Children, Objects, and Relations: Constructivist Foundations in the Reggio Emilia Approach

Annette C. Swann
University of Northern Iowa

This article examines how children's construction of relationships in exploring materials helps to explain the constructivist foundations of the Reggio Emilia approach. A quasi-naturalistic study of 12 preschool children, ages 3 and 4 years, individually exploring different kinds of collage papers reveals a range of constructivist categories including physical knowledge responses, mental relationships, and symbolic representation responses. The results show that as children explore the physical properties of media, they become more familiar with the affordances, or capacities of materials. Development across the ages of the group progresses from the children's exploratory actions on the objects to their increasingly more complex relationships to support a range of emerging representations—props of symbolic play, letters of the alphabet, and stand-alone artistic representation. These constructivist underpinnings emphasize the origins of Reggio Emilia's relational pedagogy and support today's playful relationships with all of the elements of art.

The recent impact of the Reggio Emilia schools in Northern Italy on early childhood education has created an interest in understanding the foundations and underlying theories of this innovative program and its offshoots (Edwards, Gandini & Forman, 1998; Katz & Cesarone, 1994). Defined as constructivist from the work of Piaget (1937/1954), where children construct their knowledge of the world by acting on the environment, the Reggio Emilia approach has also sprung from the research of Dewey, 1941; Hawkins, 1986; Bruner, 1980; Vygotsky (1934/1986), and others. Having broadened its base since the schools' post-war origins of the 1940s, Reggio Emilia constructivist theory, now neo-Piagetian, has been extended (Forman & Fyfe, 1998; Malaguzzi, 1998). The concept of knowledge has never been verifiable through one's perception, but rather it gains clarity through negotiation with others. Broadly, this analysis has moved from education about the facts to the social processes of how we learn as defined in social constructivism (Vygotsky, 1934/1986; Wertsch, 1985).

All learning in the Reggio Emilia Schools has taken place through a strong emphasis on the expressive media of the arts. However, Forman (1994), drawing on his constructivist background (Forman & Kuschner, 1983), recently studied the innovative media approaches of the Reggio Emilia Schools, revealing new cognitive insights about the affordances, or information about the properties of art media and children's construction of knowledge. The founder of the Reggio Emilia schools, Loris Malaguzzi (1998), labeled the communicative arts approach the hundred languages because of the in-depth capacity and expressive vocabulary of each learning medium. Reggio Emilia students have been able to translate multiple themes of interest across several media languages into “poetic understandings” (Vecchi & Giudici, 2004, p.137). Visiting educators and scholars have been amazed that Reggio Emilia children can create such extraor-
Studies in Art Education

**Children, Objects, and Relations**

Ordinary graphic and sculptural designs in all areas of project work. Reggio Emilia preschool children's precocious artistic abilities, astute perceptual awareness, and general advanced expression in the visual arts have appeared to be that of children many years older.

**How Do They Do It?**

The objective of this study is to examine how children's construction of relationships in exploring materials helps to explain the constructivist foundations of programs like Reggio Emilia and also contributes to artistic development. I present a research study of 12 preschool children, ages 3 and 4 years, individually exploring different kinds of collage papers, using a quasi-naturalistic research approach.

DeVries (2004) posited that, “the rationale for emphasizing the construction of relationships in education is that it is basically by constructing relationships that children elaborate their knowledge and develop their intelligence” (p.412). For Piaget (1936/1952), “intelligence is the construction of relationships” (p. 418). Piaget saw the mind as self-organizing through the theory of assimilation and accommodation which begin as reflexes at birth, “To assimilate means […] to understand or deduce, and assimilation is intermingled thereby with the formation of relationships” (Piaget, 1937/1954, p. xi). DeVries (2004) gave an explanation: As the hungry baby suckles, he or she constructs relationships between sucking and milk/nipple and not-milk/not nipple. These relationships, though not apparent to the child, have implied meaning that lead to relationships of similarities and differences which, in turn, develop into schemes for later classifications.

