactic model. In 1993, the first article on the subject was published, and today there are more than 80 articles and publications on the subject. Among them we should highlight two books published by A.L García and J. M. Jiménez in 2006 and 2007 and two doctoral theses in the years 2010 and 2012.

1.1 Aim of the Study

The afore mentioned works must be contextualized in a research line, referred, in the first place, to the epistemological source of the curriculum that, from our point of view, is the least studied. We understand that from the analysis, the study and the understanding of the nature of the referring disciplines, it is from where the bases of their learning and the foundation and the scientific consideration of their Specific Didactics can and should be considered. This does not mean, at all, to ignore the theories and contributions of the educational sciences, without which it is impossible to carry out any reflection or didactic research; but, we insist, science, knowledge has to be present, simply because it is the raison d'être of teaching.

Now, science, knowledge, the contents of teaching can no longer be the same, and not only because society and students have changed, but because science has also changed. Indeed, Geography and History, as sciences that they are, have increased and broadened their field of action on the one hand and, on the other, they have deepened their origins, consolidated their foundations, have given greater consistency to their episteme and, in short, they have developed their theoretical field better.

1.2 Theoretical Framework of the Research: The Scientific-Didactic Principles

The theoretical reference of this work is found in the Scientific-Didactic Principles that we have elaborated and developed in the first part of the published research (spatiality, temporality, modality, activity, intentionality, interdependence, causality and identity); these are at the origin and base of the scientific nature of our disciplines; they were enunciated in the 19th century, by the creators or parents of Geography or History: Humboldt (1724-1859), Ritter (1779-1859), De la Blache (1845-l918), Bloch (1886-1944), Febvre (1878-1956), etc., and that today, they are still very topical. The Scientific Principles of Geography and History are a substantive part and essential elements of both disciplines, so they are essential to shape their disciplinary or scientific content, but, in addition, they constitute one of the keys to their learning, so they are also didactic instruments; that is to say, they spoil part of the curricular content, similar to the "didactic knowledge of the content".

From this perspective, the new theory or theoretical framework that we have proposed maintains that the Scientific Principles of Geography and History also have a didactic character and constitute a pedagogical alternative that substantially improves the teaching and learning of Geography and the history.

1.3 Problem

We have to consider that in the advanced societies of the 21st century, controlled by globalization, education and teaching, they are ceasing to be the main goal and reference of citizens to become a simple requirement - although essential - to be able to work and unwind in life and in society. In these circumstances, the teaching of the Humanities is particularly complicated and, very specifically, of Geography and History, which seem relegated to second level subjects.

On the other hand, and especially since the area of Didactics of Social Sciences was created in Spain,

the need to find the basis and the scientific basis, which gave it an entity as its own and different discipline, has been repeatedly raised, although without response. of Geography, History or General Didactics.

1.4 Research Objectives

The objectives that we intend with this investigation are the following:

1. Analyze the programs and the general situation of the teaching-learning of Geography and History in public and private centers.
2. Identify the characteristics of the socio-academic and curricular contexts of the teaching of Geography and History.
3. Assess the viability of the application of the Scientific-Didactic Principles model.
4. Check, through the experience in the classroom, the viability of the proposed model, based on the Didactic Science-Principles of Geography and History.
5. Achieve, in the students, a geographic and historical formation, more rigorous, deeper and more accessible to them, based on factual, conceptual, procedural, reflexive and attitudinal contents.
6. Train students in the analysis, reflection and interpretation of facts and events in real life and respond to the problems it poses.
7. Propose models of didactic units of Geography and History, according to the methodology of the Scientific-Didactic Principles.
8. Contribute to the scientific foundation of the Didactics of Geography and History.
9. To alleviate, to some extent, the scholastic failure of these disciplines.

2. METHOD

Due to the complexity and the characteristics of the work that we present in this project, we require a certain complementarity and a methodological pluralism. Although always dealing with the same subject, each party deals with a different field of study; therefore, we have had to use a different methodology as well. Consequently, we have tried both an adaptation to each dimension or objective of this research, as a methodological triangulation, as Denzin says - quoted by Flick (2004: 244) - "the triangulation of method, researcher, theory and data is still the Stronger strategy in the construction of the theory "(1989: 286). We have used, therefore, the methodological option that we have thought most relevant to describe, analyze, understand and illustrate the evidences and the existing curricular implications.

