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APPRENDIMENTO NELLE
COLLEZIONI PEDAGOGICHE**

a cura di Sandra Chistolini

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Object-based learning and the pedagogical value of historical-educational collections

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Introduction: the multifaceted values of pedagogical and school objects

The aim of this contribution is to explore the pedagogical value of historical collections of educational objects and school materials. These collections are still preserved in schools, research centres, and museums of educational history managed by universities, private foundations, and municipal bodies. To reach our aim we should, first, refer to what educational theories say about the use of material objects in teaching and learning. For this purpose, the history of education and pedagogical thought can be helpful, offering many examples of thinkers, educators, and movements that have highlighted the value of teaching techniques based on the active engagement with objects. Even before John Dewey and the pedagogical activism of the New Schools, many educators have affirmed the importance of the intuitive method based on sensory and direct experience in learning: such as Pestalozzi, John Locke, and Jean-Jacques Rousseau (Carter, 2018). But going back, the oldest testimony of the importance of sensory and direct experience in learning is represented by Jan Amos Komensky, author of the first manual of intuitive methods *Orbis Pictus* (Calò, 1950; Crupi, 2017).

From this perspective, museums in general – with their collections of artifacts, specimens, and tangible resources – have rightly been recognised as privileged spaces for sensory and object-based learning, consistently valued by educators and scholars such as Durbin et al. (1990), Scott Paris (2002), Helen Chatterjee (2008), Sandra Dudley (2009, 2012), Nina Levent and Alvaro Pascual-Leone (2014) or Elizabeth Wood and Kiersten Latham (2016), among others. In the specific case of educational heritage museums, however, as educators working with educational materials, we can all testify to how visitors of all

ages – children, adults, and seniors alike – can easily and immediately make a personal connection with the objects in the collections we manage in our museums and research centres. This connection is facilitated by the diverse uses we can make of school objects, as the educational historian Antonio Viñao Frago (2012) has illustrated: the nostalgic use, when the items help to remember the school experience and the childhood; the commemorative use, which determines which items are worthy of being remembered as part of the collective and public memory; the historical use, made by scholars when they consider school items as material sources; the pedagogical use, linked to the fact that each school item is designed to serve as a specific educational tool; the commercial use, which reflects the importance and significance of the items on the market.

Viñao Frago's reflection highlights how and to what extent school materials can fulfil multiple functions. Not only are the school objects part of a larger collection that outlines the history of the Italian school system, but even as individual objects they are capable of awakening forgotten and scattered memories in visitors. They can help individuals to connect with their own past, as well as that of their parents or grandparents, thus contributing to the development of a true biographical sense and identitarian belonging (nostalgic and commemorative use). Furthermore, a significant number of historical school objects continues to possess intrinsic value as educational resources. I am referring to all those materials which have been defined by Juri Meda (2010) as 'pedagogical teaching aids' that is materials designed by educationalists such as the Italian Maria Montessori, Rosa and Carolina Agazzi, and Giuseppina Pizzigoni. These latter objects are significant in two ways: firstly, they serve as testimonies to the material culture of the school; secondly, they are products of the author's pedagogical thought. The intrinsic value of these materials ensures that they remain relevant and do not become obsolete, in contrast to other school materials. Consequently, they can be optimally exploited in museum contexts and formal educational settings, such as schools that adhere to the mentioned pedagogical methodology, and university classes where pre-service teachers are trained in the same methodology and pedagogical thought.

Regarding the concept of object-based learning (OBL), it is important to acknowledge that since the early 2000s, this term has gained significant currency in the field of education. OBL can be defined as a teaching method that involves the active utilisation of authentic museum objects and specimens to facilitate learning, both within and beyond the museum environment. Its aim is to enhance deep learning and observation skills in formal educational contexts across various subjects from art, to science, to history and so on. This development owes much to the efforts of numerous scholars and research groups, such as that led by Helen Chatterjee at University College London

(Chatterjee & Hannan, 2015; Kador, Chatterjee & Hannan, 2017). In Italy also, notable research has been conducted by Antonella Poce (2020) and others. In evaluating this approach, it is also important to consider the educational methodologies that seek to empower the ‘inquiring child’ through active and meaningful engagement with objects in a variety of contexts, both familiar and unfamiliar. This perspective is shared by many pedagogies, from Montessori method to the Reggio Emilia approach, and has been brilliantly illustrated by the research conducted by Monica Guerra (2019).

