Designing an inclusive educational landscape through the conjunction of formal and informal educational settings

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Abstract
The social role of museums has recently shifted from focusing solely on collections and objects to prioritizing the recipients, i.e., the public. Once narrow and rigid institutions with an elitist imprint on public consciousness, museums are now being transformed into alternative sites of cultural exchange and idea sharing. This broadening of their role seeks new, more creative, inclusive, and educational forms of communication. Communication is a key function of museums, typically with an educational mission, fulfilled through various educational programs that create an environment of informal education. Informal education encourages active participation and offers experiences and knowledge that are not provided by traditional school textbooks but complement them and play a significant role in the learning process. Linking the curriculum with specific museum educational programs allows for a more holistic and interdisciplinary approach to education. This paper proposes a museum educational program called 'Cartus Emotional Landscaping,' centered around the theme of "Riga's Charta", a significant historical document by Rigas Velestinlis, as a temporary exhibition in a contemporary art museum. This program is designed for blind pupils in the last two years of primary school and is integrated with history and geography lessons. In view of creating an inclusive environment in education and society in general, which ensures equal opportunities for all groups of the population, this paper will focus on the structuring of a museum educational program suitable for a mixed group of students, including those who are partially or totally blind. The paper aims to serve as a guide to the ways in which formal education can be successfully combined with informal learning to create a holistic educational model that is sensitive to the needs of children with disabilities.

Key words: Informal Education, Museum Educational Programs, Visitors with Visual Impairments.

1. Introduction
Active participation in the field of knowledge has been recognized in the last few decades as a prerequisite for learning. Learning environments vary and can be differentiated into formal, non-formal, and informal settings. The terms formal, non-formal, and informal learning do not describe the quality of the educational process but refer mainly to the learning context.

Formal education is defined in Greek legislation as education provided within the formal education system, leading to the acquisition of accreditation issued by public authorities and is part of the structured education system [N. 3879/2010 (αν. 4763/2020)]. It requires a curriculum that defines the subjects taught, including content, objectives, methods, teaching hours, evaluation, and students' responsibilities (examinations, grading, diplomas, certification). Non-formal learning includes activities that occur beyond organized educational contexts, throughout a person's life, in their leisure time or within professional, social, and cultural activities (N. 3879/2010). Informal learning environments include the family, peer groups, media, and art settings (museums, galleries, cinemas, planetariums, cultural centers, libraries, etc.).

Sociologist Pierre Bourdieu (2004) argues that education is not an isolated field, nor should the educational system be regarded as an enclosed and sacred space detached from reality. Therefore, shifting from trying to be the sole education provider in a confined sense is a necessity for schools. They cannot and must not aspire to teach everything within a secluded system. When designing an educational program, we should consider the entire network of related educational fields. Bourdieu also argues that schooling would be enhanced if it were consciously and methodically integrated into the wider circle of cultural activities generated by other forms of cultural exchange.

Finally, considering that technocratic education reproduces inequalities by favoring social mechanisms that exclude the underprivileged, he proposes actions based on the relationship between education and culture as a response, leading to a more democratic perspective for the educational system.

Modern pedagogical theory finds its application in education through the integration of art as a means of embodied cognition. According to Studd and Cox (2013), "our bodies provide us with the means to perceive, contact, and interact with the world." Learning is based on lived experience, and experience is embodied. The theory of embodied cognition critiques the Cartesian dichotomy between body and mind.

Drawing on Gardner's theory of multiple intelligences (2011), educational programs have been developed that promote an interdisciplinary approach to learning and lead to the holistic development of students by including their emotions and creativity in addition to academic knowledge. Therefore, the experience gained through interaction with the surrounding environment, knowledge that cannot be acquired from textbooks, plays an important role in the educational process (Glitsi et al., 2002). Consequently, the contribution of informal education is valued and recognized, as the learning process involves active participation beyond and outside the textbook. Informal learning allows educational programs to achieve objectives that are more humanistic than those achieved through textbooks and better meet today's demand for holistic education and the development of students' skills.

