

Municipal School Atlas of Ourinhos/SP: a way from abstract to concrete; from uncertainty to reality

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1. Some information about the Universe of the Research: a dialogue between the goals and the challenges

Since May 2005, UNESP/Ourinhos-SP has systematized the elaboration of the Municipal School Atlas of Ourinhos as a subsidy of the study of place¹. However, differently from the Conventional Atlas, the proposal of the Municipal School Atlas of Ourinhos, destined to students from the 5th to 9th grades of Fundamental Education, has the following goals and challenges:

- a) Act in four interdisciplinary cuts - ***the Geographic, the Historical, the Environmental and the Cartographic*** – where aspects of Nature, society, economy and culture will be presented, discussed analyzed in an integrated way, as thematic axes, respecting the historical evolution of the municipality.
- b) Bring the proposal of a Municipal Atlas composed by four versions for the study of place, through the use of indissociable ***different languages***, – the **Analogue version** (*analogue language*), the **Digital and Interactive version** (*digital language*), the **Imagetic version of the videos** (*audiovisual language*) and the **Tactile version** (*tactile version*) - on the municipality of Ourinhos.

The proposal to use different languages to the study of the place through the Municipal School Atlas aims both to dynamize the Geography teaching and provide subsidies for the activities mediated by the teacher to instigate the reflection and the formation of critical students, readers of the world (SILVA, 2012, p. 9).

However, when proposing the use of different languages in the classroom, it is important to consider that wider spheres must be discussed in order to avoid the creation of an illusionary

¹ Existing since 2005, it is important to emphasize that, in 2009, the project was formalized through a partnership with UNESP/Ourinhos Nucleus of Teaching, Ourinhos Regional School Department and the Municipal Secretariat of Education of Ourinhos -SP.

activity which might disguise the educational project. The objective is to provide subsidies for the activities mediated by the teacher to instigate the reflection and formation of critical students, active in their surroundings. The shift from local to global thinking is a methodological proposal which aims to comprehend the spatial phenomena comparing scales and relating their dynamics. Geography teaching requires the spatial thinking, which can be instigated through different languages – in addition to the cartographic one – classical in Geography.

2. The Municipal School Atlas in the analogue version: from the imaginary to praxis

The greatest challenge in the elaboration of the pages of a Municipal School Atlas is in the systematization of the data in order to contemplate an accessible language, able to reach students from all levels to which it is intended.

In this case, the difficulties in the labor of the acquisition of updated data, official documents, accounts by individuals who know about the studied area; i.e., the live history provided by the possibility of knowledge about the oral historicity concerning the municipality cannot be put aside; as well as the empirical knowledge through the performance of field work aiming to collect data through the geographic, historical and environmental views.

Based on these assumptions, we agree with Almeida (2003) who emphasizes that:

[...] the production of a didactic material of this nature is not an activity that can be isolately carried out by an expert, geographer or cartographer, or else this expert will create a material which is disconnected with the educational needs. (ALMEIDA, 2003, p.164).

After the systematization of the information, the contents were approached in thematic axes. The proposal to present the contents organized in thematic axes broaden the possibility of the themes to dialogue between themselves and allow the teacher to mediate the pedagogic knowledge according to the grade and the content addressed. In this sense, the following fact must be considered:

Determining *which* the teaching content is and *how* to select it constitutes one of the most conflicting aspects of the educational thinking and teaching practices; and involves many different views, perspectives and options. (SAO PAULO, Curricular Proposal, 2009, p.116).

Concerning the **Layout and Graphic Conception** of the pages, based on the experience reported by Almeida (2003), the Atlas has been diagramed according to the following pattern:

- a) pages have A4 paper size; in analogue format and colored;
- b) the topics are presented in double pages, where the maps are on the right page and the texts and other information on the left page. This diagramation favours the act of reading, conducting the eyes from the left to the right;

c) the photographs, graphs, illustrations and pictorial images identified as illustrations are more attractive and might serve as a “bridge” to the texts. Thus, the topic is completed by the map, larger, occupying all the space available on the right page (**figure 1**);

d) The language and the cartographic communication will be based on the structuralist paradigm of the Graphic Semiology. For this, the proposal by Zacharias (2010) will be considered, suggesting different reading possibilities for the study and spatial representation.

