



Body-Related Learning Processes in Museums

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Educational science research indicates that children from preschool to primary school age create meanings in terms of their personal relationships and interactions in their physical surroundings that they often express through bodily postures. This can be observed in museum visits that are the subject of video-ethnographic research (Amann & Hirschauer, 1997; Wagner, 2013). Young children initiate subjective practices and relationships both within their peer groups and with collection objects.¹ For those creative activities that are connected to forms, senses and emotions, objects with concrete and tangible properties are needed so that preschool and primary school children can create meaning through artistic expression and play (Isenberg & Jalongo, 2000). Developing an exploratory relationship with objects in a museum exhibition can be described as a form of learning process. Early social science education in Germany, founded on the discipline and teaching methods of *Sachunterricht*, is processual and based on the way preschool and primary school children interact with different materials (Pech, 2009; Pech & Rauterberg, 2007, p. 3). Within these learning processes, educational strategies that focus on the discursive dimensions of learning with objects in

¹“Up to primary school age children live in a world of relationships and develop theories to understand their place in the world, some are more useful than others. The discussion of these theories and paying attention to their function is tangible early childhood learning” (Scholz, 2010, p. 39).

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school, especially in the primary school subject (*Sachunterricht*), are highlighted (Pech & Rauterberg, 2008). The approach sees the interests and questions of children as a starting point of learning and relates this to the childhood educational science known in German as *Kindheitsforschung* (Heinzel, 2010)². The approach places less emphasis on particular skills and formal knowledge, and instead stresses the need to facilitate the individual child's processes of figuring out and interacting with objects.

First, the following chapter describes the research field: children and their physical access to objects in collections (Sect. 1). Then learning processes of preschool and primary school children in museums, with reference to anthropological studies and the concept of contact zones, are described (Sect. 2). As an example, research in performative play stations for preschool children in the permanent exhibition *German History in Images and Artefacts* of the German Historical Museum (DHM) in Berlin is presented (Sect. 3). Finally, results from the research project are shown in the context of body-related learning processes of preschool and primary school children (Sect. 4).

1 The Research Field: Children and Their Physical Access to Collection Objects

A short overview of educational research based on publications in the field with an emphasis on preschool and primary school children in museums is given in this section. First, we look at the discourse in English-language publications. This discourse is dominated by many authors who criticize learning theories for their strict cognitive focus, thereby neglecting learning approaches with the body. Richard Jordi (2011), for example, describes body and mind interactions in his article 'Reframing the Concept of Reflection: Consciousness, Experiential Learning, and Reflective Learning Practices'. This is based on a theoretical approach. From Jordi's point of view, these interactions can lead to more holistic learning experiences. He postulates that the use of all human senses enriches the learning experience, and that inclusive learning environments benefit from physical activity and the spirit of discovery. Joanne Yoo and Sarah Loch (2016), in 'Learning Bodies: What Do Teachers Learn from Embodied Practice?', reflect on the *Sky High* program for teachers, which was designed to raise the awareness of body language and to show ways of

²"That's why education processes are perceived as subjective genesis processes only when answers to questions are given that the subject, from a need to find things out and to understand the world, has discovered for him or herself" (Schäfer, 1999, p. 119).

increasing the learning motivation of socioeconomically disadvantaged students. In their ethnographic research, Yoo and Loch find that a visit to a museum can be a motivating experience with experiential learning approaches. These experiences can help to diminish prejudices, for example that museums are only accessible for intellectuals. Because of long distances or small budgets in some rural areas, museum visits are almost impossible. An alternative is to offer a museum experience in school, for example by ordering selected collection items in what is called a museum carrying case, or by collecting objects which provide a special learning experience. In 'Beyond the Walls with Object-Based Learning', Cassandra Barnett (2019) outlines how collections and exhibits can be moved around in order to offer a museum experience to remote schools. This requires professional networks and training for teachers to enable them to discuss the provenances and properties of objects with a school class and create mind-opening experiences. Studies of learning materials and environments show that interventions are open to historical, artistic as well as physical and chemical elements. Steven Murow and Arnold Chavez (2017), in 'Exploring Matter: An Interactive, Inexpensive Chemistry Exhibit for Museums', reflect on field reports about a modest college exhibition. Through interactive activities and learning through examples, students are challenged and can become enthusiastic about chemistry: an area in which large museums often fail.