What is intended is integration in the sense of inclusion and respect for the diversity of each student's needs. These two elements (integration on the one hand and diversity on the other) define the proposals for models of action. A suggestion in this direction is an interdisciplinary approach to learning, which is particularly well served by linking the curriculum with educational museum programs. Museum education, an informal form of learning, can contribute to many aspects of students' social life, especially for those with special needs.

The right to inclusion and participation of all people, without distinction, in cultural activities has influenced cultural institutions such as museums and led to the emergence of new access policies. The search for equal opportunities and rights for people with disabilities can be traced back historically to activist movements in the United States in the 1960s. The emerging concept of inclusion was captured in the slogan "nothing about us without us," which relies on the principle of participation. This slogan has been used by Disabled Peoples Organizations throughout the years as part of the global movement to achieve the full participation and equality of people with disabilities. This focus on reclaiming control and power over one's own life represents a transition from inclusion to full integration, where people with disabilities themselves design the processes they wish to follow for their full social integration. In 2002, the demands of the movement for the rights of people with disabilities were discussed by a committee of the UN General Assembly on the occasion of the Convention on the Rights of Persons with Disabilities (UNCRPD) in 2006. In 2009, the agreement was

ratified in Germany in the form of a convention. Article 30, paragraph 1, of this convention aims to promote the right of persons with disabilities in culture. Therefore, the activists' demand for equal cultural participation of people with disabilities in cultural life became a formal request to cultural institutions.

In response to this request, museums began to adapt their spaces to make them accessible to people with various forms of disability. The Disability Resource Directory, first published in 1993, served as a manual outlining the steps and changes that museum had to undergo to enable the inclusion of all audience groups. However, inclusion is much more than accessibility. It challenges the idea that museums are merely accessible and explores the museum's role in the service of society. A two-way dynamic relationship is proposed, where visitors also co-construct the museum's content through different sensory perceptions. As Kinsley (2016) argues "inclussion in museums is a matter of social justice".

Among the various categories of special museum users, visitors with visual impairments (partial or total blindness) stand out as particularly challenging to accommodate. Until recently, a sign saying "DO NOT TOUCH" was very common in museums. There was a clear boundary between the exhibit and the visitor, a boundary that was not only spatial but also a general restriction on interaction. However, this directive, with all that it implies, is now being replaced, particularly for visually impaired visitors, by the phrase "PLEASE DO TOUCH." As early as 1909, the American Museum of Natural History in New York had created an area where blind visitors could touch taxidermy specimens. This was the first of a series of steps designed to counteract the limitations of one sense by leveraging the abilities of another.

Museums now have sufficient resources to convey their content to specific audiences. First of all, when it comes to designing the building, they ensure that navigation in the spaces is facilitated by adopting practices such as floor signs and Braille inscriptions. There are even "tactile" museums that institutionally ensure the mediation conditions. Acoustic descriptive guides are another excellent tool, especially when combined with personalized tours, where trained guides lead small groups of blind and partially sighted visitors through the museum. Employing specialized staff or cooperating with specialized professionals—representatives of special groups—are also important factors towards this direction.

Museums work hard to create cultural and social connections. By considering evolving social tendencies and being sensitive to the needs of each user, museums are expanding their cooperation with all stakeholders. Museology is an interdisciplinary field, and creative synergy is an essential part of its policy. New technological applications, such as 3D printing, also contribute towards the goal of inclusion. However, perhaps the most effective means of conveying content to special needs groups are multi-sensory environments. Additionally, museums often incorporate specially designed educational programs into their narrative flows as a further means of ensuring access to their content by specific audience groups. These programs can also be used as vehicles for the conjunction of non-formal educational settings with formal education in an even more complex but highly useful museological scenario.

