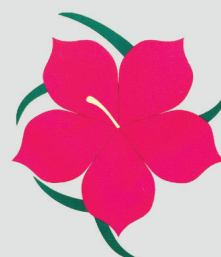


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PODGORICA



INTERACTIVITY, INTERPRETATION, INSPIRATION: EDUCATION IN THE NEW MUSEUM PERMANENT EXHIBITION

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SYNOPSIS

Key words:

new museum exhibition,
education,
interactivity,
interpretation,
inspiration

The newly renovated Croatian Natural History Museum is a dynamic, inclusive space for knowledge and experience. The modern exhibits support multi-layered education based on interactivity, interpretation, and inspiration. By observing the displays and engaging with digital tools, multimedia, and tactile elements, visitors become participants in a story where knowledge is conveyed not only through information but also through personal experience. The focus is on accessibility, interactivity, and inclusivity, attracting new audiences – middle-aged and older individuals, previously marginalized communities, the growing number of foreign nationals living in Croatia, and tourists. Through innovative exhibition concepts and new technologies, education within this framework also fosters social change – the museum becomes a gathering place for the local community and a center for lifelong learning. This approach creates opportunities for new knowledge – not only about the natural specimens on display, but also about identities, ecology, and the contemporary challenges of climate change.

SINOPSIS

INTERAKTIVNOST, INTERPRETACIJA, INSPIRACIJA: EDUKACIJA U NOVOM MUZEJSKOM POSTAVU

Ključne riječi:

novi muzejski postav,
edukacija,
interaktivnost,
interpretacija,
inspiracija

Novi, obnovljeni Hrvatski prirodoslovni muzej dinamičan je i inkluzivan prostor znanja i doživljaja. Moderno koncipirani novi postavi omogućuju višeslojnu edukaciju koja se temelji na interaktivnosti, interpretaciji i inspiraciji. Promatranjem izloženih sadržaja te integracijom digitalnih alata, multimedije i taktilnih elemenata, posjetitelji su dionici priče gdje se znanje ne prenosi samo informacijom, već i osobnim doživljajem. Naglasak je na pristupačnosti, interaktivnosti i uključenosti, čime se privlači nova publika – ona srednje i starije dobi, zajednice koje su prije bile marginalizirane, te sve brojniji strani državljani koji žive u Zagrebu i Hrvatskoj kao i turisti. Kroz inovativne koncepte izlaganja i korištenje novih tehnologija, edukacija u novom okviru donosi i društvene promjene – muzej postaje mjesto boravka i druženja lokalne zajednice, mjesto cjeloživotnog obrazovanja. Takav pristup stvara prostor za nova znanja – ne samo o izloženim prirodninama, već i o identitetima, ekologiji i suvremenim izazovima koje donose klimatske promjene.

INTRODUCTION

Following a comprehensive renovation, the Croatian Natural History Museum has become a contemporary, inclusive space for knowledge and experience. The new permanent exhibition marks a paradigm shift – the museum is no longer a place of silence and static exhibits, but a dynamic educational centre where knowledge is built through interactivity,

interpretation, and inspiration. The museum follows modern practice, which increasingly emphasises active participation and visitor interaction, rather than passive viewing of exhibits. In the new exhibition, the visitor is not just a spectator but also a participant in the process of learning and discovery.

This article demonstrates how the new exhibition at the Croatian Natural History Museum enables

multi-layered education and lifelong learning, with an emphasis on inclusivity for diverse visitor groups through the use of digital and tactile tools, as well as the cultural and social significance of the museum as a place for meeting and exchanging knowledge. The use of new interactive and interpretive methods in the exhibition aims to contribute to more effective education and to show how such approaches inspire audiences to gain a deeper understanding of natural, cultural, and historical heritage. The new exhibition is the result of a project to implement a new museum, renovate and extend the historic building that houses it, and create a new display with new content, entitled “The Keeper of Heritage as a Catalyst for Development, Research and Learning – the New Croatian Natural History Museum”. The project for the building’s renovation and the new permanent exhibition was led and coordinated by the Museum’s Director, Professor Dr Tatjana Vlahović, with her team headed by Dr Iva Mihoci, a museum curator.

DISCUSSION

A thorough reconstruction of the museum’s building has made this 18th-century historic nobleman’s palace in Zagreb’s Upper Town functional for the modern activities of the Croatian Natural History Museum, adapting its facilities for the exhibition of the museum’s rich collections while also presenting the value and uniqueness of the building itself, both for the museum and the city as part of its tourist offering. The Croatian Natural History Museum now has both an impressive building and a contemporary organisation. This primarily refers to the exhibitions, which present part of the vast natural heritage that the Museum preserves and displays.

