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MULTIMODAL STRATEGIES OF CHILDREN'S EXPLORATORY ENGAGEMENT IN THE DIGITAL DISCOURSE OF BRITISH MUSEUMS

The integration of digital technologies into museums has transformed approaches to communication with audiences, particularly children. Museum websites today function as autonomous environments for representing cultural and natural heritage, where multimodality is a key principle. In digital museum communication, child-oriented multimodality emerges as a promising area of research. The relevance is determined by the need to understand how multimodal practices reshape the role of children, shifting them from passive recipients to active participants in cultural communication. This study analyses how the multimodal resources of museum websites construct exploratory interaction with cultural heritage for young audiences, showing how leading institutions employ strategies that position children as active participants in cultural communication and learning. The research employs qualitative multimodal discourse analysis, combining structural-semiotic observation with comparative analysis of web interfaces and educational content across institutions. Based on the analysis of the British Museum, the Natural History Museum, and the National Gallery websites, the findings demonstrate that sensory backpacks, interactive guides, creative challenges, and edutainment activities provide opportunities for children to explore exhibits and actively engage with the museum environment. Narrative framing of activities combines tactile, auditory, and visual engagement, while interactive elements extend communication across channels and create a digital atmosphere of curiosity, participation, and emotional connection. Such practices highlight the growing role of digital platforms as spaces where museums test new pedagogical and communicative models tailored to younger audiences. In this perspective, museum websites function as repositories of information and at the same time as curated multimodal spaces where play, interpretation, and exploration shape communication with children. Emphasising children's multimodal engagement opens new forms of interaction with heritage, strengthens participatory practices, and reflects broader transformations of institutional identity in the digital age, ensuring sustainable engagement of future audiences.

Key words: *digitalisation, discourse, children's engagement, interactive resource, media, modus, multimodality, museum website.*

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1. INTRODUCTION

In the digital age, museum websites are increasingly transforming into autonomous environments for the representation of cultural, natural, and scientific heritage, where multimodality functions as a fundamental principle in shaping communicative practices. For younger audiences in particular, the integration of semiotic channels of interaction provides access to information about collections and creates new scenarios of play, exploration, and interpretation of cultural heritage. Within this context, the websites of leading British institutions, namely the British Museum, the Victoria and Albert Museum, the Natural History Museum, the National Gallery, and the National Portrait Gallery, emerge as representative models of digital museum discourse, where multimodal content structures fulfil cognitive, navigational, and institutional functions while also supporting child-centred strategies of discovery and participation. The analysis of these resources makes it possible to trace the specificity of semiotic organisation, rhetorical strategies, and conceptual frameworks that shape communication with young audiences in digital environments.

Growing integration of digital technologies into museum communication highlights the urgency of examining how cultural institutions address children as active participants in heritage interpretation. The relevance of this research is determined by the fact that museum websites increasingly function as autonomous environments where multimodality constitutes the semiotic framework through which interaction is realised. In discourse studies, play is viewed as a meaning-making practice, which underlines the importance of children's engagement with these multimodal spaces. By combining linguistic, visual, auditory, tactile, gestural, and spatial modes, museum websites expand access to collections and reposition the child from a passive recipient to an active interpreter of cultural heritage.

The object of the research is the digital discourse of contemporary museums, viewed as a multimodal communicative environment. Child-centred multimodality of museum websites, expressed through semiotic organisation, communicative strategies, and interactive formats is the subject.

The goal is to analyse how multimodality in museum communication constructs children's exploratory interaction with cultural heritage.

The empirical data comes from the websites of leading London museums, specifically the British Museum, the Natural History Museum and the National Gallery.

The study aims to establish the theoretical and methodological foundations for analysing digital museum discourse, identify multimodal strategies shaping children's exploratory engagement, systematise communicative techniques embedded in interactive design, and interpret how multimodal configurations

contribute to the transformation of institutional identity within contemporary museum communication.

2. METHODOLOGY

The methodological framework integrates multimodal discourse analysis, comparative semiotic analysis, and elements of qualitative content observation. The material was selected according to three criteria: explicit orientation toward child audiences, the presence of multimodal and interactive design, and the accessibility of digital resources on official museum websites. The analytical process unfolded in three stages: first, descriptive cataloguing of multimodal resources and interface features; second, semiotic and rhetorical examination of visual-textual correlations; and third, interpretative synthesis focused on communicative and pedagogical implications. Throughout all stages, the study employed methods of observation, comparison, and interpretation characteristic of multimodal and discourse research.

During the formative stage of online museum resources in the 1990s–2000s (the so-called first wave), websites were primarily associated with informative and experimental functions, offering an initial expansion of museum presence into the virtual domain [3]. The COVID-19 pandemic revealed the broader relevance of this potential, as museums worldwide intensified digital engagement, though online formats largely operated as a temporary substitute for the physical visit rather than a full-fledged alternative [4]. Yet the effectiveness of digital solutions became most evident in communicative formats oriented towards interaction and participation, especially those that encouraged playful involvement of children and families. The activation of visual, auditory, and interface resources contributes to the formation of emotional involvement, conceptualised as a "museum digital atmosphere" [7].

At the same time, museum communication has been adapting to new social practices, including influencer marketing [6], gamification, and personalised interaction. Playful strategies such as quizzes, creative challenges, and edutainment scenarios have proved particularly effective for engaging younger audiences, fostering both entertainment and learning. Nevertheless, the absence of integrated strategies continues to limit the potential of digital engagement in many institutions [1]. In general, contemporary museology increasingly defines digital platforms as spaces not only of presentation but also of transformation of institutional identity, reflecting broader processes of cultural change [5; 2].