A relevant educational museum program is presented below. It is designed to fit the needs of visually impaired students in the 5th and 6th grades of the elementary school, as it was developed in accordance with the guidelines given for the students at the School for the Blind in Thessaloniki, Greece. The program, called 'Cartus, Emotional Landscaping', is an example of combining formal and informal educational settings. It is based on the subjects of History and Geography as they are taught and presented in the students' books of the two final grades of elementary school according to the Greek educational curriculum and is

especially curated to benefit from the informal learning environment of a contemporary art museum.

2. Elements for the implementation of the museum educational program

The museum educational program “Cartus, Emotional Landscaping” was developed in 2019 within the framework of the Postgraduate Program in Museology and Cultural Management at the Aristotle University of Thessaloniki, Greece. The project was developed by the Department of Museum Education of the Aristotle University of Thessaloniki, as a semester project during Museum Education. It is an application proposal based on the students’ course of study as part of the course in Art Education.

The conceptual museological design, entitled “Cartus,” by the museologist Ioanna Axioti, is based on the spatial scenario of the Museum of Contemporary Art of Thessaloniki. The program is placed in the third section of the proposed exhibition, which specifically addresses the contemporary aspect of cartography as it is influenced by art, consumerism, and technology. On the three artworks, the program explores concepts of scale, proportion, and texture, and proposes the technique of transferring ideograms into space. This technique uses these valuable tools of spatial understanding and representation to introduce emotional mapping (Emotional Landscaping). It is aimed at an audience consisting of fifteen, fifth and sixth grade students from the Thessaloniki School for the Blind.

However, the program is designed to be suitable for students with and without visual impairment. It can be implemented during the school year in ten lessons (excluding the visit to the museum), with the possibility of adapting the timetable to the needs and potential of the students.

3. Program’s Aims and Objectives

The objectives of the program are divided into main objectives and sub-objectives. The program aims to fulfill museological (conceptual exhibition design), museographic (spatial exhibition design), and educational purposes.

3.1. Main objectives

First, the project aims to convey museological meanings in an experiential way, combining learning with entertainment, within the context of a hierarchical educational intervention in the museum space. It also seeks to convey these meanings holistically, activating secondary senses, given that vision cannot be fully utilized by its audience. Using narrative as one of its tools, the program provides a comprehensive picture of the history and importance of cartography to our culture. It introduces other mediated tools for presenting cultural context, following the principles of cultural-historical psychology.

Important aims include cultivating critical thinking, promoting autonomy—which is particularly significant for this target group—and fostering socialization and interaction among the members of each subgroup, thereby strengthening overall cohesion. Through individual projects, the program imparts not only knowledge but also skills, as well as personal meanings and interpretations. The knowledge and skills imparted are both general (related to scientific fields such as geography, cartography, and history) and specific (such as spatial concepts like scale, proportions, and distances). These skills contribute to the perception of space and its qualities, which is the greatest benefit of the educational program for this group.

Consequently, the program aims to boost the self-confidence of participants, as visual impairment is considered one of the most threatening conditions to the human psyche due to

its direct impact on self-confidence (Reina et al., 2011). On a broader level, the inclusion of special groups of visitors is equally important for the museum as an institution with a social mission, as well as for people with visual impairments or blindness. The museum educational program cultivates fine motor skills through crafts and provides opportunities to understand and use tools of style, content development, thematic development, and hierarchical organization, as well as recognizing visual intentions and context.

The museum educational program also aims to produce accompanying educational material for presentation and follow-up activities.

3.2. Sub-Objectives

In addition to the main objectives of the program, there are also important sub-objectives. At the level of conceptual museological design, it aims to provide ideas for the transfer of exhibition narratives from an explanatory semantic sphere to a more inclusive and interpretative one. The exhibition seeks to challenge the notion of art as merely "a commodity for visual pleasure only." It also aims to enhance the social responsiveness of institutions (museums) to the diversity of different social groups. At the level of exhibition design, it seeks to broaden the focus beyond accessibility for physical disabilities to include all forms of disability, both visible and invisible. This includes not only the architectural design of buildings but also the processing and spatial presentation of documentation and exhibition material.