With these diverse scenarios in mind, the following pages will illustrate the educational value of school objects, with a particular emphasis on the multimodal learning processes facilitated by museum visitors’ interaction with materials, owing to their inherent materiality. Furthermore, school objects can act as powerful mnemonic and symbolic landmarks, prompting visitors to recall, narrate and share memories and, in the end, facilitating self-identification within the broader cultural context of school culture.

1. Museum objects as triggers of multisensory and interactive experience

The pedagogical potential of collections in museums can be explored in several ways.

First of all, museum objects are strong catalysts of multisensory experience. When we consider historical artifacts as authentic testimonies of past, it’s undeniable that they have always held a fascination. They, in fact, bear witness to diverse worlds and cultures, offering glimpses into the lives of real men and women, and enabling us to travel back in time and experience the past. As a tangible expression of past material culture, these objects inherently possess a greater capacity to capture people’s attention in the museum than abstract language, compelling stories, photographs, or other media. In this regard, anthropologist and museologist Sandra Dudley has highlighted how information and textual media, which appeal exclusively to our rational mind, can distract from, or even inhibit the interaction processes that may occur between museum objects and people through genuine, embodied, and emotional involvement (Dudley, 2012, pp. 11-12). Such authentic interaction is facilitated by the psychological concept of affordance, which James Gibson formulated in the late Seventies. Affordance, literally an invitation to use objects, has been defined as what the environment provides to the animal in terms of the perceived properties of graspable objects. These properties, and their perception by individual’s senses, form the basis for exploratory behaviours and the development of actions using those objects (Gibson, 1979, p. 127).

The discovery of mirror neurons has demonstrated that there is no clear separation between perception and action; rather, both support the processes

of knowing and interpreting reality. According to Rizzolatti and Sinigaglia, the sight that guides the hand can be defined as a genuine 'ability to see through the hands', due to which 'the perceived object appears immediately encoded as a certain set of action hypotheses. This is what allows the individual to orient himself and prepare to move and act in the world around him (Rizzolatti & Sinigaglia, 2006, p. 49).

Yet, Maria Montessori had asserted that objects hold a unique allure for children, inviting them to touch, explore, and engage. The Italian pedagogist underscored the significance of this 'voice of things' in facilitating children's learning and development: 'objects of various kinds 'call' children of different ages. The brightness, colours, and beauty of cheerful and decorated items act as voices that capture children's attention and inspire them to engage. These objects possess an eloquence that no teacher could match: they silently say, 'Take me, preserve my integrity, and place me where I belong'. Responding to the objects' invitation can provide children with a sense of joyful satisfaction and awaken their energy, priming them for more challenging intellectual tasks' (Montessori 1948/2018, p. 102).

Exposure to the observation of artifacts in the museum naturally predisposes visitors to 'see with their hands' and engage in silent communication with objects. In short, it spontaneously activates a multitude of perceptual and cognitive processes that educators can harness and guide through targeted communicative and didactic actions, such as good questions and learning conversations.

If visitors are permitted to physically handle objects, whether authentic items or replicas, a genuine multi-sensory experience can be offered, capable of engaging all the intelligences suggested by the Multiple Intelligences Theory of Howard Gardner (Gardner, 1983 and 1999). In contrast to the traditional emphasis on verbal or visual intelligences in education, object-based learning can engage learners' bodily kinaesthetic and tactile intelligences, which today are increasingly recognised by educators influenced by embodied models of cognition. In its different articulations, the embodied cognition theory challenges the traditional brain-centred cognitivist approach by positing that cognition emerges from sensorimotor processes resulting from the interaction between the brain, the body, and the external natural, social, cultural, and physical environment. Consequently, these processes are significantly shaped by the use of tools and the interaction with objects (Shapiro, 2012). It is also similarly evident that the involvement of other intelligences such as the auditory one (the Gardnerian musical-rhythmic intelligence) or the olfactory one is no less effective. As is well documented, these intelligences not only trigger vivid memories but also play a fundamental role in learning, like in Auditory Memory or Olfactory Memory. Finally, musealised school objects have the potential to engage our emotional intelligence, which Gardner has categorised into three distinct types:

Interpersonal, Intrapersonal, and Existential intelligence (Gardner, 1983). It is of great importance to activate visitors' emotions in order to shape a museum experience that is meaningful and relevant for all people as well as for each individual. Furthermore, emotions are intimately linked to the learning process, and thus facilitate the formation of stable knowledge.