2.1 Descriptive-Quantitative Methodology: Analysis of Data and Documents

In the first part of the research, we followed an orientation methodology of a descriptive-quantitative nature to know the evidences of the problem through data and documents. A critical assessment of the Geography and History of Spain programs has been carried out in the second year of Baccalaureate (Pre-University Education). All the questions and questions raised in the sixteen calls have been collected in various tables, while at the same time judging the suitability of the tests.

2.2 Ethnographic-Qualitative Methodology: Discussion Groups

To compare the statistical data with a more ethnographic and qualitative analysis of reality and, above all, to verify the viability of those from the teacher's thinking, we have resorted to an instrument as rich and interesting as the Discussion Groups.

2.2.1 Foundation of the Same

The Discussion Groups constitute a qualitative research technique par excellence; They have a long tradition in Social Sciences, although with a different denomination: group interviews, focused diagnosis group, etc. Morgan (1997) considers the "focus groups" as a research technique that allows collecting data through the interaction of the group on a topic determined by the researcher. "A discussion group - says Krueger - can be defined as a carefully planned conversation, designed to

obtain information from an area, defined of interest, in a permissive, non-directive environment" (1991: 24).

2.2.2 Role of the Researcher-Moderator

If the meetings have to be prepared carefully, the interventions of the researcher-moderator must be much more. It was about developing a good operating dynamics, based on five requirements:

- Environment of relaxation, trust, freedom and interest in the topic of discussion.
- Full interaction between all participants except the Researcher-moderator who sets the initial guidelines and avoid referrals to other issues.
- Moderate discussion on more general topics, but always related to the main topic.
- In-depth discussion of the central topic under investigation. - Proposal or alternative proposals for the solution of the debated problem, always based on real experience. Etc.

2.2.3 Teachers Participating in the Discussion

Two Discussion Groups were organized and we held two work sessions with each one of them; the duration of the sessions was set at around three hours, but in some cases this limit was exceeded. The group of participants were all Secondary teachers, either Geography or History. Of the twelve participants, four are from private arranged schools and the remaining eight are high school teachers.

2.2.4 Topics Covered

Following the dynamics set out above, we will now indicate the issues addressed. Before this we will clarify that the groups were not pre-created, but that they arise exclusively for the development of this research. Yes, however, was the subject of debate and discussion (the theory of the Principles), about which we had talked with each participant, and about which we had previously sent, a brief written information (Previous report).

2.2.5 Analysis of the Results

We analyzed and established 44 categories and 8 meta-categories with their corresponding codes. Once the complete categorization of the text has been completed, we have submitted it to a computer program for coding and retrieving texts in segments or subtopics of interest, which regroups them for better analysis and understanding.

2.3 Experiential-Narrative Methodology: Intervention in the Classroom

Here, the didactic model is explicitly explained, based on the principles and intervention guidelines that favor the implementation of our methodology in the classroom. With it, students are trained to combine the logical structures of knowledge with skills and abilities, which equip them for any operation of analysis, understanding and solution to key issues that arise on the set of contents, which are part of the program of our materials. The main objective of this methodology is that, based on the application of the Scientific-Didactic Principles governing geographical and historical science, a more stable, more creative and closer learning to the students' interests and motivations be developed. But also, with this methodology, it is also encouraged that students become the main actor in their own learning process, which consolidates their previous theoretical knowledge and that acquires skills in the selection of those information or contents that are truly significant. It is about making the student a self-critical, analytical, conscious, self-sufficient, competent subject and committed to the challenges and situations that take place in their housing environment. With this methodological proposal, learning is promoted that fosters the development of scientific thinking (by contrasting and inference of causal relationships), of communication skills and of group and interdependent work.

3. RESULTS

3.1 Experience of its implementation on a class in Master degree for new teachers of secondary Education

We will talk after the new line of research, based on the study and aply of this theory at the History of Art, but now we want to share an experience. During a class in the Master Degree for new Teachers of Secondary Education we decided to put the model into practice using a work of art, in this case "Apollo and Dafne" by Bernini. The students had to perform a formal analysis of the work of art, based on traditional study models, after that we decided to make a new perform based on the use of the Scientific-Didactic Theory model, here are the results.

We believe that in the case of study, it was essential to provide the following data about the work: *Spatiality*, *Temporality*, *Modality* and *Evolution*.