In order to qualitatively legitimate the didactic material produced, the project aggregates, in addition to the elaboration of the pages, its application in the classroom. The results of this evaluation will allow the review of the level of difficulty of the material in order to adequate it to the users, in this case, the students of the 2nd cycle of fundamental education.

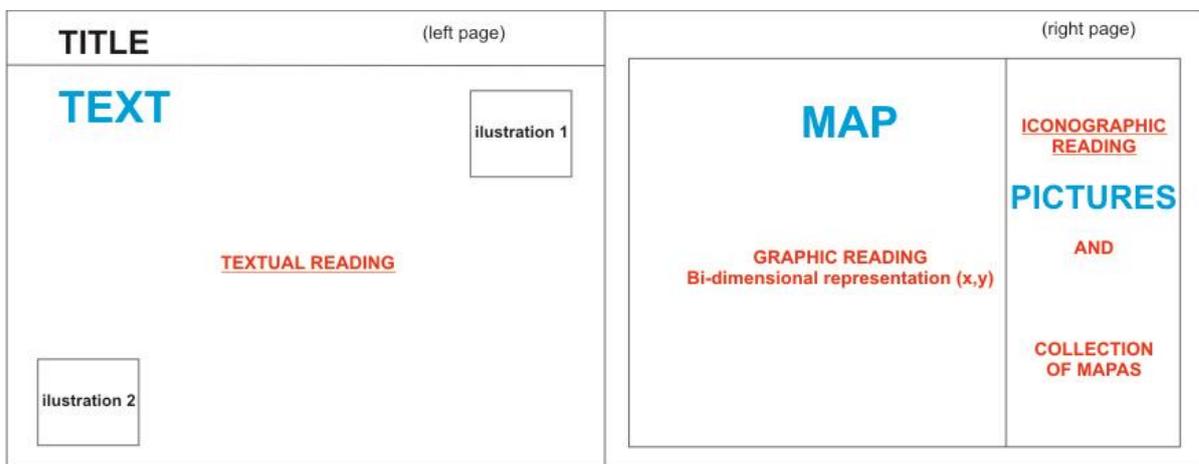


Figure 1 – Prototype of the Layout of the Municipal School Atlas's pages.
Source: Almeida (2003) / Adapted by Zacharias (2013)

3. The Digital and Interactive Atlas: a dialogue through multimedia maps

With the advent of technology, the advances in computer Science allowed not only the conversion of information from analogue to digital; but also brought, since the 90's and through the paradigm of Cartographic Visualization, a new way to create, structure, store, manipulate, analyze, distribute and communicate the spatial representations. (RAMOS, 2005, p. 12).

Such paradigm associated to the Municipal School Atlas for the study of the place multiplies the possibilities of the students to explore the graphic representations, observe, learn, relate the visualized data with the reality lived, and bring questioning about the space itself, in addition to allowing the discovery of new information about the reality, which in this case is the students' municipality.

The proposal of the Municipal School Atlas of Ourinhos *in the digital and interactive version* emerges in this context, being constructed in a way that each page:

- a) establishes the principles of interactivity; i.e., the animation, the multimedia and in some cases, the virtual reality, once the maps are not merely a structure of the terrestrial surface in a static perspective, but have become a structure with a dynamics-interactive platform;
- b) contains a geographic data bank, with graphic representations (maps), containing animations, photographs, satellite images and aerial photographs; in addition to audios, videos and tridimensional representations, among other pieces of information, all of them interacting with the user;
- c) presents a simple interface, considering that the users – teacher and students – are not experts; therefore, the processing time has to be short;
- d) allows the teacher to mediate the knowledge during the explorations of the interactive platform graphs.

