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Materials from Childhood to Adulthood

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Abstract

Both structured and unstructured materials are fundamental objects in the pedagogical tradition and from there in the didactic experience of future teachers. Our hypothesis is that experiences from childhood influence choices made as adults, even in professional contexts.

In this light, this paper analyzes the relationship between the preference of choice of materials used in childhood and those in adulthood through memories and the expectations of future preschool and elementary school teachers. Students enrolled in the third and fourth year in the Degree Course at the Education Faculty in a University in the North of Italy were given questionnaires aimed at gathering information about their preferences during two different periods regarding materials, crossing the results with the first proposals designed by the students during their practice teaching internships in local schools.

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1. Introduction

Structured and unstructured materials are fundamental objects in the didactic experience of teachers. They are powerful didactic mediators, which if used in a way to take advantage of their potential, facilitate more active learning which involves learners to a greater degree. The aim of this paper is to investigate the relationship between the preferences for the materials utilized during childhood and those used as an adult in memories and in the imaginations of future teachers for pre and primary schools, in order to support a more aware use.

2. An historical framework

First we will make a brief excursus in teaching and pedagogy regarding the value and importance that objects and materials have for children. Many researchers have studied and observed these aspects using various approaches and focuses. In schools, encounters with usual and unusual materials has long been part of the pedagogical tradition (Fröbel, 1993; Agazzi, 1938, 1950; Pizzigoni, 1956, 1971; Montessori, 1950, 1970; Freinet, 1973; Malaguzzi in Edwards, Gandini, Forman (Eds.) 1993).

Fröbel, for example, highlighted the importance that objects naturally assumed for children: “*The child comes to us with his intimate desire to place what he found and is holding onto with his little hand in our laps; almost as if, thus heated, the object gives him an idea of itself. The child cherishes everything that enters into the small circle of*

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his world and which widens it, even if just a bit. The smallest thing for him is a new discovery” (Fröbel, 1993, p. 55). Starting from these observations, he would design specific actions, defining thus his “gifts”. Another aspect which appears in play also struck his attention, the child’s inexhaustible desire to manipulate, build, make as a prodrome of the adult’s future laboriousness. This is how the child discovers the world and is fascinated by it, but it requires movement, action, construction, the desire to try out the newly discovered things, so that the destruction of an object is motivated by the desire to deepen perception and understanding: *“The smallest thing is a discovery for him. [...] That’s why a child wants to know why he loves a certain object; he wants to discover all the details and it’s most intimate nature, [...]. Thus the child turns it inside out and upside down, he rips it and breaks it; he puts it in his mouth and bites it, trying to tear it with his teeth. [...] Children want to learn about the internal structure of things [...]”* (Fröbel, 1993, pp. 55-56). The impulse to build and create follows through from childhood and becomes more determined and complex, where various materials become tools for a detailed project: *“Everything should be subjected to his impulse to create: in that pile of earth he must build a basement, a cave, and above it a garden, a bench. Boards, branches, sheets of metal, poles are joined to make a hut, a house; [...] all according to the sense, the spirit and the intention of men of this age, according to the meaning and spirit of appropriation and unification”* (Fröbel, 1993, pp. 87-88).

Another point of reference in this pedagogical panorama are the Agazzi sisters, who created “an educational museum”, thus described by Rosa Agazzi: *“My museum doesn’t cost anything; it could even be called the museum for poor people, if it weren’t for the fact that it appeals as much and even more than those for rich people: little boxes, buttons, seeds, pits, tubes, threads, nails, ribbons, cards, bottles, corks, fabric, paper, braid samples, various trinkets, balls, vases, packets, postcards; and various materials: wax, iron, tin, marble, wood, leather, glass ...”* (Agazzi, 1938, pp. 12-13). Observing the action and the materials present in their museum, we can see how small things, if used in a knowing way, become powerful means for implementing and enriching linguistic, logical, reflexive development through actions like manipulation, naming, dividing, matching, categorizing, storytelling, modifying.

Maria Montessori also noticed the power of materials children naturally searched for: the hand becomes a vehicle for active knowledge, a more and more explicit instrument for absorbing the world, for entering into contact with reality: *“At first he was guided by a hidden force within, now his ego guides him, while his hands are active. It is as if the child, who absorbed the world through an unconscious intelligence, took it in his hands”* (Montessori, 1970, p. 166) and, from this importance, from the knowledge and the competence plans specific tools. By carefully observing children’s actions, Montessori realized they were not merely content to touch objects, trying out their most superficial characteristics, but how they wanted to see how they worked, understand the mechanisms, master the movements, discover the exact way to handle them.