Table 1. Formal Analysis

Students	Recognize Spatiality	Recognize Temporality	Recognize Modality	Recognize Evolution
60	13	46	34	16
Students	Not Recognize Spatiality	Not Recognize Temporality	Not Recognize Modality	Not Recognize Evolution
60	47	14	26	34

Table 2. Analysis Using the Scientific-Didactics Principles Model

Students	Recognize Spatiality	Recognize Temporality	Recognize Modality	Recognize Evolution
60	57	52	51	36
Students	Not Recognize Spatiality	Not Recognize Temporality	Not Recognize Modality	Not Recognize Evolution
60	3	8	9	24

The results of this study show that, using the scientific-didactic principles model, most students are able to recognize elements that they normally forget in formal analysis. And therefore, it is a good tool to achieve better results than formal analyzes, since it requires following a series of steps that in formal analysis are usually forgotten.

3.2 Fourth part: Proposal-Application Methodology, Proposal of Teaching Units

One of the main advantages offered by the teaching of Geography and History, is that it allows to design teaching units with conceptual frameworks, on the same plot of reality, typical of integrated projects (Interdisciplinary) or only modular (disciplinary), without that prove to be antagonistic or incompatible. They come to be hypothetical concretions of work in the classroom, and face a new way of understanding and relating the different elements of the curriculum and learning situations, where the Scientific-Didactic Principles constitute the articulating axis and the obligatory reference. Regarding the learning activities that are presented in each teaching unit, are raised from an active and reconstructive perspective, which advocates a first approach to the object of study and, from it, perform insights at different levels by means of the investigation action. The actions would correspond to:

a) *Approach of the conceptual framework and awareness of previous ideas:* The aim is to provide students with general information about the contents of the unit and the learning situations that will be proposed.
b) Understanding and spatial-temporal contextualization of the theoretical constructs generated It will be carried out by the students through the use of texts and diverse documents, so that they complement and give meaning to the knowledge already acquired.
c) Recognition of the dimension of new learning: Through individualized interventions, the student will arrive at a conceptual framework of the present cognitive reality, which must be contrasted with that of the other students, in group work sessions. Then, the teacher will systematize the conclusions and incorporate the new knowledge developed.
d) New situations of analysis, Deepening the problems raised: The students will now face an individual work of inquiry that serves them as application, the set of knowledge and procedures already acquired throughout the learning process, in order to put them at the service of situations linked to their life experience.
e) Presentation of answers and drafting of final conclusions: In group sessions, the results of each investigation are expressed and complemented with the answers and / or contributions of each student, in order to be able to draw up the final conclusions of the unit.

To finish, just mention the extension of the framework of this research, to delve into the field of Art History, Antonio Luis García Ruiz and Javier Contreras García make the book chapter: *First approximation of the theoretical model of the Scientific Principles -Didactics for the study of Geography and History to the History of Art: The Palace of Charles V of Granada* (García Ruiz and Contreras García, 2016). Where, for the first time, this new theory is used in the field of Art History, thus opening a new research path, which is currently being extended with the realization of different investigations, like the second application of the model to the history of art: *Alonso Cano on the 350th anniversary of his death: A tribute through the Theory of Scientific-Didactic Principles* (Contreras, 2018). The same authors also signed the article: The Scientific-Didactic Principles model for the teaching of Geography and history implemented in images (García Ruiz and Contreras García, 2016). Where is intended to make an association of images with each of the principles to better reach current students, more likely to use new technologies and multimedia resources.

Table 3. The Scientific-Didactic Principles

UNIVERSALITY	Everything is included in the Universe?
SPATIALITY	Where is it located or is it located?
TEMPORALITY	When does it happen or did it happen?
MODALITY	How does it happen or has it happened?
ACTIVITY, EVOLUTION	How does it pass or has it passed?
INTENTIONALITY	What did they feel? What did they think?
INTERDEPENDENCE	What or who are involved?
CAUSALITY	Why does it arise or has it emerged?
IDENTITY	What are its essential features?
RELATIVITY	How is it interpreted?

4. CONCLUSIONS

We therefore believe that this article is a first step for the expansion of this new theory outside Spanish borders, within the framework of Europe. In the more than 20 years that it has been developing, there are more than 80 publications made, which, as we said, include books, book chapters, articles, lectures in congresses and Doctoral Theses, some of these works reviewed in the bibliography. With the definition in the last years of the theory of the Principles through the use of

the 10 principles defined up to now, we create a fundamental theoretical framework, to develop new research, which already delves into three fields such as: Geography, History and the history of Art. The value of this theory is that it is a new tool to implement in the study of history, geography and art history, as well as highlighting that it has been used in areas such as the study of cinema or videogames. Now, we are trying to implemented an international web project to spread the investigations and make a digital place for share knowledge. This web: CODISOC, is now implementating in the University of Granada (Spain). We believe that the model, its bases and foundations and its possibilities of development in any place and center of the educational environment are clearly explained, due to its universal character, in addition to them, we will accompany a series of references that can help its better understanding and use in possible investigations related to this field in Turkey.