The reconstruction helped the museum solve problems that had significantly hindered its development, primarily the inadequate spaces for displaying natural history exhibits, a lack of space for ancillary facilities (such as a children’s workshop or a souvenir shop), and outdated infrastructure, which did not allow for the use of modern audio-visual technologies. The adaptation has given the building a completely new lease of life, and the museum has become a thoroughly engaging 21st-century institution, full of creative, interactive content for all visitors.

It is now recognised that a museum is not, and should not be, just a scientific institution (collection, study, and identification of exhibits) but also a space of interest to a wider audience, which should be attracted with additional content (Majanović (1994), Bauer (1975, 1985)). A museum must function openly,

as a place where everyone is welcome and where new insights are gained about one’s own cultural and natural heritage and identity. This is achieved through specific actions devised by professional museum staff, through which the museum becomes involved in the life of the local community. Events that attract media attention will ultimately result in a greater number of visitors. The aim is for the museum to be visited more by individual visitors and families, in addition to organised school groups. These are the fundamental starting points in considering how to design and implement a new exhibition. A larger space designated for the exhibition and presentation of the museum’s collection certainly contributes to this. Modern exhibitions are designed with many interactive features that offer numerous opportunities for preparing a variety of educational programmes in which visitors can participate actively, reflect on what they have experienced, and be creative at the same time (according to Toma (2010)). The thorough renovation of the old historic nobleman’s house not only enabled the expansion of the exhibition space, and thus the creation of a modern, interactive exhibition, but also made the museum accessible to people with various disabilities, which had not been possible in the previous museum due to numerous obstacles such as stairs and narrow corridors. All of this was taken into account during the design of the building’s internal reconstruction, to enable people with various forms of disability not only to visit the museum but also to enjoy a more pleasant, barrier-free experience, thereby ensuring equality with other members of the community. However, the concept of the ability to “move freely and without hindrance” refers not only to physical barriers such as stairs or entrances and exits that are too narrow, but also to the provision of information and orientation in visual and tactile forms for people with special needs (Bosnar-Salihagić, 1999). For each group of people with disabilities (those with motor impairments, the deaf, the blind, etc.), specific requirements must be met. For example, a lift is provided for people with reduced mobility where stairs are present, and entrance doors and corridors are widened in accordance with the standards required to facilitate their movement. For visually impaired and blind visitors, tactile objects are provided in each thematic section, along with descriptions in Braille (**Photo 1**). For deaf and hard-of-hearing visitors, subtitles are provided in all video and film presentations (**Photo 2**). The accessibility of the museum buildings to people with disabilities is an important part of their integration into society, and “accessibility” here means much more than just



Figure 1: A tactile museum object for blind and partially sighted people (dinosaur hall).

physical access; it also denotes the availability of information, which is of great importance. In the new museum, the primary focus is on accessibility for visitors with disabilities, making the Croatian Natural History Museum a museum for all, with a spacious, representative, modern new permanent exhibition that ensures excellent visitor flow and communication.

The museum's new permanent exhibition is accessible, tailored to the general public, and presents natural history through the items it houses. The guiding principle behind the entire exhibition concept is to answer the questions: what is life, how was it created, how has it evolved through geological time, and what is life like today? Our new exhibition can be described in one word: change – a change in matter, form and size, a change in time and space. Through exhibits from the museum's collections, the permanent exhibition presents the diversity of organisms that have evolved over geological history, their diversity today, their interrelationships, and the threats to which species are currently exposed (Mihoci, Brezinščak, 2024). The permanent exhibition spans three floors over an area of almost 3,000 m², and consists of the Mineralogical and Petrographic Exhibition, the Geological and Palaeontological Exhibition, and the Botanical

and Zoological Exhibition. Through 43 thematic units, visitors can discover topics and objects by looking, listening and touching. In every exhibition room, there is a central item that can be explored by touch, surrounded by collection exhibits, mainly originals, as well as by many multimedia screens with additional information such as maps, charts, games, scientific contests, and more (**Photo 3**). Alongside the exhibition rooms are memorial rooms, which are like time capsules, dedicated to the distinguished naturalist museum founders and creators of the museum's collections, Spiridion Brusina and Dragutin Gorjanović Kramberger, offering visitors a glimpse into the beginnings of natural science in Croatia.