In light of this, the analysis of specific cases of digital communication in the museum environment makes it possible to investigate how the principles of multimodality are realised at the level of web interfaces and content structures, and how they contribute to positioning children as active explorers of cultural heritage in the digital museum space. The integration

of play and learning within these environments corresponds to broader social semiotic perspectives, where meaning-making is always embedded in practice and shaped by the affordances, meaning potentials, and activity potentials of designed resources [8]. Affordance refers to the material and functional qualities of an object or resource that enable certain actions. These affordances are then culturally interpreted and stabilised into meaning potential, which frames how the object represents the world and how it is understood in a given practice. At the same time, they are inscribed with activity potential, which directs how the object can be used interactively within specific contexts of learning and play. Museum websites, when viewed through this lens, do not merely provide information but orchestrate environments where children encounter digital resources with layered potentials: images, captions, interactive buttons, and downloadable guides all afford different ways of acting, carrying meaning potentials shaped by institutional narratives, and offer activity potentials that structure how children may explore, interpret, or extend their learning. In this sense, museum websites may be understood both as channels of information delivery and as curated environments of discovery, in which children's interaction with multimodal resources resembles the open-ended explorations of toys and games. Digital activities on museum platforms, much like play objects, thus mobilise affordances that open representational and interactive pathways, guiding children toward knowledge acquisition and exploratory engagement.

3. RESEARCH FINDINGS

This interplay of affordances and potentials is realised on the British Museum's website through the *Family sensory support backpacks* – special sets available at the Families Desk in the museum's Great Court,

designed to introduce children to the exhibition via sensory play and to structure the visit as an exploratory learning process (Fig. 1).

The “*Backpacks*” page visually foregrounds the idea of a comfortable and child-centred experience, where the museum space is reinterpreted not only as a site of knowledge transfer but also as a safe and imaginative setting for exploration. The central image on the page depicts a child with a brightly coloured backpack, surrounded by sensory play objects, such as a magnifying glass, the illustrated book *Colours*, and a multicoloured toy, accompanied by an adult seated nearby. The compositional focus draws attention to the child's interaction with objects, visually articulating the connection between play and learning. The semiotic framing of the photograph appeals to notions of curiosity, discovery, and security, while simultaneously constructing the scenario of exploratory play as a legitimate mode of interpreting the museum environment.

The caption “*Child with Little Feet: Alfred the explorer backpack*” that appears upon activating the interactive “i” button introduces a nominative element that individualises the depicted child and provides a personalised narrative frame. In this semiotic move, the museum positions the young visitor as an “explorer,” thereby aligning the museum visit with the imaginative logic of a quest. Spatial arrangement of the objects, in particular the clear positioning of the backpack in the foreground, visually focuses attention on it as the principal means of integration into educational communication.

The structural organisation of the page demonstrates a complex layering of modes. Verbal elements are realised in the form of informational blocks and hyperlinks that provide contextual details and instructions. Visual accents include contrasting fonts

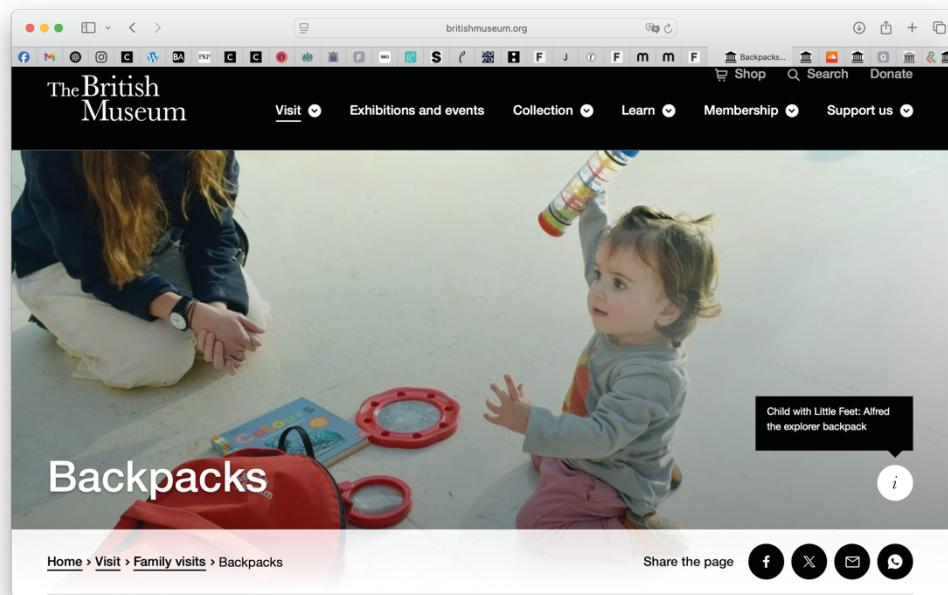


Fig. 1. Webpage Backpacks, 25.06.2025.

and accessibility markers, which ensure readability and inclusivity. Interactive components are integrated through functions such as the “i” button and the download option for the Gallery backpack sensory guide. The hypertextual insert “Please download the *Gallery backpack guide – sensory guide*” extends interaction beyond the boundaries of the page. This element plays a crucial role in the multichannel construction of the museum interface, where each user can choose their preferred mode of interaction – textual, visual, or sensory. It activates the digital modality by encouraging action, not merely informing but directing the user toward a new engagement channel. The hyperlink operates simultaneously as an informative and imperative device, mediating the transition between different navigational nodes of the museum website.