Body-related learning processes integrating experiences and the senses are not limited to analog learning arrangements; digitalization and digital culture require new competences and perspectives too. In 'The Interactive Museum: Video Games as History Lessons Through Lore and Affective Design', Sky Anderson (2019) deals with the controversial topic of integrating computer games into educational contexts. Even though most computer games have a commercial background, their interactive potential and the emotional involvement of the players can be used in pedagogical contexts. The author analyzes contents of computer games and compares players' experiences to analog learning methods. He finds that some give the impression of being an interactive museum. Also, combinations of digital and analog elements are thought to expand educational value and learning. Maria Dardanou (2019) focuses ethnographically on that point in 'From Foot to Pencil, from Pencil to Finger: Children as Digital Wayfarers' by describing how children can intensify the museum experience with digital devices during and after their visit. Like an interactive computer game, they can use their photos, videos and notes/drawings to develop a story with their tablet that involves them emotionally and leads to connections between the different things they are learning. It is not only that the children experience the museum through interacting with their

bodies, but the fact that they document it via digital devices and develop stories which can be experienced even after the museum visit.

Different kinds of involvement and perspectives during learning processes are the subject of Amy Chou and Janet Shih's article 'Show Me What You See: An Exploration of Learning in Museums and Learning in Theatre' (Chou & Shih, 2010). The authors' qualitative research, based on semi-structured questionnaires, focuses on individual learning strategies. The authors argue that performance techniques and storytelling in museums and theaters are suitable in contexts of individual learning strategies. They find that, through narrative approaches and personal involvement, the impact of museum visits is intensified. Ran Peleg and Ayelet Baram-Tsabari (2017) discuss in their qualitative- and quantitative-based research (391 questionnaires and 67 interviews) the performances that are put on in museums to create a learning environment. Personal involvement in a story can help and hinder learning at the same time. On the one hand, clear and explicit information is absorbed easily through the personal link with the audience; on the other hand, some information or aesthetic elements are interpreted by audience members, opening up the possibility of facts being misinterpreted. That is why a play put on in a museum must be directed in a way that is more than just entertainment; it must provide educational value too. Nevertheless, playing and performance are thought to be central elements in museum education. Pamela Krakowski (2012) observes in 'Museum Superheroes: The Role of Play in Young Children's Lives' how children who are still in kindergarten can benefit from a visit to an art museum when they experience the exhibition by playing. In particular, connecting children's personal environment and interests, for example superheroes, to a museum's topic will motivate the children and the experience may enrich their knowledge.

Another way for children in kindergarten or preschool to connect with museum educational offers is through role-play, in which the children create their own exhibition and guide the visitors. Alice Hope's case studies in 'Young Children as Curators' (Hope, 2018) raise the idea that, in contrast to a passive reception, children give meanings to objects or displays when they create their own scenarios. When they have experienced that perspective, children are better prepared to visit a museum and understand other concepts. Because the possibilities in one's own exhibition are almost endless, children can use their imagination and give objects fantastic meanings, what stimulates them to play with all the senses. In contrast to Cassandra Barnett's (2019) approach, not just the collection objects are introduced in school, but rather the idea of creating museum scenarios and presenting collections. Recently, reactions to nationalism and learning experiences that relate to a complicated globalized

world have become more important. Museums with a multicultural orientation can provide learning environments that support transcultural awareness. In her article 'Black Museums and Experiential Learning', Cheylon Woods (2018) describes the history of exclusion in museums. She argues that more space should be given to the initiatives of Black communities and other minority groups to enable them to show their culture in appropriate ways. According to the author, this approach contributes to the idea of a *democratic museum*.

In Germany there is not a great deal of research on museum education for children. Early childhood education studies in Germany address children's negotiation processes with objects. They show that testing out and exploring objects, even if they irritate children or result in failure, is vitally important for the acquisition of knowledge and problem-solving skills (Nentwig-Gesemann, Fröhlich-Gildhoff & Pietsch, 2011a). This can also be seen in the context of personal experiences, in which mimetic self-formation processes are created (Gebauer & Wulf, 1992; Schäfer, 2011; Nentwig-Gesemann, Fröhlich-Gildhoff, & Pietsch, 2011a). Mimetic activity is defined as the ability to use one's senses to creatively and physically imitate cultural expressions. Subjective perceptions are stored as internal images and then reproduced physically. This process is not just simple imitation but involves imaginative expression and interpretation. Mimetic processes are a necessary part of the informal conditions that foster development and learning. They characterize an environment in which children are dynamically involved in their surroundings and can familiarize themselves with collection objects.