The new museum exhibition is interactive, its interpretation offers numerous possibilities, and it is also an inspiration. The new exhibition has also brought new challenges, opportunities and ideas in the education of museum visitors. The popular-educational programmes of the Croatian Natural History Museum are an umbrella term for programmes organised and run at the museum, ranging from guided, classical and interpretative tours, through specialist and creative workshops, to exhibitions of pupils' works produced in the workshops, meetings with naturalists, lectures, cooperation with other museums and educational and cultural institutions, as well as participation in interdisciplinary and EU-funded projects. All educational programmes are aimed at museum visitors – from pre-school children and pupils to older visitors and senior citizens. Also, brochures with basic information about the exhibition and the museum itself have been prepared for visitors in several languages. For younger visitors, there is a kind of tour-guide that leads them around the museum by having them solve certain tasks. Education programmes are tailored for first-time visitors, regular visitors, hobbyists and amateur naturalists, as well as professionals in the field of natural sciences. It is well known that a museum is not a school, and that



Figure 2: Adaptation for the deaf and hard of hearing, film subtitling.



Figure 3: One of the thematic units in the museum features a tactile object in the centre, original natural history exhibits, and interactive and multimedia content.

knowledge is acquired here informally, through visual, interactive and enjoyable content, because learning is not subject to the same evaluation as it is at school. This benefits both pupils and teachers, as everyone is more relaxed and therefore more open to new knowledge. Through its educational department, the museum makes a great effort to provide visitors – who are mostly pupils, though there are more and more adults – with a comprehensive and inclusive exhibition, accompanied by a suitable educational programme. The beauty of minerals, the mystery of fossil remains, and the diversity of taxidermied animals – which can only be seen in the museum, from butterflies and shells, bats and birds to tiny creatures from the depths of the earth – show visitors just how fascinating and worth exploring the world around us is. Each segment of the exhibition, each thematic unit, presents its theme through large-scale dioramas, primarily featuring original exhibits, but also models and replicas, as well as interactive elements for exploration, play, or getting additional information. In the newly renovated museum, there is also an educational workshop space where students can gain additional knowledge about topics from the exhibition, which is important because it further expands and strengthens their understanding (**Photo 4**).



Figure 5: Museum atrium – space for performances, concerts, panel discussions ...



Figure 4: Museum workshop.

Alongside the exhibitions, an important museum space is the covered atrium, which conceptually connects all the museum's sections. Furthermore, it adds to the museum's value as it is used for various cultural and professional events throughout the year, regardless of the weather (**Photo 5**). Visitors are also given a glimpse of the museum's work "behind the scenes", for example, by visiting a new laboratory that is open for viewing, where interested visitors can see what is done in museum laboratories and how museum exhibits are prepared and mounted for display. This also provides an excellent opportunity to organise various natural science courses for students, scientists, and amateur hobbyists (**Photo 6**). Visitors are particularly interested in the multimedia hall, where 3D animations are projected onto a huge wall surface as an integrated part of the exhibition. At the same time, this multifunctional space also serves as an open platform for showcasing purpose-developed interactive content in the natural, technical and social sciences, in the arts and in medicine (Mihoci, Vlahović, 2025) (**Photo 7**). Last but not least, no less important is the opening of the gift shop, as this is also a form of popularisation and education for visitors. The tour of the museum ends in the museum shop. A souvenir has long since ceased to be merely an item bought



Figure 6: Museum science lab.



as a memento of a place visited; it is now an object that carries its own educational message, and as such becomes interesting to most visitors. The souvenirs on offer are related to the museum's core content, so in addition to museum publications accompanying the exhibitions, there are also publications aimed at the very youngest visitors (picture books, colouring books), as well as for scientists. The educational publications on offer explain natural sciences in line with school curricula and are therefore recognised as supplementary teaching aids. In addition to

publications, various original minerals, fossils, as well as educational posters, games, fashion accessories (T-shirts, hats, ties, bags) and many useful items are also on offer, all of which promote knowledge of the natural sciences. Every museum shop or souvenir shop contributes to bringing the museum to life, but more importantly, to attracting visitors. The products sold are, in a way, ambassadors for the museum, spreading its reputation, especially if a visitor buys them and gives them as gifts to others (Gob, Drouguet, 2007) (**Photo 8**).