4. Methodology of the project

This educational museum program has been structured on the theoretical basis of cooperative learning in groups within the context of a holistic approach to education. The main characteristic of the method is the students' cooperation with each other and with the teacher. Group work is a further development of student-centered methods, where pupils are at the center of the activity, not as individuals but as a group. In this case, the group collaborates with both the teacher and the museum educator. The techniques used include brainstorming, storytelling, discussion-dialogue through questions and answers, art workshops, and adapted craft exercises. The aim of modern pedagogy is to encourage cooperation while respecting individual needs and abilities. For this reason, targeted individual approaches are interspersed within the group projects.

5. Structure of the museum educational program (presentation of activities - teaching material)

5.1. Pre-Visit Preparation

Long before the visit to the museum, the museum educator contacts the teaching staff of the school to gather information about the visiting group and their current studies in history and geography. At the same time, the educator requests the class teacher to introduce the historical context of the exhibition they will visit. This is followed by the museum educator's first visit to the group's classroom. Using the question-and-answer method, they cover a general range about geography and history, and then the museum educator continues with an introduction to cartography. This introduction briefly presents the history of cartography and its social components, using audiovisual material from the first and second exhibition units. The narrative is accompanied by special materials such as bathymetric and tactile maps. This introductory visit lasts one teaching hour.

5.2. Visit to the Museum of Contemporary Art

The visit to the museum is structured in three phases:

5.2.1. Phase One - Introduction to the Concepts

The museum educational program begins at the entrance to the Museum of Contemporary Art, where the museum educator gives a brief introduction to the museum and contemporary art. The students are informed about the peculiarities and challenges of displaying historical documents in an unconventional exhibition environment such as a contemporary art museum. An overview of all sections of the exhibition is provided, and then the students are invited to move on to the section that forms the basis of the museum's educational program. In this section, the cartography they have already been briefed on is explored in the context of art, technology, and consumerism.

5.2.2. Phase Two - Teamwork

The group is then moved together to the room in section 2 of the exhibition (Fig. 1), where there is a copy of Riga's Charta. The museum educator gathers the group of 15 people around the Charta and gives a brief ten-minute presentation on its history and the personality of its creator, Rigas Velestinlis.

Following this, the educator presents a 1: 2 tabletop copy of the map (dimensions 1x1 meter), which is suitable for optimal hand rotation. The map is presented as a model, inviting the participants to touch it. Using the question-and-answer method, the educator asks questions about navigation, focusing on important landmarks related to the Charta. Participants are also invited to touch the cartouche, which includes three-dimensional illustrated symbols, while the educator provides information about each symbol. This stage lasts twenty minutes.

To ensure the best integration of the subject, the use of assistive technology (AT) tactile markers is recommended. This technology allows scanning with pens that provide audio information about a 3D object.

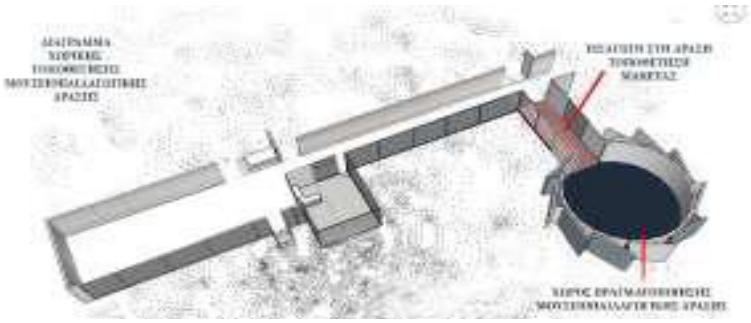

Fig.1. Chart of Cartus exhibition spaces

5.2.3. Phase Three - Subgroup Work

Everyone is then brought into the rotunda room (Fig. 2), which is divided into three sections, each of which receives a conceptual work of art. The group of fifteen is divided into three sub-groups of five. The first group is associated with the first painting, a map drawn according to Mondrian's principles. The second group works with a painting of a dress with maps printed on it, and the third group with a table of personal routes (derived from the two-dimensional mapping of three-dimensional GPS data).