The contents of the backpacks are presented on the museum’s website in the form of a downloadable PDF guide, which realises a multimodal model of learning through play and is specifically designed to engage children aged 3–16 in independent, sensory-rich exploration of the museum environment. Each backpack is thematically associated with a particular cultural epoch or region, for example *Life in Ancient Greece*, *African Adventure*, or *Jobs in Roman Britain*, and contains a carefully selected set of items: magnetic figures, samples of textiles and materials, toys, aromatic containers, MP3 audio guides, visual puzzles, as well as masks, styluses, mosaic pieces, and other tactile resources. These objects are supplemented by instructive booklets that propose tasks involving observation, touch, reconstruction, or narrative play. In this way, the tactile channel is activated through artefacts such as masks, cylinder seals, amulets, or fragments of architectural structures, creating an embodied experience of material culture. Simultaneously, the auditory modality is engaged through the listening of myths, for instance the Labours of Hercules or descriptions of Roman deities, which enrich the cultural frame of reference and expand the interpretative possibilities of the child’s encounter with the collection.

The interactive structure of the tasks is based on the principle of narrative-modular organisation, ensuring that tactile, visual, auditory, and olfactory channels of perception are consistently activated and intertwined. This design supports a deeper emotional and cognitive immersion into the exhibition context, moving beyond the passive reception of information toward embodied multimodal participation. Already on the first page of the booklet, the system of multimodal orientation is made explicit through pictograms (Fig. 2; Fig. 3), symbolising the principal perceptual modes: visual (eye), olfactory (nose), tactile (hand), auditory (ear). Each pictogram is accompanied by an imperative verb (Look, Smell, Feel, Listen), and marked in a colour-coded system: green for vision, blue for smell, orange for touch, and purple for hearing. This colour-semiotic navigation continues throughout the entire booklet, where the names of the

perceptual modes are highlighted in the corresponding colour. Such design ensures cognitive consistency, strengthens associative connections, and facilitates orientation within the task sequence. In doing so, the booklet exemplifies how the multimodal resources of the museum website extend into the child’s embodied interaction with the exhibition space, framing the museum visit as both structured learning and playful exploration.

For example, in the *Life in Ancient Greece Backpack*, the activity *Feel the tunic and cord belt* is highlighted by the orange-coloured verb *Feel* and accompanied by a photograph of the corresponding clothing item, directing the child toward embodied re-enactment of ancient dress. The task *Smell each of the 3 containers*, related to olfactory interaction with substances such as olive oil, wine, and perfume, is marked by the word *Smell* in blue, framing the olfactory channel as a legitimate modality of knowledge acquisition. In the fragment *Listen to the story of Hercules’ Labours*, the auditory mode is activated, labelled in purple with the imperative *Listen*, while visual activity is foregrounded in the task *Look at the pictures and put them in the correct places to recreate the Nereid Monument*, where the word *Look* is highlighted in green. Each mode is thus explicitly coded through a chromatic and verbal system that stabilises orientation and renders the principles of multimodality transparent to the young user (Fig. 2; Fig. 3).

Within the digital segment of the website dedicated to the at-home museum experience, a series of multimodal activities for children is presented, many of them adapted from the Early Morning Explorers programme [<https://www.britishmuseum.org/sites/default/files/2020-02/EME%20Creatures%20Visual%20Story%20PDF.pdf>]. These resources extend the spatial and temporal boundaries of museum communication into domestic settings and, at the same time, establish play as an intermodal cognitive tool. A representative case is the PDF guide *Build Your Own Trojan Horse* (Fig. 4) [https://www.britishmuseum.org/sites/default/files/2023-11/Build_your_own_Trojan_Horse.pdf], which combines instructional text with visual templates for cutting, colouring, and assembling. Through this resource, the child is invited to reconstruct a mythological narrative by means of manual activity, activating visual, motor, and narrative modalities simultaneously. The sequential instructions such as pushing slits together, cutting out wheels, attaching straws, and finally assembling the horse scaffold a process of learning through making, where tactile engagement and narrative framing converge.

Another illustrative example is the scenario *The Story of Odysseus* [https://www.britishmuseum.org/sites/default/files/2023-11/EME_Revisited_The_story_of_Odysseus_script.pdf], which is structured as a sensory storytelling activity. Here, the child is expected to use familiar household objects such as rice, foil, fabric, or fruit to represent natural phenomena or

mythological characters. The activity mobilises multiple sensory channels: auditory perception is activated by the narrator's voice, tactile involvement emerges

from the manipulation of materials (tissue paper as waves, cushions as rocks), gustatory perception may be engaged through fruit, while sound effects create an

The British Museum

What's inside a Gallery backpack?

Gallery backpacks are designed to engage families with the galleries. They include an activity booklet which will guide you around the museum, giving you information about the collection and activities you can complete along the route.

Available every weekend throughout the year from the Families desk in the Great Court. Each activity backpack can take up to 90 minutes to complete, and there is limited availability.

The descriptions give an overview of items and activities in each backpack. The sensory experiences for each backpack are colour coded using the key below.



Look



Smell



Feel



Listen

Life in Ancient Greece Backpack

This bag contains 6 activities.
Suitable for ages 5–9.