DeVries (2004) extended Piaget’s theory of intelligence for education by using the more easily understood concept of mental relationships to replace the use of logico-mathematical knowledge, which Piaget intended to be known as structures of mental organization. In order to clarify process and content, DeVries (2004) compared children’s efforts to elaborate their knowledge to two sides of a coin, with the process/structure of schemes/relationships on one side and knowledge content on the other. Through the process of assimilation-accommodation the child has acquired reasoning or knowing how structures of knowledge, that he or she applies, on the other hand, to the knowing that content of the external world.

Smith’s (1979) research suggested that knowledge acquired from the active explorations of the young child in physical, sensory, and expressive properties of media contributes to the acquisition of more rich and varied symbols. She identified movement as the most pervasive factor in the explorations of paint, clay, and blocks—often accompanied by pretense and sound. Through Werner and Kaplan’s (1963) “transcendence of expressive qualities” (p. 23), Smith (1979) linked the essence of media’s salient qualities to symbolic features that influence the child to create a richer, more meaningful, symbolic response. In Piagetian (1945/1962) terms, a more elaborated signifier meant a more elaborated signified.

In the same vein, Gardner (1980) proposed that children must spend several months learning about the media. They must have mastered various challenges and engaging tasks in each medium before representational qualities can be
attained. They must have understood what each of their actions and bits of knowledge will contribute to future symbolic meanings.

From play research, we also have found that information about the object through exploration and manipulation is essential to meaningful play experiences (Fromberg, 1992; Rubin, Fein, & Vandenbergh, 1983). Hutt (1970) added to the research of exploration and play by establishing that children must discover what an object does before they can discover what they can do with an object. Visual inspection has been the first stage of getting to know an object (Gibson, 1988), while novel objects elicit the greatest amount of attention and exploration (Willats, 1983). Piaget and Inhelder (1967) delineated specific exploratory procedures across age levels. They observed that infants have fallen into procuring and investigating behaviors. Slightly older toddlers have been the most active manipulators and explorers. Children, 3½ to 4½ years, have been largely passive and/or engaged in random exploration, such as holding or examining parts of the object by chance while older children process a limited amount of information quickly and then move on to other tasks. In general, with increasing age, the children’s exploratory behavior has become more planful and systematic in nature.

Gibson (1988) contributed to the epistemological research in that object exploration is a basis for the classification of objects, as well as for learning about the casual relationships between events: “The active exploration of objects, leading to observable consequences and more specialized exploratory activities, has important results for learning about what an object affords, what can be done with it, its functional possibilities and uses” (p. 24).

**Background**

As a background to my study, I reviewed the sensorimotor stage of infants through 2-year-olds via an expressive account of Reggio Emilia students in an experimental project followed with a definition of their constructions of knowledge. A recent publication (Vecchi & Guidici, 2004) from Reggio Emilia featured infants and toddlers, as well as older children, working in a sophisticated manner with a wide variety of beautifully processed recycled and natural materials—exhibiting alongside recognized Italian artist, Alberto Burri. Contrary to common practice in many classrooms, the children were not allowed to view the Burri exhibit until their work was finished and on display alongside the artist.

For examples of the sensorimotor child, we visited the Reggio Emilia's Bellelli School (for children ages 8 months to 2 years) constructing pieces for the Alberto Burri Project. Before his death, Burri, an abstract constructivist working in recycled and natural materials, donated whole exhibits of his work to a local community center that collaborated with the Reggio Emilia preschools on the project. Inspirations for the Bellelli students’ compositions began as teachers staged a studio environment of only white materials for the project arranged as an elaborate carpet. The media setup was described as modular units of various forms in high and low relief of rich textures, a beautiful composition in itself. The infants’ first fresh glimpse through the studio door was a threshold into a new object world, making a powerful impact on the senses. The layout of plastic

Annette C. Swann
textiles, papers, and filmy synthetics was composed entirely of sparkling shades of white—frothy, varied, and glittering.