The idea here is to present new interactive possibilities of the multimedia Cartography as a platform of dynamic representation, allowing the student to explore the landscape and identify the living spaces having the computer screen as the only simulator.

For this, the project understands that the digital and interactive version of the Municipal School Atlas of Ourinho cannot substitute the analogue version. On the contrary: envisaging the digital language expects it to be a complement, based on other media and language for the study of geographical phenomena; in this case, the interactivity.

In order to potentialize this logic, after one year of study and considering the expectations of the Project, a “compound”² architecture was chosen for the pages (**figure 2**), where Martins; Zacharias (2011) state:

[...] in this structure a click on a particular area opens a window (in sublevel) which presents the characteristics of the clicked object, the user can go back or advance in different levels (hierarchic ou non-linear structure) or “surf” in the same level obtaining further information about the selected object (linear structure). (MARTINS; ZACHARIAS, 2011, s/p).

² Studied from VAUGHAN (1994) apud RAMOS (2005)

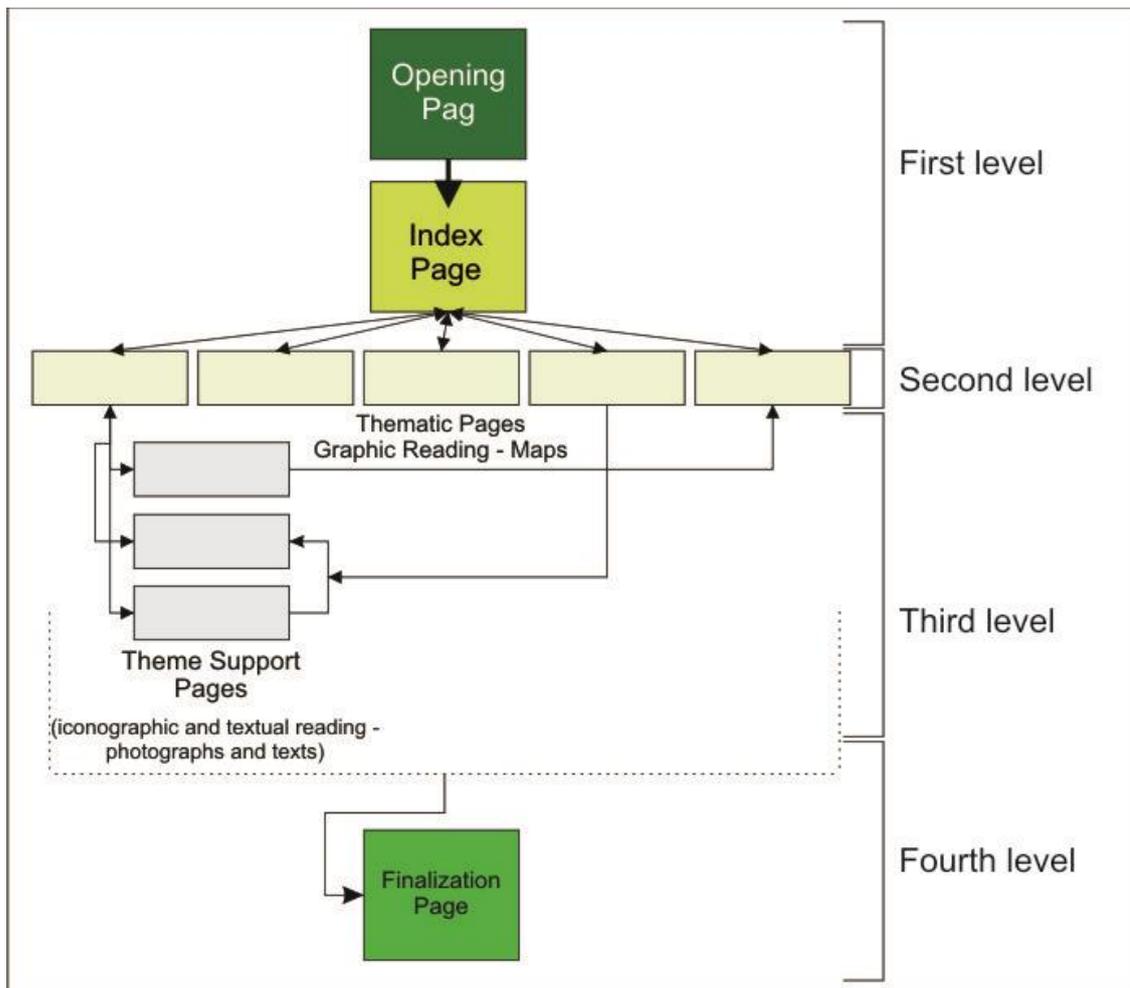


Figure 2 – Proposal of interaction architecture among the pages of the Atlas.
 Organization: Martins (2012) / adapted from VAUGHAN (1994) apud RAMOS (2005)

In this interface the student explores the content of each page; finds different possibilities to visualize the pieces of information among the spatial scales; chooses the symbology to represent the visualized features; makes movements; has access to animations and is able to consult texts and links to virtual realities through 3D panoramic flights, making use of a totally interactive product.

Despite the increasing number of advancements in the area, the studies carried out so far, even bringing valuable contributions, still do not meet all the needs of an evaluation in education, concerning the use of products derived from the paradigm of the cartographic visualization in the classroom. Questions on the evaluation of the use of this language by the students in the classroom have not been thoroughly answered with the existing knowledge on this area.

4. The Atlas in the Imagetic Version of the Videos: a dialogue between Making Art and Making Science by the production of knowledge

Thinking about the audiovisual language, important resource in the teaching-learning process as it comprises Geography, cinema and visual images; the idea of the Atlas emerges; also in the Imagetic version of videos.