Feel the tunic and cord belt.

Use them to dress up as an Ancient Greek.



Look at the pictures and put them in the correct places to recreate the Nereid Monument, a large tomb built 2400 years ago.



Smell each of the 3 containers. Each one smells of a different item kept in Ancient Greek pots. (Olive oil, wine and perfume).



Listen to the story of Herakles' Labours.

Look at the 5 pot paintings and place them on the large pot in the order Herakles carried them out in the story.

Fig. 2–3. Pages from the children's sensory guide Gallery backpack sensory guide, 25.06.2025

Build your own Trojan horse

3 Push the slits of one of the rectangular pieces over the top of the horse pieces, just in front of the tail.



Push the slits of the other rectangular piece over the top of the horse pieces, just behind the mane.

4 Cut out your 4 wheel pieces from template 3.



5 Take your paper straws and slide them through the holes of the wheels and the bottom of the horse pieces. Trim the straws if you like.



6 Set your Trojan horse before the gates of Troy and hope they fall for it!



Dive into the world of the Nereids

Create your own 'Under the sea' sensory bin

Room 17

Ideas for your sensory bin



To recreate sand, you can use:

- Oats
- Sugar
- Crushed up pasta

Lay the rice and 'sand' into a tray or box as the base for your sensory bin.



Tin Foil Fish
Cut out a range of fish shapes from tin foil – you can draw on scales and fins with a pen or pencil.

The silver reflects light like scales.



Seaweed
Seaweed can be recreated by:

- Green wool
- Shredded green paper
- Ribbon
- Material cut into thin strips



You can add anything to your sensory bin that you want to! Get creative with items around your house.

This one includes:

- Tin foil fish
- Pebbles
- Shells
- A cardboard starfish
- Green paper shredded to make seaweed

Fig. 4–5. Pages from the series of multimodal activities for children Build your own Trojan Horse and Dive into the world of the Nereids, 25.06.2025.

additional atmospheric layer. The outcome is a poly-channel perception of narrative, in which the myth is not only heard but also felt, touched, and re-created through everyday artefacts.

The activity *Parthenon Challenge* [https://www.britishmuseum.org/sites/default/files/2023-08/Parthenon_Challenge.pdf] further demonstrates how multimodal strategies combine digital and material practices. The resource includes a concise historical introduction to the Parthenon, tasks based on Google Street View navigation of Gallery 18, and a visual puzzle of a Metope, designed as a cut-out construction set that the child must physically assemble. Therefore, interaction with cultural heritage is achieved through digital spatial navigation, cognitive interpretation of visual samples, and the transformation of two-dimensional images into three-dimensional artefacts. The process exemplifies the integration of virtual exploration with hands-on creativity, reinforcing the museum's role as both a digital guide and a material workshop of cultural knowledge.

The play set *Dive into the World of the Nereids* (Fig. 5) [<https://www.britishmuseum.org/sites/default/files/2023-11/Nereid-sensory-bin.pdf>] invites children to construct an underwater world at home, using accessible materials such as coloured rice, oats, or sugar to imitate sand, and tin foil or ribbons to represent fish and seaweed. With the guidance of an adult, children are encouraged to activate their sensory perception through colour, texture, smell, and spatial organisation, while simultaneously reconstructing an exhibition narrative within the home environment. The tactile manipulation of improvised artefacts, combined with the imaginative projection of mythological sea creatures, turns the domestic setting into a semiotic extension of the gallery space.

Complementing this series is a PDF set dedicated to the sea nymphs – the Nereids, which provides concise mythological information accompanied by visual material, including photographs of ancient statues and stylised outline drawings [https://www.britishmuseum.org/sites/default/files/2023-11/Nereid_colouring_sheets.pdf]. The resource is structured as an interactive

task in which the child is invited to visually reconstruct the image of a mythological figure. The activity suggests choosing one of the statues as a source of inspiration and then drawing or colouring a personalised version of a Nereid using the provided templates. The task mobilises the visual modality and stimulates creative thinking, while simultaneously activating the child's interpretative potential. The child is not simply reproducing a given model but is encouraged to generate a personally meaningful representation, thereby fostering an affective and imaginative connection with the exhibition material through the medium of creative play (Fig. 6; Fig. 7).

The digital dimension of interaction is reinforced by the explicit invitation to extend the activity into the online sphere: users are encouraged to photograph their completed artworks and share them on Twitter using the tag *@britishmuseum*. This communicative gesture integrates the virtual and the physical, transforming a domestic act of drawing or colouring into a form of participatory dialogue with the museum. It exemplifies how children's creative outputs can circulate within broader digital networks, positioning them not only as recipients of museum knowledge but also as contributors to its multimodal discourse. This activity transcends the boundaries of the gallery, extending museum engagement into hybrid spaces where cultural heritage is reinterpreted through children's imaginative agency and publicly displayed within social media environments.

A comparable strategy of integrating play, creativity, and digital interactivity can be observed on the website of the Natural History Museum, where the section *Activities for all* is dedicated to family-oriented and child-centred engagement. Here, three thematically oriented segments are distinguished: *Family and youth group adventures*, *Backgarden exploration and projects*, and *Indoor science and crafts for when you can't get outside* [<https://www.nhm.ac.uk/take-part/activities-for-all.html>]. This tripartite organisation reflects the museum's ambition to adapt content to different spatial and temporal contexts of use, namely collective visits, outdoor explorations, and domestic settings.