References

Contreras García, J. (2018) *Alonso Cano on the 350th anniversary of his death: a tribute through the Scientific-Didactic Principles Theory.* UNES Journal, Granada, 4, Spain.

Flick, U. (2004). *Introduction to qualitative research.* Madrid (Spain). Morata

García Ruiz, A. L., & Contreras García, J. (2017). *The model of Scientific-Didactic Principles for the teaching of Geography and History implemented in images*. UNES, 2, Granada, (Spain), 52-72.

García Ruiz, A. L., & Jiménez López, J. A. (2007). *The implementation of the Scientific-Didactic Principles in the learning of Geography and History*. Granada, University. (Spain)

García Ruiz, A. L., & Jiménez López, J. A. (2006). *The Scientific-Didactic principles: new model for the teaching of Geography and History*. Granada, University. (Spain)

García Ruiz, A. L., & Contreras García, J. (2017). First approximation of the theoretical model of the Scientific-Didactic Principles for the study of Geography and History to the History of Art: the Palace of Charles V of Granada. In: *University Innovation: Digitization 2.0 and excellence in content.* Madrid, McGrawHill, 331-348. (Spain)

García Ruiz, A., Jiménez López, J. A., & Rodríguez, E. (2009). Theoretical bases of the model of scientific-didactic principles for the teaching of geography and history. *Paradigma Journal, 30*(1), 33-68.

Krueger, R. A. (1991). *The discussion group Practical guide for the applied discussion*. Madrid. Piramide. (Spain)

DOCTORAL THESES ABOUT THE SCIENTIFIC-DIDACTIC PRINCIPLES THEORY

Martínez Romera, D. D. (2006). *The formative value from the historical, epistemological and curricular perspective.* University of Granada (Spain).

Pascual Segarra, M. (2010) *The organization of the contents of social sciences in secondary education, according to the model of scientific didactic principles*. University of Granada (Spain).

Redondo Pacheco, J. S. (2017). *The documentation Centers and Historical Investigation as a source of resources for teaching-aprendization of the history of the city of Ceuta*. University of Granada (Spain).

Villanueva Zarazaga, J. (2001). *The Geography on the secondary edoucation*. University of Zaragoza (Spain)

INTERNATIONAL ARTICLES ABOUT THE SCIENTIFIC-DIDACTIC PRINCIPLES THEORY

García Ruiz, A. L. (2005). *Scientific-Didactic Principles: The archetype to teach Geography and History*. In: The Twelfth International Conference on Learnig, Commond Ground Publishing, Melbourne (Australia).