The Swedish model of integrating preschool and primary school shows that it is not beneficial that professionals in social science teaching methods (Sachunterrichtsdidaktik) bring concepts from primary school into early years learning. Instead, issues of early years learning should also be considered as the task of primary schools; comprehensive coordination is needed between preschools and primary schools (Scholz, 2010, p. 34). However, transitions between kindergarten and primary school are non-linear and thus require coping strategies and transitional phases. Exactly how such transitional phases can succeed and how procedural knowledge about them can be expanded may have important implications for future research. Further studies of the experience horizons of preschool children dealing with collections can be applied to this field of research (Duncker & Kremling, 2010). Educational Science conceptions of early years education, such as the importance of mimetic learning, offer insights into concepts and methods of learning in the social sciences. In particular, early years education can be considered as the focal point of social sciences teaching methods. Tangible learning opportunities can

mediate children valuable impressions of history, social change, different actors and stakeholders. These impressions are based on relevant objects—for example a piece of the Berlin Wall as a source of contemporary history—that can be incorporated into social science teaching. A focus in social sciences teaching is the participative role of the child actively developing and presenting ideas—more detail will be given in the empirical material of the following chapter. For preschool and kindergarten children, historical changes can be explained less by conceptual arguments than by physical respectively hands-on processes in which emotional connections are created (Wulf et al., 2001). In the following chapter, early childhood educational practices such as the development of experience horizons are shown in the context of the *German History in Images and Artefacts* exhibition. Connections are drawn between the scientific discipline of early childhood education and the methods used in social science teaching.

2 Contact Zones with Collection Objects

The learning processes of preschool and primary school children are tied to personal interpretations of situations as well as affective creations. Possible meanings are tested out through subjective experiences and performative self-portraits (Wagner, 2013; Stauber, 2004, 2006).³ The performativity of this process is seen in spontaneous interactions with museum objects.⁴ For example Marie Louise Pratt (1996) develops the idea that contact zones in a museum establish a distance from everyday interpretations of things and encourage situations of negotiation and testing. This idea calls for interactive spaces in museums to add experiential dimensions to exhibits. Pratt points out that a contact zone provides visitors with insights into unknown or past worlds; as such a zone ‘is an attempt to invoke the spatial and temporal copresence of subjects previously separated by geographic and historical disjunctures, and whose trajectories now intersect’ (Pratt, 1992, p. 7).

Reflections on the performative nature of contact zones in museums expand and fundamentally challenge our approaches to teaching in primary schools;

³ Stauber (2004) emphasizes the interactive body-related aspect of self-dramatization in peer groups. She sees the importance of the production of action communities, embodying meanings and opening up spaces. In addition, Stauber addresses presentation of the self, forms of recognition and membership of groups.

⁴ “If human action is perceived as cultural acting and cultural performance, changes in understanding of social and educational processes arise. In this case the physicality of the actors, the event and directorial character of the actors deserve greater attention” (Wulf et al., 2001 p. 9).

they also challenge current educational concepts for non-formal education, which revolve around models of concentric circles, original movements and conceptual change. Pratt favors a performative concept of learning in museums as part of an interactive process that can lead to students' broader understanding of content. Performative forms of learning as directorial, active social practices can be understood within Judith Butler's (1990) framework—for example in negotiating the meaning of museum objects. These practices help describe the activity of children where they express themselves through body-related mimetic actions. Contact zones, as described by Pratt, are designed as a kind of performance-like museum visit for primary school children. Contact zones in a museum should have flexible arrangements of objects to allow groups of children to move and act with them. This gives children room to playfully approach objects in the exhibition whose materiality arouses curiosity (Nohl, 2011). Performative games support viewers in negotiating asymmetric meanings, which Pratt considers as constitutive for contact zones⁵. Spontaneous moments of play in the museum can be analysed from a pedagogical perspective and can be made fruitful for educational purposes, such as creating a multi-perspective understanding of objects.

For several years there have been efforts to welcome children more in museums and exhibitions. This includes providing educational materials for learning purposes. Several prominent Berlin museums, such as the Ethnological Museum of the Prussian Cultural Heritage Foundation, have a children's museum with activities tailored to primary school classes. There are hands-on play and experimentation stations. But many of our museums' educational activities for children are only installed for short-term projects and do not have sufficient space. In the next section we will look at research with a long-term learning environment, linked to a permanent collection in the German Historic Museum and based on the anthropological concept of contact zones. The learning environment with several stations allows small, accompanied groups of children to explore objects for themselves, as accompanying researchers observe the way children learn as they are confronted with these objects. The resulting stations are tailored to explorative learning and offer thus predominantly sensory experiences. When children try things out and negotiate at the stations, even when they get annoyed or fail, these are considered to be vital stages in the acquisition of procedural knowledge and problem-solving skills.

⁵A previous research project developed contact zones for groups of children in the exhibition *American Indians* in the Ethnological Museum in Berlin. The study focused on pupils' intercultural dialogues at the museum and in its storage rooms (Wagner, 2010).