Dive into the world of the Nereids

The Nereids (sea nymphs or water spirits), were the daughters of the sea god Nereus and of Doris, the daughter of Oceanus. The Nereids were helpers of Poseidon, the Greek god of the sea.

They were often shown in human form, dressed in white silk robes trimmed with gold, riding on the back of dolphins or the Hippocamps (the horses of the sea). They were occasionally drawn with the tail of a fish.

The Nereids symbolised everything that is beautiful and kind about the sea.



Dive into the world of the Nereids



Fig. 6–7. Pages from the series of multimodal activities for children *Dive into the world of the Nereids*, 25.06.2025

The multimodal design of the page is explicitly aimed at stimulating active engagement with the content, achieved through a combination of instructional and educational materials, dynamic visual design, and navigational interface elements. At the same time, the layout and verbal framing underscore the inclusive character of communication, presenting science as an accessible and playful domain in which children and families can participate on their own terms.

The section *Family and youth group adventures* focuses on the organisation of shared leisure practices for families and youth groups [<https://www.nhm.ac.uk/take-part/activities-for-all.html#adventures>]. Verbal instructions are consistently paired with illustrative images and framed by a clear navigational structure, which facilitates participation in collaborative, nature-oriented tasks. A central element of this design is the interactive component, expressed in the possibility of navigating via hyperlinks to individual activities adapted to different age-groups.

The section *Outdoor activities for kids* exemplifies a visually oriented interactive game that integrates multimodal design principles into the museum's online communication [<https://www.nhm.ac.uk/take-part/outdoor-activities-for-kids>]. Entry into the activity sequence begins with pressing the button Make, play and explore, which directs the user to a start page marked by the invitation: "Fun, free things to do in a park, on the street, or anywhere outdoors." By clicking Get started, the user enters a dynamic environment where an animated insert "Searching for activities..." precedes a gallery of tasks, each accompanied by a vivid photograph and a short textual description. The synergy of verbal and visual cues provides immediate clarity of

action while preserving a playful, game-like interface [<https://www.nhm.ac.uk/take-part/outdoor-activities-for-kids/random?activity=stick-throw%2Canimal-gift%2Csticky-plant%2Chide-and-seek%2Cbalance-stone%2Chave-a-slow-worm-race>].

Visual elements here serve as the principal navigational markers. For instance, the task *Make a den* is illustrated with an image of a boy constructing a shelter out of branches (Fig. 8). Other examples include *Balance a stone on the back of your hand*, *Sculpt a flower or flames using leaves*, *Hide and seek*, and *Beat your wings like a honeybee for 20 seconds*. Each photograph anchors the activity in a recognisable visual schema, while the underlining of task titles upon cursor hover functions as an interface signal of active interactivity. This interplay of verbal labels, images, and interface cues constructs a multimodal logic of participation that guides the child through both recognition and action.

Each activity opens on a separate page containing step-by-step instructions. For example, in *Make a den*, the child is instructed: "Using fallen sticks and leaves, build yourself a den", with an indication of the approximate time required (30 minutes). Gamified elements are incorporated to sustain motivation: upon completion of the task, a confetti animation appears on the screen alongside the message "Yay, you did it!". The reward is supplemented by a nature joke "Why was the tree fern lonely in the winter? Because it lost all its fronds.", which adds a humorous dimension and situates the child's achievement within a playful communicative frame. The final stage of interaction displays a bright block with a star icon and the caption "You are an outdoor star!", reinforcing the affective dimension of accomplishment (Fig. 9; Fig. 10).