One example of the multisensory engagement that school objects can induce is the triggering of school memories through objects and sensory exhibits. Let us consider, for example, the memories and emotions associated with the olfactory experiences of a school in our childhood. In modern societies, the school experience is by now part of everyone's life. Consequently, memorable odours, such as those of freshly sharpened wooden pencils or newly purchased books and notebooks, elicit in all the people a range of emotions associated with the start of a new school year. The smell of a school canteen, or familiar snack flavours have a special significance for each of us. Once more, let us consider the school soundscape, which is immediately evoked by the ringing of an old bell, with the following sound of children's voices or the clatter of desks still resounding in our ears.

2. School objects facilitate meaning making processes

We have seen how objects displayed in the museum environment, in general, have the potential to capture visitors' attention and engage them in multisensory experiences. This potential lies in their very nature of material objects, capable of inviting people to interact in a material modality (handling) as well in a cognitive modality (perception, analysis, memory, reflection). In early 2000s Jorge Wagensberg, the Director of the innovative science centre CosmoCaixa in Barcelona, theorised the 'total museum', which he understood as a place capable of unifying all branches of knowledge in a multisensory and interactive experience developing around objects: 'We have to invent a new museography: a museography with objects that are real but express themselves in a triple interactive way: manually interactive (hands-on), mentally interactive (mind-on) and culturally interactive (heart-on). They are objects with associated events, living objects, objects that change. It is one thing to exhibit a sedimentary rock on its own and another to associate an experiment that shows the process in real time of how the rock was formed' (Wagensberg, 2005, p. 311).

Moreover, school objects offer an added value since they almost immediately stimulate the establishment of personal connections with all visitors and with everyone, due to their capacity to prompt individuals to immediately recall personal memories of their childhood spent at school.

This capacity to generate memories has been exploited by educational historians to retrace various aspects of forgotten educational practices, ritu-

als, and meanings of the past school. In this regard, the multifaceted heuristic value of school objects has been definitively acknowledged with the advent of novel historiographical approaches. One such approach is the 'sensory history of school and education' formulated by Gaspar da Silva and Gonçalves Vidal (2011), which draws on individual and collective contacts with the school materiality evoked in memorialistic and autobiographical literature. Moreover, a substantial body of research has emerged that focuses on school memories. This research has recently expanded to encompass the investigation of the multifaceted meanings of these memories, which can be articulated into their individual, collective and public dimensions (Yanes Cabrera et al., 2017; Meda et al., 2024).

Regarding the museum environment, the focus of this paper, it is clear that the ability of school objects to connect with all visitors can enhance the museum experience, just in terms of meaningful learning. As known, the concept of meaningful learning has emerged and widely spread in museum studies since the 1990s, together with the emergence of the constructivist museum model (Hein, 1995; Silverman, 1995; Jeffery-Clay, 1998). Coined by the cognitivist psychologist David Ausubel for the school environment, meaningful learning indicates the outcome of a process in which new information is connected to pre-existing, relevant aspects of an individual's cognitive structure. Since this connection facilitates the assimilation of new knowledge, this process needs to be guided by the educator by delivering new information through relevant cues that can draw on the previous knowledge (Ausubel, 1963).

Given the premises outlined above, it is clear how this construction of connection is greatly facilitated by school objects displayed in museums, simply by virtue of their ability to automatically relate to the individual individual and collective school memories shared by all visitors. Thanks to these personal connections, it becomes easier – for museum educators – to use this cognitive and emotional bridge to convey any new information about the school heritage, with the reasonable expectation that this can be transformed into stable knowledge 'anchored' in personal memories.