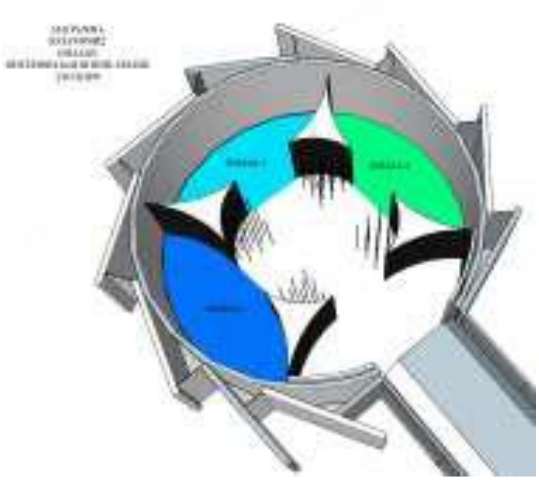

Fig.2. Subgroup distribution in rotonda diagram

Once each group has gathered in its own section, accompanied by an assistant and under their guidance, each group is asked to do the following:

The first group starts by listening to the assistant briefly describe Mondrian's original painting (Fig. 3.1). In individual copies, where the colors stand out, a three-dimensional image of the original painting is presented. This image is then compared to an embossed map of the earth. The embossed painting of the map is given, where the map of the earth is reproduced using the Mondrian technique. By touch, the students explore the transfer of the Mondrian pattern to another schematic form and understand the concept of the design canvas as the lines that create analogous contours. Each student is then given a set of shapes in primary colors (red, yellow, blue) and a cardboard outline. The students are asked to make their own composition with cardboard of different thicknesses and create their own artwork using the provided method (3.2). The gaps created by the white of the base (level 0) complete the picture (suggested dimensions 50 x 30 cm), with pieces of the picture (10 x 20 cm). The aim of this exercise, apart from entertainment, is to understand the concept of Kanavos design, the interaction of shapes, and the proportions of sizes and colors in the process of composition, which is not only a key issue of visual creation but also of spatial perception. In this way, spatial perception is sharpened.

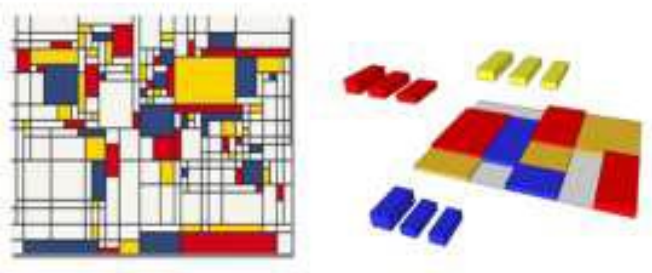

Fig.3. Left (3.1) Mondrian's painting. Right (3.2) visualization of the learning material

The second group, in their own room, listens to a short description of the interactive board that presents a picture of a catwalk model. This picture (Fig. 4.1) of the model with a map printed on her dress is shown by the assistant, who then makes a reference to the map and the concept of consumerism, combining the contents of the board with the museological

approach. Each member of the group is then given a sheet of cardboard (50 x 30 cm) with the outline of a continent presented as an empty space. Each person is given a different continent. They are then provided with another piece of cardboard and various materials. The students are asked to make a collage of the different parts of the continent, gluing the pieces together (using special glue) to create a coloured and textured cloth map (Fig. 4.2). The correspondence between the different textures and places on a map (e.g., cold countries - thick or coarse fabric, warm countries - linen or smooth fabric) is highlighted.