Vecchi & Giudici (2004) described some of the actions of the infants and toddlers in relationship to the materials:

The children investigated this place-landscape with every part of their bodies: eyes, hands, and feet became sensitive receptors that clearly listened to and explored the material and its perceptual, visual, and sonorous qualities [...]. The children shook, struck, plucked, and pounded to hear rhythmic and sonorous qualities [...]. The children stroked the materials to feel the tactile qualities [...]. The children who were walking experimented with a sort of dance-exploration [...]. The children also explored the materials by tasting them and sniffing them to smell their odors. (p. 21)

We know from Piaget (1936/1952) that children in the sensorimotor stage construct mental relationships primarily through their senses. The Bellelli infants and toddlers established relationships with the physical properties of the materials by using their bodies, twisting and rolling, constantly changing and modifying their approaches to encounter and explore. Here we saw possibilities of children creating a more complex level of understanding by using their bodies as a tool for means of exploring. Their hands twisted, rolled, pinched, folded, creased, crumbled, and transformed. Their actions on the objects of the environment gradually became selective and intentional as children focused on resulting relationships. In this way, the children became capable of entering into new co-ordinations and syntheses of intelligence in their actions (Piaget, 1936/1952).

To continue the study of how children construct knowledge in the exploration of an art media, we looked at preoperational children from 3- and 4-year-old classrooms in an American constructivist preschool program. In this stage of thought (Forman & Kuschner, 1983; Piaget, 1937/1954) the defining characteristic has been the children’s ability to anticipate the effect of one action on another action learned by active exploration. Accordingly, I chose media similar to that used at the Bellelli School—collage papers not routinely used in the classroom—that would stimulate children to explore. Familiar objects have been thought to motivate symbolic play and pretend behavior (Piaget & Garcia, 1987/1991). The child’s past experiences in exploration and manipulation of the object has paved the way for meaningful representation.

**Methodology**

**Participants**

From a class of 14 students, approximately 86% or 12 children, participated in the study. The group was composed of five 3-year-olds and seven 4-year-olds. Two students chose not to take part in the study. Over 90% of the children at the school were from low-income families. Even though an attractive art center was available along with other learning centers for blocks, water play, puzzles, games, play dough, and books, few children regularly participated in art during the school day unless engaged by an adult. The 3-years-olds’ drawings revealed age-appropriate scribbling and global forms while most 4-year-olds drawings
advanced to the expected tadpole figures with faces and appendages—on target for the stage theories of Arnheim, (1969, 1974), Golomb (1974), and Lowenfeld (1943).

A trade-off in the disadvantage of a small group of subjects was the researcher/teacher's depth of familiarity with the students. Because this was a quasi-naturalistic approach, there were no expectations to generalize the results of the study, which first must be replicated (Hatch, 1995).

Setting
The setting was a university laboratory school for research in early childhood constructivist education. Although offering a broad base of Reggio-inspired media experiences and project work, the art program was integrated into a science-based curriculum rather than leading learning through the arts. The main focus was on the sciences and math in constructivist curriculum development, research, and dissemination with the arts well integrated throughout the program.

The art materials for the research were straightforwardly presented without special organization in a room designated for research purposes with an overhead camera and a control room. Some of the children were familiar with the room occasionally used by the researcher/art teacher and other specialist teachers for instructional purposes. The existing phenomenon of everyday occurrences was not greatly changed in the administration of the research measures (Hatch, 1995; Willems & Raush, 1969).

Media
The assortment of papers varied in color, texture, and size--cut-pieces and whole sheets of tissue, butcher, and construction papers as well as a few lengths of colored ribbons for novelty. Loosely arranged in a large clear plastic box approximately 16" x 24" x 5", the strips ranged from approximately 4" x 12" to 2" x 24." Whole sheets ranged from 9" x 12" to 12" x 18." The materials of approximately 75 various pieces appeared to invite order to be bestowed upon them. A large piece of white poster paper (24" x 36") provided ample work surface on a large table. Glue and scissors were not intended for this exercise. The children were told to use or “play with” as many of the papers in the container as they wished.

Procedures
The primary objective of the study was to provide examples of children in a natural situation constructing relationship knowledge for a better understanding of constructivist education. The methodology was to observe and record the basic exploratory actions initiated by each child for the purposes of description and interpretation.