John Dewey, the outstanding representative of the active school and promoter of direct contact between children and materials present in the world, was skeptical regarding the materials proposed by other pedagogues, including Froebel’s gifts and Montessori’s materials as being too defined: *“only by starting from raw materials and subjecting them to an intentional manipulation can students gain the intelligence that took shape in the finished material”* (Dewey, 1984, p. 255).

3. Some recent educational experiences

In this vein, recent educational experiences include the exploration of objects and materials that is less constricted and directed by adults, to be developed according to themes in a second moment. Meaningful experiences in ECECs have been used, including the Treasure Basket and the Heuristic Game by Goldschmeid (Goldschmied & Jackson, 1994). Susan Isaacs Sutherland (1971) proposed seemingly opposing proposals with 2 to 8 year old children, offering them objects of various sorts to structured materials by Montessori or other pedagogues, with the aim of stimulating children’s active research rather than teaching them things. The methodology developed by Pujol, Mongay, Roca & Cunill (1995) starts with an initial phase of spontaneous action, when the children move freely in an unplanned space coming into contact with unstructured materials and objects, proceeding towards greater structuring and shared intention. We also recall the Reggio Approach and Loris Malaguzzi (Edwards, Gandini,

Forman (Eds.) 1993; Gandini, 2005), who with unstructured materials, especially industrial discards, dedicated the Remida experience, his Center for creative reuse (Reggio Children, 2005).

Today it is held that the exploration of materials encourages children's learning, making the learning processes visible. This action, above all natural and independent, is intentionally planned in schools thanks to the setting up of spaces and materials to offer children the chance to plan and utilize materials in school settings, making them part of the educational process.

4. An exploratory investigation

After this necessary historical survey which confirms how the use of structured, unstructured and unusual materials – unstructured materials are materials that allow a more open combination, supporting a creative thinking, as opposed to structured materials, materials which elements are linked by a specific network of relationships, the use promotes educational objectives previously identified by adults (Anolli & Mantovani, 1981). We define “inusual” new or used materials unfinished, unrecognizable, not immediately definable – is a fundamental aspect in the history of education and in current teaching practice, the focus of this paper is on training future pre and primary school teachers and how they experience this aspect. We analyzed whether early childhood experiences could influence the knowledge, competence and choices made as adults involved in education and teaching, and whether their first proposals during their practice teaching internships included the use of materials by analyzing the data gathered in the schools they worked in.

Hawkins (1974), after having worked with university students for a long time, claimed that knowledge of physics would not take “root” in young people who did not experience play and contact with different materials as children. He introduced a preparatory phase of “messaging around” in his physics course for this reason. In the same vein, we wanted to study whether there was a connection between materials chosen as children and those chosen as adults, and if this choice, in the case of future teachers, influenced their professional choices. One hypothesis to explore was whether childhood experiences could influence the choices made as adults, also in professional settings.

In this light, this paper analyzes the relationship between the preference of choice of materials used in childhood and those in adulthood through the memories and expectations of future preschool and elementary school teachers. Students enrolled in the third and fourth year in the Degree Course at the Education Faculty at the University of Milan-Bicocca were given questionnaires aimed at gathering information about their preferences during two different periods regarding materials, crossing the results with the first proposals designed by these students during their practice teaching internships in local schools.

With respect to what was observed in their teaching internships in schools – which shows the consideration of materials in 61% of the situations, which rises to 84% in preschools, and drops to 12% in primary schools – the students chose to use materials in the activities conducted by them in a consistent way, in 84% of the cases.

The list of materials is very articulated and diversified. The range of materials cited by the students shows they cannot clearly and directly be attributed to precise categories, appearing at times on the borderline between objects and instruments. This first observation shows there is not total clarity in distinguishing different types of materials and we are unable to define objects as opposed to instruments, referring to the absence of a clear definition between structured and unstructured materials, those that are didactic and those that are part of our everyday lives.

All of the materials mentioned in the responses, however, appear to be possible mediators for educational actions.

The continuity hypothesized following Hawkins' work does not seem to emerge in an evident way in the answers given by the students. Regarding their past experiences at school and their present experiences as teachers in training, there do not seem to be clear-cut overlaps, while there are many differences.

There are a few materials that emerged which can be used together. In particular, in the answers regarding preferences in childhood there was a series of materials which were not appreciated, like awls, rulers and markers, all structured and finalized materials. These are the answers to the question “What were your least favorite materials as a child?”: abacus 1; awl 7; baker's clay 2; books 1; cars 2; chalk 3; crayons 7; dolls 3; fabric 4; flour 1; glass 2; glue 3; markers 6; measuring rod 1; metal 6; mud and earth 3; oil paint 1; pencils 4; plastic and rubber 6; ruler 1;

sand 4; scissors 1; soap 1; stones 1; tempera paint 2; tissue paper 4; viscous and rough materials 2; water 1; watercolors 3; wood 1.