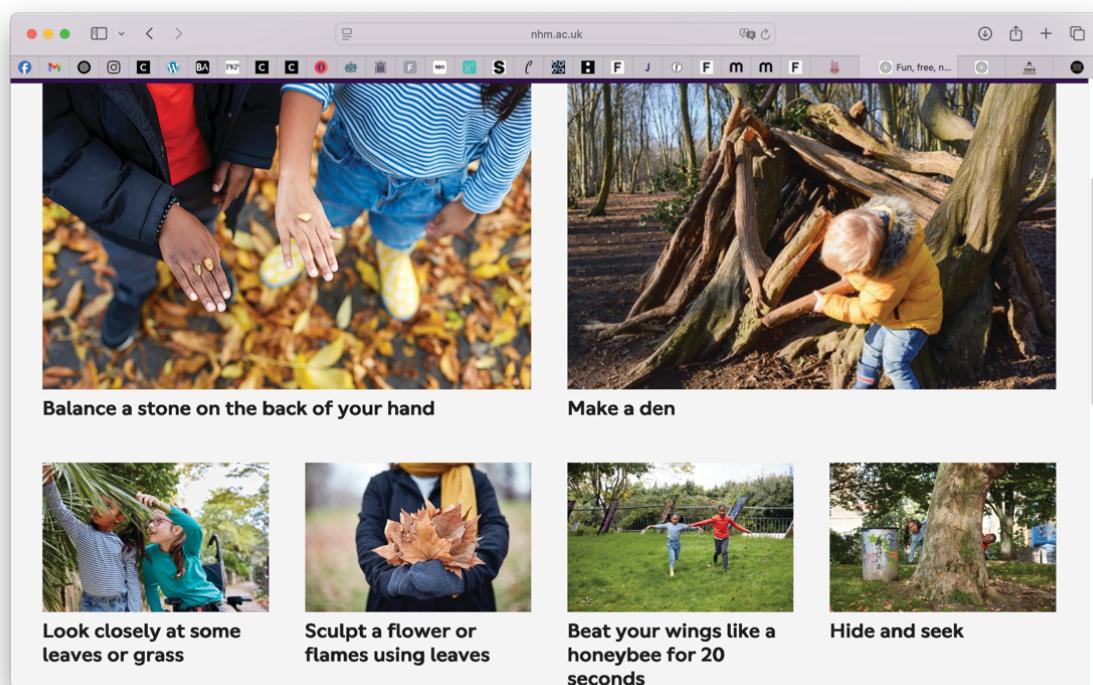


Fig. 8. Task gallery, 26.06.2025

Each activity is also supplemented by an additional challenge under the heading *Go further*, which stimulates higher levels of creative problem-solving. In the case of den-building, the child is asked to improve the structure so that it becomes waterproof: “*Can you try and make your den waterproof so it will shelter you in the rain?*” This extension transforms a simple construction exercise into an open-ended inquiry, encouraging improvisation and resilience in interaction with natural materials.

The interface maintains continuity of engagement by offering recommendations for new activities under the label *Try something else*, each accompanied by visual previews. Examples include *Make a mud face* or *Spot different colours on tree trunks*, which extend the spectrum of exploratory possibilities. Altogether, the verbal instructions, visual anchors, gamified feedback, and navigational prompts converge to form a unified multimodal mechanism of communication.

In the section *Backgarden exploration and projects*, emphasis is placed on ecological education and hands-on interaction with the natural environment [<https://www.nhm.ac.uk/take-part/activities-for-all.html#backgarden>]. The activities presented, such as building a hedgehog house, constructing bird feeders and baths, or creating insect hotels for bees and ladybirds are supported by multimodal instructions that combine verbal explanations, visual cues, and in many cases video demonstrations. This integration of

textual, visual, and dynamic resources enables children to follow each step of the project while simultaneously understanding the ecological rationale behind their actions. The presence of the button *Browse more ideas for projects* extends the pathway of engagement, inviting users to personalise their trajectory and to continue exploration according to their own interests.

The section *Indoor science and crafts for when you can't get outside* presents science-oriented activities designed for the home environment [<https://www.nhm.ac.uk/take-part/activities-for-all.html#indoor>]. These include *modelling a volcano from everyday materials*, *making origami in the shape of dinosaurs*, or *creating animal-shaped snowflakes* (Fig 11; Fig 12). Each activity is accompanied by carefully structured step-by-step instructions, vivid photographs, and functional interface elements such as hyperlinks and embedded videos. The result is a multimodal format of learning through play, where the interweaving of visual, textual, and procedural channels ensures clarity of execution while at the same time stimulating curiosity and creativity. By presenting science as a set of playful experiments, the museum transforms the domestic space into a temporary laboratory, enabling children to experience discovery beyond the boundaries of the institution.

In addition to these thematic sections, the Natural History Museum’s digital exhibition offers an interactive three-dimensional model of the skull of

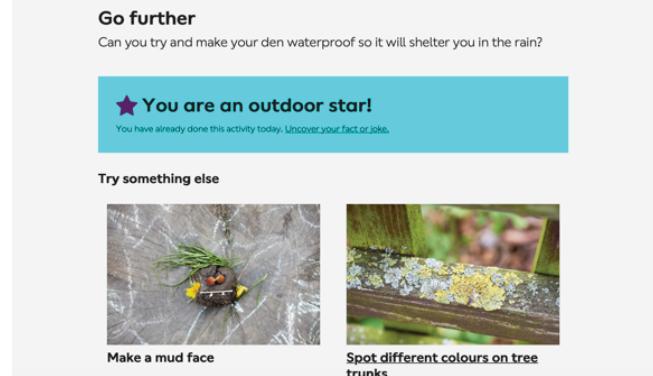
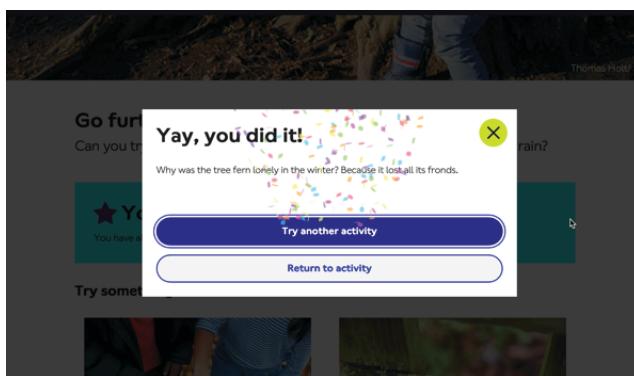


Fig. 9–10. Visual interface elements, 26.06.2025

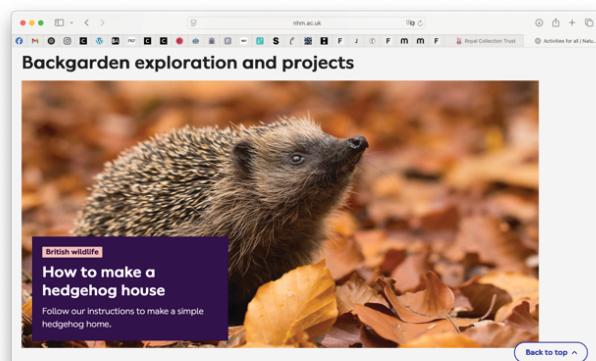
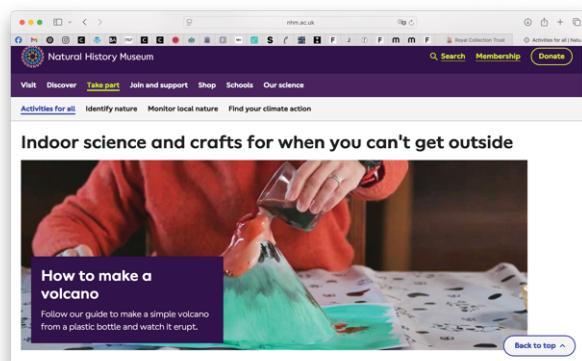