In addition to being fun, the aim of this exercise is to develop fine motor skills and improve spatial awareness through the concept of empty and non-empty space (the principle underlying the built environment). At the same time, the creation of mental links and the transfer of concepts are encouraged through the choice of textures.

Fig.4. Left (4.1) catwalk model's picture wearing a map themed dress, source: https://heartculturefashion.wordpress.com/2015/09/25/gucci-spring-2016/. Right (4.2) indicative image of map made of texture's collage, source: https://flamingotoes.com/huge-fabric-us-map-hoop-art/

Similarly to the previous groups, the assistant leads the third group to its own section, which features a three-dimensional personalised image of a person on a two-dimensional surface (Fig. 5.1). The board is made up of individual embossed copies. Using the board as a referral point, the assistant refers to GPS technology and the linear representation of routes. Again, the concepts of distances and proportions are emphasised, as well as the metaphorical concepts of 'distances' in relation to personal experiences. Each member is then given a board (dimensions 50 x 30 cm) with small wooden wedges that can be moved. Using threads, each member is asked to identify five basic personal concepts (e.g., family, love, friendship, learning, school) and connect them to create a map of emotional connections (Fig. 5.2) according to their significance and relevance to each other.

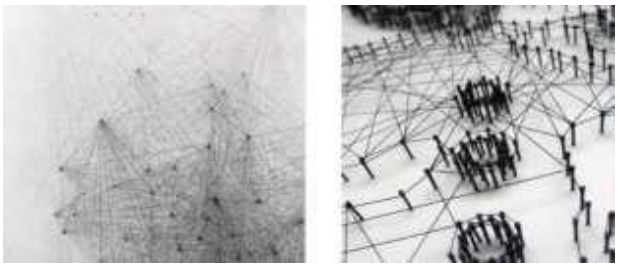

Fig.5. Left (5.1) a board with gps data, source: https://gr.pinterest.com/pin/514465957418162605/. Right (5.2) indicative map of emotional connections, source: https://www.themag.it/inspiration/2012/network-thread-and-nails-portraits.html

At the end of the project, each group presents to the others how their work of art came about, and all together discuss the experiences and lessons learned. It should be noted that the term “assistants” also refers to other museum educators, as a total of four are needed to carry out the museum educational activity. The total time is half an hour for the first part of the group activity and one and a half hours for the second part. When leaving, each member of the group should take the table they have created with them.

5.3. After the visit

After the visit, the museum educator gives the teacher a museum kit to consolidate the material through further processing in the classroom. The teacher can then give the students a copy of the museum’s exhibits to work with during the workshop. Inside the kit are:

A. A CD with a narration and sounds related to the inhabitants of the Marshall Islands, a small population whose entire life is linked to the sea. This people made standard maps of their daily routes using chopsticks. These unique maps are named after the people who made them and hold a unique place in the history of cartography (Fig. 6).

B. A wooden replica of such a map, which is ideal for tactile exploration due to its form.

C. Instructions for a group project in which students can use balsa sticks and rope to make a personal map of their daily routes, and then connect all the individual maps in relation to their school’s location.

D. The resulting composition has the appearance of a work of art that can be hung in the classroom and can be interspersed with new information that enables to proportionally expand it. This can be done by reproducing it either in the same medium or in other media (works in the second group), or by adding other coded personal information (third group task).

6. Evaluation

The evaluation of the activity will take place within the context of a spatial museum program that will be included in the exhibition design to complete the visit. This program has been created from the spatial design of the exhibition as a reflection of the visit’s imprint. It consists of a wall-mounted construction where each visitor uses a thread to circle the points, they found useful and interesting during their visit at the exhibition. It applies independently to all visitors. All texts can be read in Braille and the museum’s team will be prepared to answer any questions that may arise. All visitors participate equally in the evaluation of the activity. Given the absolute relevance of the spatial design with the content of the museum’s educational program, a holistic evaluation of the museum’s educational program is achieved.

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