On the other hand, favorite materials consisted in clay, das, playdough, baker's clay, plasticine and homemade clay, all soft, unstructured materials, together with flowers, leaves and straw, unstructured natural materials. A coherent preference for open materials was evident, taking distance from a more traditional way of teaching. Below the answers to the question "What were your favorite materials as a child?": awl 1; baker's clay 7; balls 1; boxes 4; clay 6; crayons 8; das 5; dolls 4; fabric 4; flowers and leaves 2; foam rubber 2; glue 1; lego 3; markers 3; mud and earth 4; plastic from packaging 2; plastilina 3; palydough 9; pongo 7; sand 4; soap bubbles 1; straw 1; tempera paint 8; tissue paper 2; toys 7; water 2; wood 1.

In line with this, the most popular materials mentioned as choices for adults included baker's clay, buttons/beads; paper, flour, wood, sand and fabric, all materials that are highly unstructured and even more divergent in their use. Here's the answers to the question "What materials do you like now?": baker's clay 9; balls 1; boxes 2; buttons and beads 4; canvas 1; clay 5; corn starch 1; crayons 7; crystal 1; das 3; eye shadow 1; fabric 13; flour 3; photographs 1; glue 2; lego 1; logic games 1; markers 3; music CDs 1; paper 8; pastels 1; pencils 3; plastic from packaging 3; plastilina 2; playdough 1; pongo 3; sand 4; shells 1; tempera paint 7; water 2; wood 5. Conversely, these are the answers to the question "What materials do you like the least now?": abacus 1; awl 2; ballpoint pen 1; bike lock 1; books 1; boxes 1; buttons and beads 1; clay 5; crayons 5; das 1; fabric 3; foam rubber 1; fruit 2; gasoline 1; glass 1; glitter 1; glue 1; grater 1; industrial discards 1; logic games 4; markers 5; metal 7; mud and earth 2; oil 2; paper 1; plaster 3; plastic from packaging 3; polystyrene 3; pongo 1; rope 1; sand 1; stones 1; talcum powder 1; tempera paint 4; viscous and rough materials 7; water 1; watercolors 2.

A particularly evident distinction was made regarding the use of these materials. In their childhood memories as pupils, they were used in a convergent way, while those used or planned by the students during their practice teaching experiences or their first professional experiences appear to be used in a divergent way, not connoted with an educational intention. The materials don't seem to be used in individual activities aimed at specific ends, rather they are included in larger projects, at the beginning or afterwards, as part of a plan and not rigidly finalized.

5. Some emerging hypotheses

An emerging hypothesis from these initial observations is that the particular group of subjects who completed the questionnaire, students who had almost completed their teacher training, could determine a discontinuity between the materials listed in their current experience with respect the materials they recalled using as children, and how they used them. Teacher training seems to act in the opposite way from the continuity we assumed in the initial exploratory phase, influencing greater awareness of the choices and uses of materials, calling for more active teaching, where the actions of the teacher seem less closely linked to words alone and were mediated by materials, thus used in a less directive way.

In particular we hypothesized that teachers in training or at the beginning of their careers could search for and use materials as allies to support their teaching actions, so that they became additional teachers as Malaguzzi stated in his reflections on spaces and materials (in Edwards, Gandini, Forman (eds.) 1993). Materials are silent teachers who lead children to action, in the sense that the teacher/tutor acts together with and in front of the new teacher. The emphasis on materials seems to respond to the need to put space between the teacher and the children, leaving them to the task of using them so the teacher can have a more observational role, so s/he can understand the answers given by the class without being completely involved.

This participatory distance created by the materials and sought after by teachers undergoing training offered an interesting opportunity for self-training which leads to getting accustomed to less directive, more mediated interventions which are not intrusive and redundant, encouraging the constant use of active teaching in the long term.

Acknowledgements

The main questions raised by initial study can be summed up as follows. An awareness of one's own past as a schoolchild seems to influence one's educational intentions, confirming the choices made in the past, or modifying them. In this sense, the questionnaire included numerous open questions and space for including the needs felt, also to promote a self-reflexive attitude aimed at reconsidering one's personal experiences in a longitudinal sense. Each choice of a material is linked to a type of proposal, where the didactic action is not limited to repetition but requires a longer period of time for discovery and research by the children. Finally, the materials seem to be a fundamental support both for the training of future teachers and in their first experiences in the field, due to the fact that they support and accompany other teaching actions.