Fig. 11–12. Pages with creative interactive projects for children, 26.06.2025



Fig. 13. Page featuring the three-dimensional model of the dinosaur skull Dippy, 30.06.2025

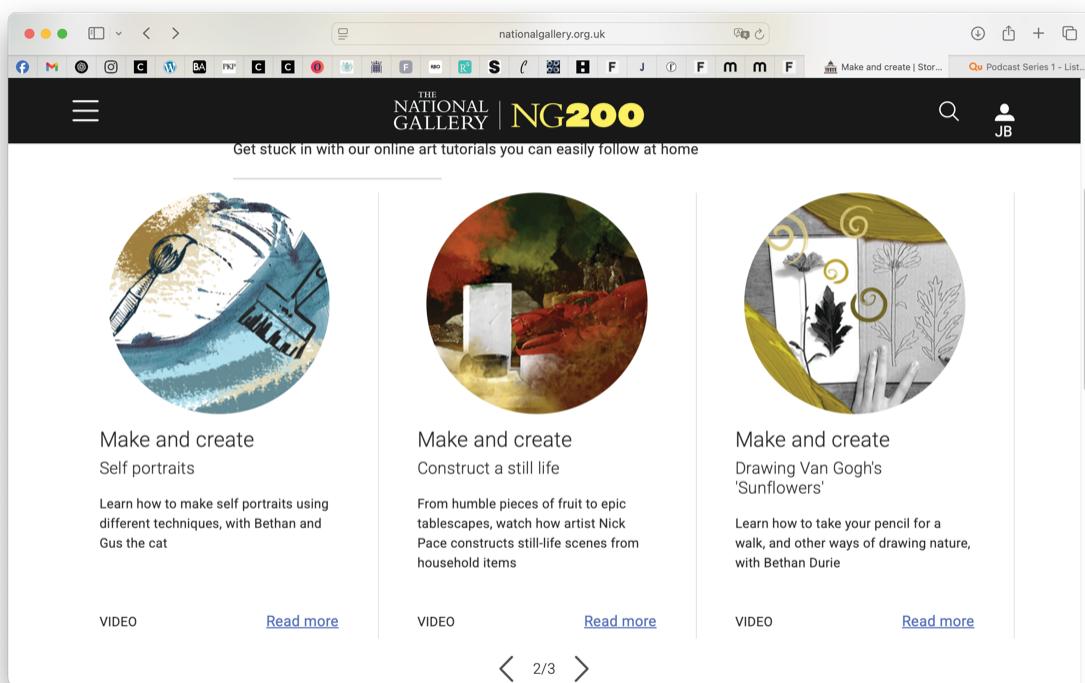


Fig. 14. Page from the section Make and Create, 30.06.2025

Diplodocus carnegii, known as Dippy, which exemplifies the possibilities of advanced visualisation of museum objects. On the page *Come face-to-face with Dippy the dinosaur* (Fig. 13) [<https://www.nhm.ac.uk/discover/dippy-the-dinosaur-3d-skull.html>], a volumetric rendering of the fossil, created by the museum's Imaging and Analysis Centre using the Sketchfab platform, is made available to users. The model allows for rotation, zooming, and detailed inspection, and incorporates interactive hotspots with annotations that combine visual exploration with textual commentary. The visitor engages simultaneously in visual perception, motor interaction (gestural movements such as click-and-drag rotation), and linguistic interpretation.

Additional textual prompts embedded within the interface, for example “*Can you find Dippy’s nostrils?*” or “*What feature does Diplodocus share with humans but few other dinosaurs?*” function as stimuli for cognitive activation. They transform observation into

an interactive inquiry, inviting children to search, compare, and hypothesise rather than passively consume information. The visual design reinforces this orientation: a light background, large-scale rendering of the skull, and minimalist branding elements ensure that attention is directed toward the artefact itself, while maintaining clarity and usability across different devices. Altogether, the presentation of Dippy demonstrates how digital technologies can support multimodal learning experiences in which interaction, exploration, and knowledge acquisition are interwoven into a unified communicative design.

The multimodal practices of the Natural History Museum, ranging from outdoor quests to domestic experiments and digital reconstructions, reveal how scientific knowledge can be reframed through play and interaction. A parallel logic of discovery is visible in the digital resources of the National Gallery, where children are encouraged to explore artistic heritage through

creative reproduction and hands-on engagement.

The *Make and Create* section (Fig. 14) of the National Gallery's website is specifically designed to promote remote artistic participation through multimodal instructions for independent creative reproduction. Each activity integrates video tutorials, textual explanations, visual exemplars, and a list of required materials, thus constructing a comprehensive environment that guides the user through the process of making. For instance, in the project '*A collage inspired by Rousseau's 'Surprised!'*', children are encouraged to create their own collage using everyday resources readily available at home, such as magazines, glue, and paper. This design makes it possible to reproduce aspects of the museum experience within the domestic sphere, engaging not only visual and auditory modalities but also kinaesthetic and tactile ones.