The papers were presented to each child individually on separate occasions during a time designated for art following their afternoon nap. The data were collected with field notes, videotapes, and still photography for the purposes of observing the children's actions. Thirty minutes was planned for the experience, although children could cease participation at any time. The data gathering represented a small window into the children's first-time response to a new medium. Through weekly video recorded observations of the children's
responses in classroom art activities, the teacher/researcher established a context for the children's current interests, their developmental level, and a sense of the social interaction of the classroom.

The quasi-naturalistic procedures provided many opportunities for the child to spontaneously explore the papers without interruption or peer influence. Similar to action research, the procedures were little more than an extension of the child's usual routine in the classroom art center. In action research, the teacher/researcher has focused on inquiry and the need for active investigation by the learners rather than the instruction of a set curriculum (Fosnot, 1989, Hatch, 1995).

The actions of the children were labeled and defined according to their directly observable responses based on the teacher/researcher's general knowledge (Corsoro, 1992). Their responses were listed in the approximate order in which they were observed, however there were no duplicated responses listed. A child's repeated or continuous behaviors were recorded and factored into the analysis. For clarity, most of the 16 coded responses were descriptively presented as members of the categories that follow.

**Data and Analysis**

The data revealed an array of responses that mirrored a small sample of unfolding knowledge in the search for an answer to the question: How do preoperational children construct relationship knowledge and anticipate the effects of one action on another in the exploration of art materials?

The analysis of data (Table 1) produced an index of three distinct categories of responses:

- **Physical Knowledge Responses**: characterizations of children's spontaneous actions exploring the physical properties of materials that create the inception of relationships
- **Mental Relationship Responses**: descriptions of the reasoning used to construct relationships and organize one's actions on the materials
- **Symbolic Representation Responses**: constructions of signifiers denoting symbolic representation through play, writing, and symbols of artistic expression

Unlike the Bellelli children, my participants were initially a little hesitant to begin exploring the materials without some encouragement that they could do anything they wanted. Most children began by carefully placing their first rectangular strips on the table parallel with the edge of the work surface for easy examination—a natural starting point for the subsequent placement of strips to follow. Younger children randomly placed paper strips as a function of the unit of paper while older children immediately created more organized placements of strips in rows across the table. These elementary classification responses (Figure 1, A, B, F, G, H, & K) of like objects were reflective of what Piaget called “figural collections” (Piaget & Inhelder, 1971, p. 372). Although the younger children began to show gradual deliberation in the placement of papers, they nevertheless continued to lay papers out in juxtaposition without the parallel lines or open spacing used by the 4-year-olds. According to Piaget & Inhelder (1971), children of this age prefer “disjunct” (without touching) spatial relationships (p. 372).

---

1 Physical knowledge, according to Piaget (1936/1952), has been the feedback received by the child as a result of his or her actions on the physical properties of the environment.

2 DeVries (2004) described mental relationships, which replace Piaget's logico-mathematical knowledge, as the organization of reasoning and modification of the child’s actions.

3 Piaget (1945/1962) identified the beginning of symbolic or pretend play as cognitive representation evoking absent objects around 2 years of age. For every signifier (symbol) there is a signified (image). Because Piaget did not address artistic representation in his systems of symbolic functioning, other sources have been addressed later in this article.
Table 1. Index of Responses to Exploring Collage Papers in 3- and 4-Year-Olds.