3 Example: Contact Zones in the Permanent Exhibition *German History in Images and Artefacts* at the German Historical Museum (DHM)

The empirical examples presented here show that stimulating objects encourage physical and sensual exploration among preschool children (Koester, 2006). Generally, children first observe the tangibility of an object in an exploratory phase followed by conceptual contemplation. Accompanying adults often offer conceptual classifications and contexts too early and disrupt children while they are testing out objects. The route through the exhibition has interactive stations which are intended to be places where children can have both an aesthetic and a hands-on experience. Questions as to how children learn can be answered here. The preschool children participating, for whom this is often their first visit at the DHM, have contributed to formulating these educational principles. Some parts of the exhibition, intended for adults, have been adjusted or altered for children's sections. For example a large painting from the turn of the nineteenth and twentieth centuries from the DHM that was considered important in the design of the exhibition was hardly noticed by the visiting children. However a car prototype, not originally intended to be included, has been met with broad interest. The stations are designed as contact zones where the objects' materiality lends itself to historical learning.

The contact zones promote discovery and learning by drawing attention to selected objects from the collection and by opening up certain niche showrooms for small groups. In the resulting spatial contact zones, the children can intensively examine the exhibition objects and then relate them to things from their everyday lives (Treptow, 2005). The visiting preschoolers compare what they experience here with things they know from everyday contexts, as observed in the discussions about the lyre, the car prototype and a model of Berlin tenements. The empirical material shows that exhibits that encourage comparing to and contrasting with life-worlds by means of familiar objects are of particular interest. For example the station that focuses on children's fashion in 1900 based on two sailor suits stimulates a playful exchange. Children can try on the clothes and compare themselves with a large mural and the items in the showcases. Preschoolers produce play structures with reference to their living environment and find historical traces in the present. Change and continuity is experienced in relation to historical objects, helping children to mediate themselves the contexts and usage patterns of things they see.

4 Prospects for Body-Based Processes of Learning About Objects in Museums

Striking about the video-ethnographic material is that the extra-curricular learning center of the museum could be a valuable space for the informal education of five-year-old children, in contrast to processes that often are preoccupied by instruction and interactions that are part of the school as an institution. Throughout the film material, there are scenes that can be identified as group formations related to the home or to childcare facilities. It seems that productive learning situations cannot be produced by explanatory remarks or the question-answer games that are often played in schools but through non-formal group interactions in the five-year-olds' physical surroundings. This type of learning is not necessarily led by the guides in the museum, though this obviously depends on the group's learning stage. The visiting children are expecting to learn about the things on display. This reflects what they are used to when they engage in educational activities. Preparatory work with children groups can provide suggestions how object-oriented disputes about meaning are reconciled. In addition to the school-related learning processes described, there are other developments to be seen in the following encodings.

4.1 Open Coding: Physically Testing Out and Selecting Unfamiliar Objects According to Their Use

Passing through the route of contact zones, the groups of children repeat ways of dealing with objects in the collection. The footage shows that in the negotiation processes, children show that they can work and act independently and demonstrate subjective learning strategies (in German: *Selbsttätigkeit*: Klafki, 1998) inspired by the objects in the exhibition. Particularly impressive in this regard are the sequences at the *Hunting* station (Picture 2). Museum staff offers children stick figures of humans and animals (some of which can be seen in historical paintings in the collection room) before they reenact hunting stories. The stick figures are used for historical and present-day hunting scenes. In these sequences, all seven groups displayed the same forms of interaction: the children listen attentively to the museum guides, move together in a tight circle in order to participate in the activity, view the material and await the stick puppets. While the museum guides point out representations in the subject area and describe the various roles of the figures, the children grow increasingly restless. The children of the sample groups appear

to be particularly interested in animal figures. Many children become active immediately and test out the didactic material. They want a closer look at the stick puppets straight away and express wishes about the roles they would like to perform in the play. The museum guides respond to these pleas and start the game phase. In that performative acting phase the comparison of multiple groups of children shows some differences at this point. There are nonetheless the following similarities: the children involved listen to the introduction by the museum educator and there are few signs of spontaneity or the wish to develop new forms. As preschool children, they demand that play material is provided at an early point. The aim of the station, a comparison of historical and contemporary hunting forms, is not a priority and does not capture the attention of the children.