The image is understood as a bridge between making Art and making Science, as “the work of art can be an interrogation about the life and history and, at the same time, a possibility of answer” (BARBOSA, 2000, p.70). A single image can communicate different messages to different ages and levels of scholarship; in general, the potentiality of the image is in this polysemy.

Under this perspective, the videos were produced following the procedural steps of the *script*, and the chosen format was CD-ROM video.

The script involves research, planning and the organization of the structure of the documentary film and text. The beginning is in the **pre-production**, the choice of the movie set, characters, narration, argumentation and cuts. It continues with the **production**, the incorporation of new facts and images during the recordings. The final step is the **post-production**, the selection of the raw filming material (SOARES, 2007) and new choices for the final product.

The script of six axes presented in chart I which compose the analogue version of the Municipal School Atlas of Ourinhos, bringing the following proposal:

- a) the use of varied languages and sources of images to portrait the spatial phenomena addressed by the axis;
- b) the most common resources used in the Geography classes: letters, maps, 3D models of the land, graphs, organograms, aerial photographs, satellite images and quantitative data ;
- c) concerning the least used resources in class, the video shows: songs, newspaper articles, historical pictures, works of famous painters, graphic animation, schematic drawings and image editions.

Therefore, with this attempt it is understood that the association of several languages allows an integrated and broader reading of the represented phenomenon. And it is the student's role, as spectator, mediated and questioned by the teacher, relate concepts, images and processes, performing the cognitive process of subjective interpretation with the help of different languages, associated to movement, color and sound.

The greatest challenge in the elaboration of the scripts was to make the image a resource that:

- a) can be watched and discussed by 5th to 9th-grade students, during the maximum of 20 minutes, mediated by the teacher;

- b) turned to the construction of the knowledge and not merely illustrative, closed within its own limits, without arousing the critical view on the scenes;
- c) in the absence of a narrator, so that the teacher can play the role of mediator and conductor of the view, focusing on phenomena and concepts considered to be relevant according to the cognitive level of the spectators and the content approached in class

In the end of the script elaboration two releases were produced in the condition of prototype videos - "**Ourinhos: time and space tell us a story**", representative of *axis 2: Territorial Formation, Culture and Memory* and, "**Inside Ourinhos**", which includes *axis 5: Services and Infrastructure*.