There are many ways in which musealised school objects can engage with visitors and establish personal connections with all of them. Just in order to create an exhibition that would enhance the interactive potential of these school objects, I was inspired by the museologist Nina Simon, who, in her renowned book *The Participatory Museum*, introduced the museological category of 'social objects' to refer to those items that are capable of immediately eliciting common interests among museum visitors, encouraging them to interact with each other, share memories, ask questions or exchange opinions about what is on display (Simon, 2010, pp. 127-181). In this connection, in fact, I suggested that school objects are precisely those which Simon defines as 'naturally social objects' (ibid., 129),

since they – even represented in a photograph – most effectively display the four qualities of social objects. School objects, in fact, are: *Personal*, since they evoke school memories, which are personal and collective at the same time; *Active* because they command the visitors' attention, such as a meticulously reconstructed old classroom that abruptly becomes visible when a closed door is opened; *Provocative*, when they elicit genuine surprise. An example is represented by an original 'Balilla' musket, which visitors are suddenly invited to touch, sling, and inquire about it with the aim to discover the story of the Fascist youth Associations. In the end, school objects are *Relational*, since many of them are designed to be used together with other individuals, such as a geographic tombola, or a hopscotch game played during school recess, or even an ancient set for school meals (Brunelli, 2015 and 2016).

3. Objects as cognitive stimuli to promote interdisciplinary and transversal competences

The object-based learning approach can be used to transform traditional museum display cases into a variety of interactive tools, be it an interpretive label or panel, or an area for a multi-sensory activity. The aim of these interactive opportunities is to transform our visitors from passive recipients of new information to active researchers of knowledge, active practitioners of new skills: in a word, active creators of meanings. The constructivist approach implies for museum curators and educators the use of tools and activities designed to encourage visitors to draw out, analyse and even challenge all the clues provided by the items, in order to create meanings that relate to their own lives and personalities.

In this process of creating new knowledge, direct and sensory interaction with material objects (both original objects and replicas) can play a crucial role, but only if it is carefully designed and oriented by the educators themselves. One of the most effective techniques that museum educators can use to (firstly) prompt, and (secondly) guide this interaction between visitors and objects is represented by what both the literature on museum interpretation defines as 'good questions' (Cunningham 2004, pp. 100-111) and the educational literature defines as 'great questions', or also 'maieutic' or 'generative questions' (Novara, 2018). The Italian educationalist Daniele Novara explains that these questions 'move in the sense of exploring, aiming to go beyond, searching for what is not known within and outside of us, what has so far remained veiled by traditions, customs, and stereotypes. They are opportunities to build open and sustainable ways of learning. [...] Learning is not a matter of exact answers, but of applicative skills, of knowing how to use knowledge in an operational, concrete, real context' (Novara, 2018, pp. 93-94).

But what exactly are the ‘applicative skills’ that we can develop in our visitors when they interact with school objects in our museums? We can give a first list of skills, related to five main areas that can be developed during an interaction visitor/object guided by good questions:

Visual skills = Learning to observe objects. If the observation is guided by good questions (for example, how many parts do you think this object is made of?), you will enhance the visitors’ ability to understand and make sense of what they are seeing. Seeing is a complex of many skills such as eye movement, eye focusing, perception, but also visual discrimination, i.e. recognising differences or similarities in size, shape, colour, objects and thus classifying them, and so on. Good questions can enhance visitors’ visual skills, which are fundamental to learning in the museum and to interpreting the world around us. As Luigina Mortari has written: ‘the capacity to focus on details is a crucial component of scientific literacy. However, it is also an indispensable mental disposition for maintaining an ethical and discerning perspective on reality’ (Mortari, 2009, p. 205).

Verbal skills = these skills are best developed through activities that encourage the use of effective questioning and engagement in games. One such activity is the description of objects, which can be facilitated using thought-provoking questions or games such as: If we were to describe this object to a friend in another room, which words would we use? The act of accurately naming the components, shapes, colours, and other defining characteristics of an object, or describing it with appropriate and functional vocabulary, enables educators to enhance the vocabulary and communication abilities of children, young learners, and beginners of a new language. This approach can also be effectively employed in museum settings.

Logical Skills = The capacity to formulate hypotheses and to pose questions represents a competence that encompasses logical abilities pertaining to inductive reasoning, discerning patterns, and relating them to function, formulating hypotheses, and other related skills. This competence is referred to as logical skills. These skills underpin methodologies such as discovery learning, IBL (inquiry-based learning), PBL (Problem-based learning), and others. Furthermore, educators can facilitate the development of this competence in a museum setting by encouraging children to ask questions in order to formulate reasoned hypotheses. For example, if you were to pose a single inquiry with the objective of elucidating the possible functions of an object based on its structure, shape, or even on a fragment of it, what would you ask?