The structure of the *Make and Create* page highlights how art-making is framed as both accessible and exploratory [<https://www.nationalgallery.org.uk/stories/make-and-create>]. By providing clear verbal instructions, visual step-by-step samples, and interactive video support, the Gallery guides the child's creative process while also allowing space for individual interpretation. The use of simple, familiar materials underscores the democratic character of the activity, conveying the message that artistic exploration is not limited to professional tools or museum walls but can emerge from ordinary household resources. As a result, children are positioned as active creators of meaning rather than passive observers of masterpieces, while the boundaries of museum engagement are extended beyond institutional walls into the everyday environment of the home.

4. CONCLUSIONS

Conducted analysis demonstrates that the digital discourse of contemporary museums evolves as a

multimodal environment where children are addressed not as passive visitors but as active explorers of cultural heritage. The interplay of linguistic, visual, auditory, tactile, gestural, and spatial modes allows museums to shape exploratory practices in which play converges with learning. British museums, in particular the British Museum, the Natural History Museum, and the National Gallery, provide representative models of such communication. Their online resources exemplify how institutional identity is reframed through multimodal strategies. These initiatives illustrate how multimodal design transforms museum websites into curated environments of interaction, where meaning is co-constructed by children through exploratory practices.

The findings also align with wider tendencies in contemporary linguistics and discourse studies, where play is conceptualised as a meaning-making practice and multimodality as a central organising principle of digital communication. Museum websites thus appear both as extensions of institutional presence in the virtual space and as platforms of multimodal discourse, contributing to the expansion of sensory vocabularies, the diversification of communicative strategies, and the transition from passive reception to active participation in cultural meaning-making.

Comparative analysis of multimodal strategies across museum contexts, with attention to age groups and their changing needs, offers scope for deeper exploration. A combined methodological approach is required to assess the impact of visual, auditory and tactile channels on engagement and learning outcomes. Particular significance lies in the study of inclusive formats for visitors with neurodiversity and sensory differences, alongside examination of how digital platforms interconnect with on-site experiences. Collaboration between museums and educational institutions remains essential for adapting practices to the needs of diverse audiences.

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Білюк Юлія Едуардівна – аспірант кафедри англійської філології та міжкультурної комунікації Навчально-наукового інституту філології Київського національного університету імені Тараса Шевченка; e-mail: JuliaBiliuk@gmail.com; ORCID: 0009-0000-0242-0250; GOOGLE SCHOLAR: <https://scholar.google.com/citations?user=NjSd3PkAAAAJ&hl>; RESEARCH GATE: <https://www.researchgate.net/profile/Julia-Biliuk>

МУЛЬТИМОДАЛЬНІ СТРАТЕГІЇ ДИТЯЧОЇ ДОСЛІДНИЦЬКО-ПІЗНАВАЛЬНОЇ АКТИВНОСТІ У ЦИФРОВОМУ ДИСКУРСІ БРИТАНСЬКИХ МУЗЕЙІВ

Упровадження цифрових технологій у діяльність музеїв трансформувало підходи до комунікації з аудиторією, зокрема з дітьми. Сьогодні вебсайти музеїв функціонують як автономні середовища репрезентації культурної та природної спадщини, де мультимодальність виступає визначальним принципом. У цифровій музейній комунікації мультимодальність, зорієнтована на дитячу аудиторію, відкриває перспективний напрям для наукових досліджень. Актуальність цього дослідження полягає у необхідності осмислити, як мультимодальні практики трансформують роль дітей – від пасивних реципієнтів до активних учасників культурної комунікації. У статті досліджено, як мультимодальні ресурси вебсайтів музеїв створюють умови для активного дослідження культурної спадщини юною аудиторією, демонструючи, що провідні інституції застосовують стратегії, спрямовані на залучення дітей як повноправних учасників культурної комунікації та освітнього процесу. Дослідження здійснено в межах мультимодального дискурс-аналізу, який поєднує структурно-семіотичне спостереження та порівняльний аналіз вебінтерфейсів і освітнього контенту провідних британських музеїв. На основі аналізу вебсайтів Британського музею, Природничого музею та Національної галереї показано, що сенсорні рюкзаки, інтерактивні гіди, творчі завдання та освітньо-розважальні активності створюють умови, за яких діти получаються до вивчення експонатів і активно взаємодіють з простором музею. Структурування завдань поєднує тактильні, аудіальні та візуальні канали взаємодії, тоді як інтерактивні елементи розширяють комунікацію між різними платформами та створюють цифрове середовище, що стимулює допитливість, залученість і емоційний відгук. Такі практики підкреслюють зростаючу роль цифрових платформ як середовищ, де музей випробовують нові педагогічні та комунікативні моделі, орієнтовані на дітей. Вебсайти музеїв постають як інформаційні ресурси та водночас як організовані мультимодальні середовища, де гра, інтерпретація та дослідження формують комунікацію з дітьми. Акцент на дитячій аудиторії та використання мультимодальних підходів розширяють можливості для взаємодії з культурною спадщиною, створюють умови для активної участі та демонструють процеси зміни інституційної ідентичності в цифрову добу, підтримуючи зв'язок із майбутніми поколіннями.

Ключові слова: вебсайт музею, дискурс, залучення дітей, інтерактивний ресурс, цифровізація, медіа, модус, мультимодальність.

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