5. The Municipal School Atlas in the Tactile Version: an innovative proposal of an inclusive education

In order to provide education for the visually impaired, in addition to the elaboration of the project, other objective was set, in the end of 2008 and in 2009, which was to develop and divulgate a new model of Municipal School Atlas, aiming to facilitate the use of the tactile language in the treatment and the communication of municipal spatial information for the visually impaired individuals.

Therefore, help blind students and the ones with subnormal vision who attend classes with the resources of special education or in regular schools; broaden their knowledge about the geographic space in which they live; bring the feeling of pertainment and identity in relation to the place in order to stimulate a greater integration with the colleagues who are able to see are the biggest challenges of the Municipal School Atlas of Ourinhos in the tactile version.

To fulfill this need, this still incipient³ step has been counting with the total support of the Group of tactile Cartography from UNESP/ Ourinhos, coordinated by Profa Dr^a Carla Cristina Reinaldo Gimenez de Sena. For representing a special step for itself, increasingly important in the national Educational policy, the inclusive education brings a paradigm shift, changing values and social relations, in which the development of competences and abilities on how to teach, stimulate and generate knowledge opposes the traditional education.

In the tactile scope, Sena (2009), emphasizes that:

See, hear, smell, taste and touch. All these senses are the means we use to receive the information from our surroundings. This information is important for our development and also for our communication. The visually impaired individual has the capacity of decoding information synthetized in images diminished or impaired; therefore the information needs to be adapted in order to be partially or totally comprehended. (SENA, 2009, p. 1).

³ The word is applied considering the maturation time in especial education, where the producers of maps must know the cartographic language to be able to understand not only the reality represented but also the necessary adaptations for the elaboration of the tactile cartographic material. Thus, for two years, the Professor coordinator of this version has been preparing a team of students of the Geography course for the development of the thematic presented. This requires an exercise, from the learning of the possible methodologies and techniques in this kind of representation to the conduction of the final version, concretized with the tactile version of the Municipal School Atlas of Ourinhos.

Sensitivities which are part of this version require more attention and also a differentiated rhythm in the production of its graphic interface, once a misproduced and misrepresented piece of information can bring serious mistakes instead of providing living experience.

Once presented the differentiated and special realities, the **graphic conception** of the Municipal School Atlas pages become the biggest challenge. In this project this graphic representation have been following the methodological proposals presented by SENA (2009), where for each thematic page a matrix is elaborated (draft or mockup) using the visual variables adapting all the image to be perceived by tact (**figure 3**). In this case, the punctual, linear and zonal symbols are elaborated within the limitation of the visually impaired individual: for the totally blind, the color is the only variable which is not perceived if not replaced by different textures. The resources are then tested and evaluated.

The innovation of the Tactile Cartography is found in this phase of adaptation. The producer of maps, facing the need to construct a tactile map, must reflect much more about the nature of the information to be represented and about which isolated or combined variables will properly execute the task of communicating the information to a visually impaired individual (SENA, 2009, p. 5).