Creative skills = Additionally, objects can prompt the development of creative processes to narrate the story of the objects preserved in museum collections. From this perspective, creative skills can be defined as the ability to imagine something that does not exist, and then to develop and realise it. This definition is entirely consistent with the concept of storytelling, whereby the imagination and perfectioning of a fictional narrative may be employed to tell the story of items preserved in museums. A variety of approaches may be adopted, as proposed by anthropologists, museum curators and philosophers.

In a notable contribution to this field, Igor Kopytoff (1986) proposed the concept of a cultural biography of things. This was developed by adapting the concept of people's biography, enriched by the notion of commodification as the sum of the diverse meanings that objects assume reflecting shifts in social, economic, and cultural contexts. In the museum context, however, it was Samuel Alberti who, in his article *Objects and Museums* (2005), put forth the proposition that the life trajectory of objects should be extended to encompass the final stage of musealisation. This entails the notion that each museum item effectively commences a new life, constituted by a complex of fresh relationships: with historians, curators, and visitors. Finally, we may cite the distinction between things and objects as illustrated by the Italian philosopher Remo Bodei (2011). In his discourse, he posits that 'objects' are primarily esteemed for the functions they perform (or have performed) as tools or commodities, on the one hand; on the other hand, 'things' are valued for their capacity to foster less utilitarian relationships with humans, manifesting in emotions, personal meanings, memories, and values.

All these perspectives can be fruitfully used with a pedagogical aim, as they permit the reconstruction of alternative biographies, based on the educational objectives to be achieved. For example: learners may be asked to write the trajectory of an object by carrying out historical research into its origins, production systems, commercial routes, and uses as a commodity. Alternatively, students can engage in creating imaginative narratives concerning the relationship between an object, such as an ancient school desk, and the humans involved in its creation, sale, purchase, use, and the emotions and experiences associated with these actions. The narrative could also include the humans who discarded it, those who discovered it, those who inherited or donated it, and its eventual arrival at the museum.

It is evident that all these processes necessitate a multitude of competencies, encompassing historical research skills, linguistic and writing abilities, and narrative and creative aptitudes.

4. Conclusions. Learning through objects

The dominant paradigm in traditional education has long assumed that abstract forms of learning, such as reading, studying, and listening to lectures, are qualitatively superior to multimodal learning approaches.

In contrast with the tenets of traditional educational theory, contemporary learning theories emphasise the value of engaging with objects as a multimodal learning experience. The OBL approach is particularly effective in engaging learners with a range of intelligences, including bodily-kinaesthetic, olfactory, auditory, and tactile, as well as varying degrees of active, experiential, and creative learning styles. This quality renders it especially suited to museum settings. The examples cited above represent merely a modest sample of the myriad activities that can be pursued through the observation and manipulation of an object, both within the museum setting and beyond. Further insights can be derived from the works of Durbin et al. (1990), Bianchi & Farello (2010a, b), Guerra (2019), and numerous other educators and scholars in the field.

The objective of this contribution was to demonstrate the pedagogical value of historical-educational collections, which are often perceived as a minor heritage, unable to serve a wider audience (except for a few specialists), unable to provide a lively or memorable museum experience, and unable to offer effective learning opportunities. Conversely, we have demonstrated that school objects, in particular, have the capacity to immediately connect with our lives by evoking atmospheres, arousing emotions, and stimulating processes of comparison between the past and the present. Of particular interest with regard to this topic are the remarks made by Remo Bodei: 'Things live if we can develop a semiotic process similar to the medical one: then we can understand the story of what we care about, its place in relation to humanity and its link to nature. The empathetic analysis of any object may lead to the discovery of multiple avenues of curiosity and inquiry. This is suggested by the etymology from the Latin 'cure', care, and willingness to know. Therefore, a rag or porcelain doll may prompt us to consider its origins, its historical development, and its role in the evolution of toys, as well as to reflect on the differences in education between girls and boys. Furthermore, it may evoke memories of personal family experiences' (Bodei, 2011, p. 62).

Pedagogical collections also tell the story of our societies through the evolution of the crucial process of education and inculturation. By encouraging visitors to interact and engage with our collections in creative ways, yet grounded in rigorous research methodology and historical evidence, we can ensure that our museums play the influential role they deserve in society. In conclusion, historical-educational museums can become that platform for public discourse on issues of contemporary social concern and provide

a unique setting for constructive engagement and even confrontation on these issues.

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