Other footage shows that unusual objects in games (e.g. the stick puppets) trigger bodily impulses and the need to conduct body-based experiments in children's groups. In practice, particular objects that point to possible ways they might be used, but still seem strange and elude categorization, attract children and lead to physical interactions (Serrell, 1996; Norman, 1999). These objects are not totally extraneous, but they cannot be compared directly to a familiar object or to everyday contexts. The objects are unfamiliar and lead to explorations and tests. This is in particular evident at the *Living* station. In addition to the model of a Berlin apartment building, which is displayed in a showcase, there are two kettles hidden inside covered boxes, with porcelain and enamel cups and pieces of coal. All the children see the covered boxes and then reach in without being able to view the contents. They make immediate guesses about what they can feel. Often they look to the adults, seemingly seeking confirmation. Once the covers of the kettles, cups and coal are removed, the children reach out to feel the objects in order to examine what they are made of. In four out of seven videos taken at the station, children visibly and spontaneously try to drink from the cups, but also smell and test the weight of the objects, such as the piece of coal. The concrete objects provoke body-related investigations about what they were used for and similarities in the living environment of children are discussed.

4.2 Open Coding: Approaching the Meanings of Objects via Everyday Experience

The children involved in the sample tap into the meanings of unfamiliar objects. The objects are found in everyday contexts and scenes that are associated with known worlds. At the play stations, the children initiate their own

re-creations of things used in daily life, regardless of the intentions of the museum guides—only in rare cases they are instigated by accompanying teachers. A very good example is the comparison made by one preschool child, when he feels a piece of coal at the *Housing* station. The child describes a family experience where the use of coal is of great importance. He tells of a family barbecue on the Tempelhof field, a Berlin city park. The child develops spontaneous associations with the everyday use of this particular object and moves away from what the museum intended it to signify. Through using their bodily senses, the children manage to figure out the everyday uses of objects. Many children imitate drinking from the porcelain or enamel cup. A film sequence shows one child who, in the context of testing cups, offers a cup of coffee to his teacher. Habits of acquaintance, including those of adults, are connected to objects that are unfamiliar. In the context of testing out objects, children create connections between objects and arrange them in relational object environments. This aspect gains more importance when a series of interactive stations is designed, as the objects displayed are linked to the activities of collecting in order to produce object relationships (Duncker, 2007). The children of the sample groups also have the opportunity to present their own collecting activities in the structured game *Collecting*⁶. Their own understanding of the way objects relate to each other helps them to understand the collections of the museum.

Although communication is largely guided by the museum staff, communicative interactions also develop among the children. In the footage we can see that these interactions cause disputes about property. Four selected video segments show that the way children communicate in small groups involves physical exploration, which strengthens their understanding of objects. In the sequences, very many children try out the shapes of objects and comment on their own experiences of what the items are used for. These situations are observed by other children, who are then encouraged to relate the objects to their own bodies or to other objects in the room. In addition to the usual behavior of children in a group, for example playful self-representations, these games that involve moving around, the body, clothing and language, also involve unusual things in the exhibition. Preschool children gain an awareness of social reality and learn to test out spaces physically by, for example, moving around the photomontage of a forest to test out what their body movements mean. A result is that educational events that the children organize themselves

⁶“However, what emerges here is a highly differentiated picture of childlike world appropriation. Children become interested in things through a methodical process of acquiring knowledge, and they maintain and strengthen these interests through collecting things as a means of social integration and developing social relations” (Duncker & Kremling, 2010, p. 63).

pave the way to experiencing the exhibits. For these performative experiments to take place, children need a space where they are free of the interpretations of adults (Foucault, 2001; Stieve, 2012). This gives children the opportunity: ‘to wrest a new order of the things’ (Treptow, 2005, p. 803), and allows them to make their experiences of things more tangible as well as gain a belief in their own ability to do things (*Selbstwirksamkeitsüberzeugungen*) (Nentwig-Gesemann, Fröhlich-Gildhoff, Harms & Richter, 2011b) in non-school environments. The collaborative study designed a research field of interactive stations in which the observation and analysis of video ethnography-based data interpretation gives hints on the vital importance of mimetic, body-related learning processes. The objects from the collections of the DHM challenge children and cause performative interactions which can be thematized in following more formal learning courses.

The performative practices in museum collections point to the disciplinary links between early years education and social science education, which have been reflected in this research. These practices can be anchored in the concept of early years social science teaching (*Frühe Sachbildung*) and used in the development of concepts that assist the transition from preschool to primary school. In several European countries, such as Switzerland, initial trials with joint modules and study phases for preschool and primary school teachers have been launched. The use of educational spaces with physical access to collection objects is beneficial for such a joint training of the two professions. Museums, which are open to both preschool and primary school groups, offer object-based, body-related learning experiences, combined with approaches to cultural heritage. These experiences can be reflected in both educational institutions and can serve as a common ground of further projects.

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