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1. Introduction

Structured and unstructured materials are fundamental objects in the didactic experience of teachers. They are powerful didactic mediators, which if used in a way to take advantage of their potential, facilitate more active learning which involves learners to a greater degree. The aim of this paper is to investigate the relationship between the preferences for the materials utilized during childhood and those used as an adult in memories and in the imaginations of future teachers for pre and primary schools, in order to support a more aware use.

2. An historical framework

First we will make a brief excursus in teaching and pedagogy regarding the value and importance that objects and materials have for children. Many researchers have studied and observed these aspects using various approaches and focuses. In schools, encounters with usual and unusual materials has long been part of the pedagogical tradition (Fröbel, 1993; Agazzi, 1938, 1950; Pizzigoni, 1956, 1971; Montessori, 1950, 1970; Freinet, 1973; Malaguzzi in Edwards, Gandini, Forman (Eds.) 1995).

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from theory to practice tank to workshops and teaching practice internships in schools in Lombardy (Kanizsa, Gelati, (eds.), 2010). The action research question posed by each individual student was the center for the practical experience in a real class, singled out thanks to the Supervisor or the Tutor in the host school.

Paradigm of reference is the philosophy of participatory research (Mortari, 2007, 2009, 2010) in the sense of action-research. It is a mixture of approaches like grounded theory, narrative inquiry, case studies: each is taken into consideration singly. The aim is to maintain the connection between formal and experiential knowledge, aiming at the shared transformation between the researcher and the educator/teacher. John Dewey's words ring true "[...] the ultimate reality of the Science of Education is not found in books, nor in laboratories, nor in classrooms where teaching takes place, but in the minds of the individuals dedicated to directing educational activities" (Dewey, 1929). The inevitable comparison with the value of experience and "educational "practices" provide data, themes, which are aspects under investigation; they are the only real sources of the problems which we must look into. These practices represent the *ultimate proof of the value* attributed to the *result* of all research." (Dewey, 1929). The complexity of each educational event was affirmed, without cutting or simplifying them in order to observe them better, while maintaining rigor and scientific validity. In fact, as stated by Boudon, "it is an illusion [...] to believe that we can access the complexity of reality as such. [...]. Contrary to the widespread idea, the purpose of scientific activity is not to explain *reality* - which, *as such*, is unknowable, or at least knowable only in metaphysical ways - but to answer *questions* about reality." (Boudon, 1984, p.238)

Action research is always starts from practice and returns to it, promoting change and improving the quality of life, and not only increasing knowledge, without underestimating this aspect. In this sense, those who share this research philosophy, be they professionals or researchers, aim to build "a research community within the community of practice" (Friedman, 2001, p.16). Action research, which deals with teachers, children, educators, inside and outside of school, is to be considered a meeting, moving towards narration in all its forms, a key element that can build new knowledge. (Bruner, 1992).

The hypothesis is that teachers, researchers and professionals formulate the questions and conduct the research together, overcoming the alleged neutrality of the researcher, who serves as an agent of change, and pays attention to social and environmental dynamics (Lewin, 1951). "Participatory" or "collaborative" philosophy has the distinctive feature of being a research dialogue between all those taking part in the epistemological experience. This occurs when those involved in the research contribute to the first stage of the creative thought processes and then take an active part by making choices about the design, implementation and validation of the research" (Mortari , 2007, p.137). This stems from experience, observation, looking for clues, constantly going back to the experience in a fundamentally cyclical process. It is not a methodical, but rather a flexible process which embraces elements as they appear. Participatory, collaborative action research becomes a sort of research-training, which Damiano defines as "practical-prescriptive" in sense of "knowing the practices in order to correct, integrate and develop them."

The choice of working on a research-training project with third and fourth year students was based on three aspects: each student chose a university course which will result in their becoming pre or primary school teachers; they each had good knowledge of at least 3 schools thanks to their 290-hour teaching practice internships; and they each had direct experience teaching, alternated with moments of reflection and observation, coordinated by the supervisors and the host school tutors. The wide-spread knowledge of the schools in Milan and Lombardy, the specific observation within individual schools, attention placed on active teaching methods and workshops, the correlation between the content of the courses and practical experience used directly in the individual activities proposed as well as in more articulated processes, together with the freshness of their own memories as pupils themselves at school, were all important characteristics.

3. Work methodology leading to the thesis

Starting from this approach, the thesis writing process was modified. In line with what we described above, in fact, the work methodology leading to the thesis, encompassing both the definition and realization of a class project and a thematic critical reflection of the experience and its results, required the fine-tuning and use of instruments and actions which called the research methodologies to mind.

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