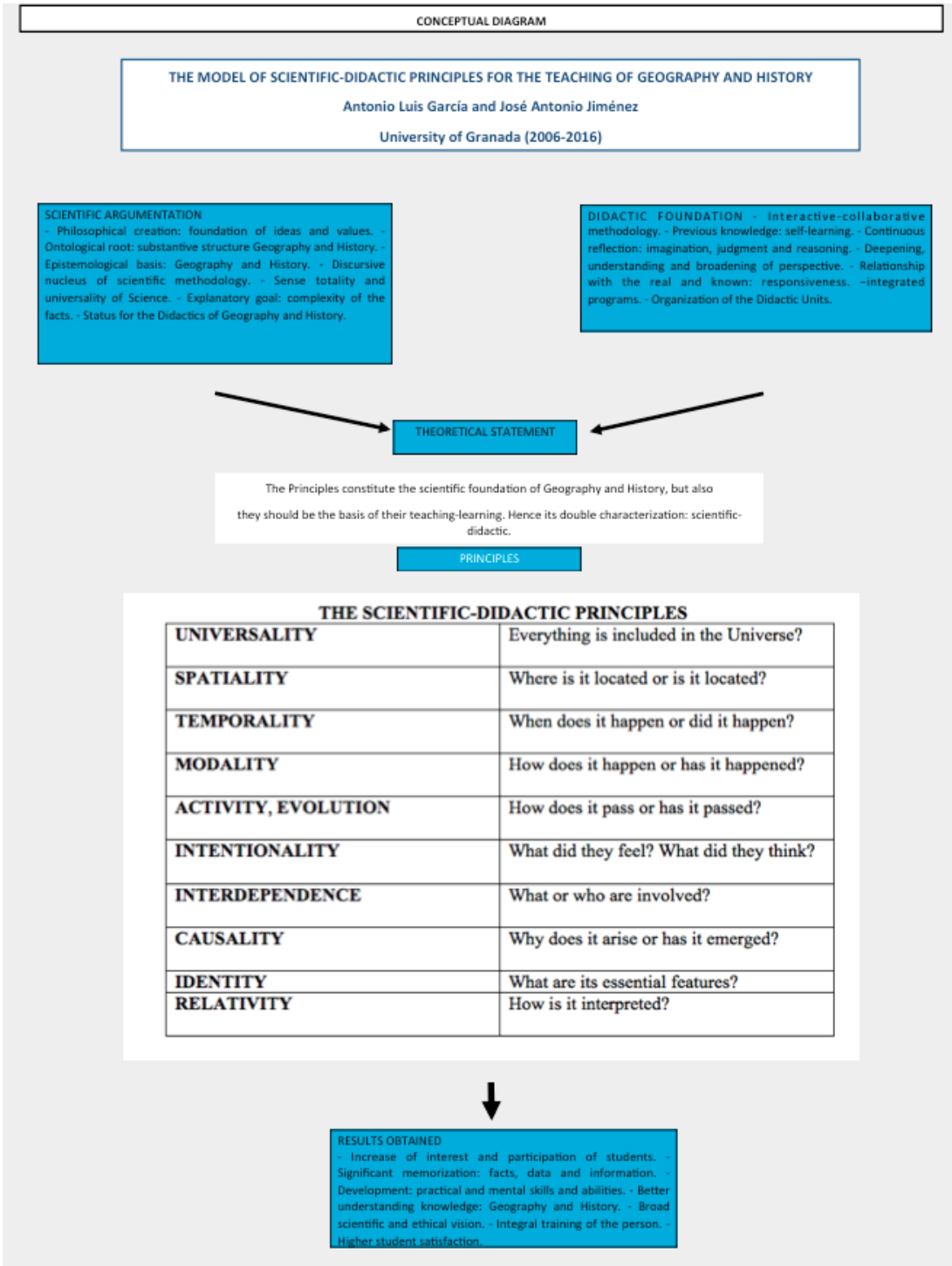
García Ruiz, A. L. (2006). *Scientific-Didactic Principles: The archetype to teach Geography and History*. In: International Journal of Learning.

García Ruiz, A., Raso Sánchez, F. (2007). *Scientific-Didactic principles in movies: a new perspective to teach Geography and History*. In: The International Journal of Interdisciplinary Social Sciences.

WEBSITE

http://www.ugr.es/~codisoc/pages/linea3.html

Appendix


CONCEPTUAL DIAGRAM
THE MODEL OF SCIENTIFIC-DIDACTIC PRINCIPLES FOR THE TEACHING OF GEOGRAPHY AND HISTORY
Antonio Luis García and José Antonio Jiménez
University of Granada (2006-2016)
SCIENTIFIC ARGUMENTATION
- Philosophical creation: foundation of ideas and values. - Ontological root: substantive structure Geography and History. - Epistemological basis: Geography and History. - Discursive nucleus of scientific methodology. - Sense totality and universality of Science. - Explanatory goal: complexity of the facts. - Status for the Didactics of Geography and History.
DIDACTIC FOUNDATION - Interactive-collaborative methodology. - Previous knowledge: self-learning. - Continuous reflection: imagination, judgment and reasoning. - Deepening, understanding and broadening of perspective. - Relationship with the real and known: responsiveness. -integrated programs. - Organization of the Didactic Units.
THEORETICAL STATEMENT
The Principles constitute the scientific foundation of Geography and History, but also
they should be the basis of their teaching-learning. Hence its double characterization: scientific-didactic.
PRINCIPLES
THE SCIENTIFIC-DIDACTIC PRINCIPLES
UNIVERSALITY
Everything is included in the Universe?
SPATIALITY
Where is it located or is it located?
TEMPORALITY
When does it happen or did it happen?
MODALITY
How does it happen or has it happened?
ACTIVITY, EVOLUTION
How does it pass or has it passed?
INTENTIONALITY
What did they feel? What did they think?
INTERDEPENDENCE
What or who are involved?
CAUSALITY
Why does it arise or has it emerged?
IDENTITY
What are its essential features?
RELATIVITY
How is it interpreted?
RESULTS OBTAINED
- Increase of interest and participation of students. - Significant memorization: facts, data and information. - Development: practical and mental skills and abilities. - Better understanding knowledge: Geography and History. - Broad scientific and ethical vision. - Integral training of the person. - Higher student satisfaction.