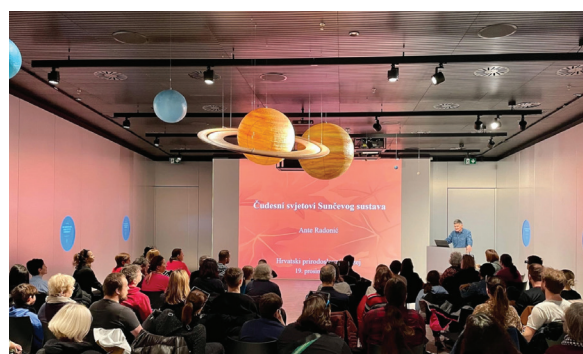


Figure 7: Multimedia Hall for lectures, presentations, meetings ...



Figure 8: Souvenir shop - selection from the museum souvenir offer based on museum collections.

In brief, here is what the newly renovated Museum offers:

1. Atrium

This contemporary covered space unites history, science and culture, and is the first area visitors encounter. Its main attractions are models of a colossal shark, a dolphin and an extinct giant marine mammal. The multipurpose space is suitable for museum openings, events, concerts and performances. Equipped with a PA system, theatrical lighting, a projector and a projection screen, the atrium is a highly attractive venue for receptions, performances, concerts and conferences. The atrium also features two bridges on the first and second floors, providing excellent vantage points for the exhibits and enabling circular circulation. The bridges incorporate modern technical solutions required for year-round cultural and scientific events.

2. Mineralogical and Petrological Display

The exhibition begins in the multimedia hall with the thematic section "Space", featuring items from the meteorite collection. As visitors progress through the permanent display, they encounter the petrological collections, exploring the diversity of rocks, followed by the evolution and variety of minerals through mineral systematics. The exhibition continues with a display of the physical properties of minerals and an introduction to the specialised mineral collections unique to our Museum.

3. Evolution

This section explores the origin of life on Earth and the theory of evolution through the work of Darwin and Wallace. It marks the transition from non-living to living matter.

4. Geological-Palaeontological Display

This presentation of the geological past, using material from the geological and palaeontological collections, guides visitors through our planet's history from around 4.6 billion years ago, through the age of the supercontinent Pangaea, the dominance of reptiles in the Jurassic and Cretaceous periods, and the emergence of the world as we know it today, including the frequent climatic reversals of the Quaternary. This exhibition concludes with the evolution of hominins and presents the theme of the Krapina Diluvian.

5. Botanical and Zoological Exhibition

On the second floor, the living world that surrounds us today is presented, along with the threats to

biodiversity. The display features three-dimensional habitat reconstructions, the Tree of Life, the plant kingdom, the museum's largest collections – its entomological collections – and the diversity of invertebrates and vertebrates. The final part of the exhibition is dedicated to the importance of natural history museums, tracing their history back to 1846. This section vividly illustrates the museum's role in preserving natural heritage as a witness to time and space.

6. Multimedia Space

The latest multimedia installation is unique in Croatia, allowing you to travel through space and time with interactive 3D flights across the entire known universe. The new Natural History Museum features cutting-edge technology – an impressive system that provides visitors with a unique virtual reality experience through wall and floor projections. Using an advanced laser projection tracking system, Deep Space offers a fascinating view of the universe and exemplifies interactive media art. This innovative addition opens the door to a new dimension of learning and entertainment, making the Natural History Museum an unmissable destination for all science and technology enthusiasts.

7. Annexe

The 350 m² space, equipped with the latest technology, is used for the museum's temporary and guest exhibitions.

8. Museum Education Workshop

This space for educational activities and work with children and adults is also a place for visitors to stay and socialise, as well as hosting specialist and creative workshops. Alongside a reference library of museum publications, a variety of interactive exhibits are available for visitors to use independently.

9. Scientific Laboratory

The new laboratory, equipped with modern technology and apparatus, enables the exploration of natural phenomena, plant and animal species, and geological samples, and is particularly useful for research projects.

10. Museum Shop – Souvenir Shop

A wide range of educational museum publications and souvenirs, based on exhibits from the permanent display and the museum's collection, are offered to popularise and educate about the natural sciences.

11. Photo Point

The museum entrance features a life-size reconstruction of a multi-metre-tall Istrian dinosaur, and as a photo point for visitors, it has become a favourite spot for creating memories of their visit to the museum (**Photo 9**).

Photo documentation: Croatian Natural History Museum, Zagreb, Croatia



Figure 9: Photo point – a large model of a dinosaur whose footprints were found in Croatia.

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