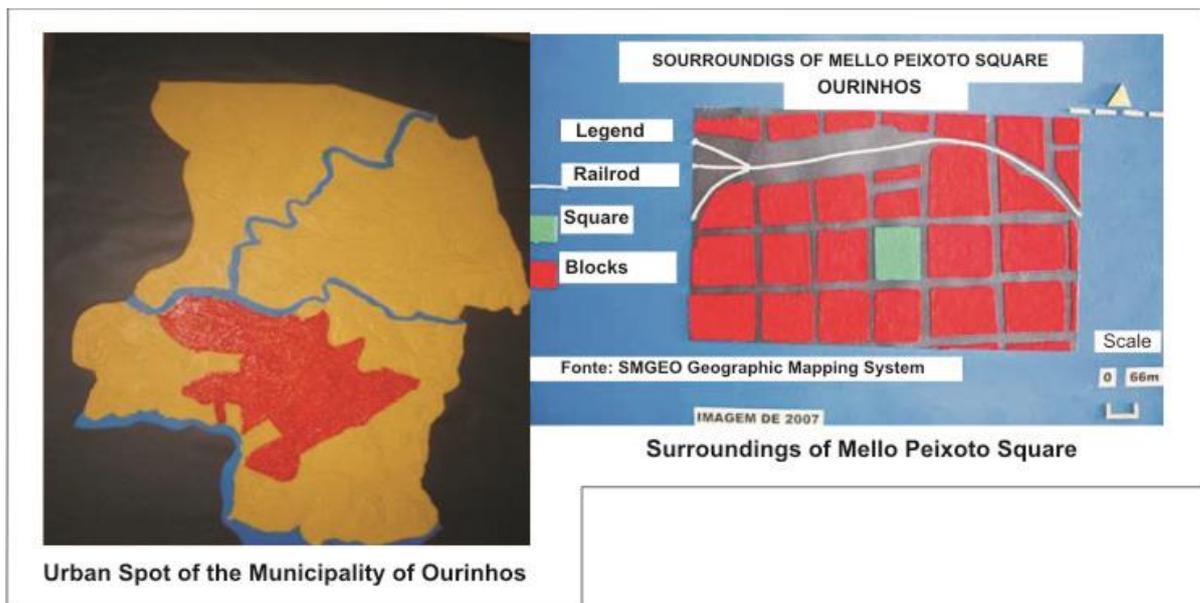


Figure 3 – Elaboration of Tactile Mockups - showing the urban area spot and the surroundings of Mello Peixoto Square. Organization: Tactile Cartography Group – UNESP/Ourinhos-SP

6. Final Considerations

Considering the discussions aroused it can be said that school is primarily the locus of democratization of the knowledge; therefore, it should make use of the technologic advances and incorporate different languages in the classroom.

Pontuschka (2009, p.263) states that, in the globalization era, with the speed of the information from different means (television, cinema, radio, video, computer) “the pedagogic work of the teacher can be enriched with the use of these resources for the production of a knowledge which helps the students to comprehend the world in which they live”. In turn, the treatment of the information approximates the classroom to the daily living, to the learning languages and communication in society, introducing new issues to the educational process.

It is in this context that the School Atlas finds its greatest challenge. Unfortunately, due to the heritage of the traditional teaching from the past, it is still common for many individuals – laypeople or not – to use *the map* as a consultation material exclusively for the location of fact or geographic phenomena. “Teach the use of the Atlas as a resource to identify or memorize disconnected pieces of information is a totally mistaken idea”. (ZACHARIAS, 2005, p. 5).

Thus, it is legitimate to include in the school pedagogic project a material to lead the student to the comprehension of the spatialities and historicalities of the place so that it can have active and propositive participation in the construction/deconstruction/reconstruction of the space during the teaching/learning process in the classroom.

According to Almeida (2003):

[...] the legitimacy of a Municipal School Atlas must not be seen only for the need of this didactic material, but the knowledge that it presents as a didactic text to be taken as a teaching object must also be considered..., once an Atlas, as a depository of the “true” knowledge concerning the municipality, must bring information with reliable reference, from scientific texts, researches of data obtained from credentialed organs. (ALMEIDA, 2003, p. 152).

More than sufficient theoretical reflections to influence this research lead to the fact that the elaboration of a Municipal School Atlas of the municipality is an important subsidy for the performance of didactic activities. Firstly, for the possibility of local studies with updated data; and secondly, it provides the students with the recognition of their territory, their living spaces, in search of meanings and senses of the forms of the city, the relations with other places and with the world during the process of perception of the space.

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