<table>
<thead>
<tr>
<th>Physical Knowledge Responses</th>
<th>Response</th>
<th>Code</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tactile/Actions</td>
<td>P-TA</td>
<td>Touching with effect, smoothing or stroking repeatedly with hands.</td>
</tr>
<tr>
<td></td>
<td>Kinesthetic Actions</td>
<td>P-KA</td>
<td>Putting in the mouth or use of the body to explore properties other than simple touching with hands.</td>
</tr>
<tr>
<td></td>
<td>Random Placement</td>
<td>P-RP</td>
<td>Spontaneous or casual placement of paper onto the work surface.</td>
</tr>
<tr>
<td></td>
<td>Fragmenting</td>
<td>P-FR</td>
<td>Tearing, pinching, or shredding pieces of paper into smaller pieces.</td>
</tr>
<tr>
<td></td>
<td>Twisting/Wadding</td>
<td>P-T/W</td>
<td>Squeezing or crushing paper into wrinkled surfaces or three-dimensional shapes.</td>
</tr>
<tr>
<td></td>
<td>Dumping/Filling</td>
<td>P-D/F</td>
<td>Emptying contents of container and replacing same contents.</td>
</tr>
<tr>
<td></td>
<td>Testing Transparency</td>
<td>P-TT</td>
<td>Looking through thin papers by holding up to eyes or testing air buoyancy.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mental Relationship Knowledge Responses</th>
<th>Response</th>
<th>Code</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Organized Placement</td>
<td>M-OP</td>
<td>The deliberate or thoughtful manner in which the child combines papers or places pieces of paper on work surface</td>
</tr>
<tr>
<td></td>
<td>Fabrication/Construction</td>
<td>M-FA/C</td>
<td>Combining pieces of paper to create a new object in simple actions.</td>
</tr>
<tr>
<td></td>
<td>Folding/Creasing</td>
<td>M-F/C</td>
<td>Applying direct and intentional pressure with the hands to create three-dimensional forms.</td>
</tr>
<tr>
<td></td>
<td>Covering/Wrapping</td>
<td>M-C/W</td>
<td>Placing large pieces of paper over or around small pieces to conceal them.</td>
</tr>
<tr>
<td></td>
<td>Complex Constructions</td>
<td>M-CC</td>
<td>Creating multiple combinations of organized actions applied to one object.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Symbolic Representation Responses</th>
<th>Response</th>
<th>Code</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Symbols of Writing</td>
<td>S-W</td>
<td>Composing numbers and letters with suggestive configuration of writing.</td>
</tr>
<tr>
<td></td>
<td>Symbols of Pretend Play</td>
<td>S-P</td>
<td>Creating simple or complex configurations of paper to support “as if” scenarios.</td>
</tr>
<tr>
<td></td>
<td>Symbols of Verbal Routines</td>
<td>S-V</td>
<td>Acting out and/or creating verbal routines alongside the exploration/constructor of paper compositions.</td>
</tr>
<tr>
<td></td>
<td>Symbols of Artistic Development</td>
<td>S-A</td>
<td>Creating representational images by complex construction that stand alone and function without signifying or supporting pretend play.</td>
</tr>
</tbody>
</table>
With careful interest, my 3-year-old participants gradually warmed to the exploration of the physical properties of the materials (Table 2). As they brought papers out onto the table, their small fingers made tactile efforts to separate the thin layers and grasped the physical properties of each subsequent layer. Two children robustly dumped the entire contents out on the table looking nervously to see my response. Others used various kinds of touching, stroking, and kinesthetic actions that ranged from smoothing out the wrinkles of the tissue paper to putting it in their mouths or around their faces. Just as Kamii and Devries (1993) described, children varied their actions to observe the immediate and varied effects of the changing materials. Children put thin paper up to their eyes to look through and waved it about in the air. They also tore and crumpled papers. One boy placed a piece of thin paper against the adjacent wall and rubbed across it with his hand several times, a kind of variation of tactility seeking relations. Children oriented themselves to a specific range of affordances or physical properties that were unique to the different papers (Forman, 1994) just as the Bellelli children had done.

In contrast, the 4-year-olds paid little attention to the more familiar physical properties of tissue paper. They often creased and folded the more sturdy papers into components for construction as they aimed toward a product. Their construction actions marked the beginning of extended mental relationships in which the children anticipated the effects of an action on the media and planned accordingly. For example, one of the 4-year-old boys (Figure 1, I) showed an interest in the stiff papers as he readily folded and creased a strip of construction paper lengthwise as though it might afford more spatial dimensions. Next, he folded it crosswise, opened it up and said it was a “slide,” describing his intentions as he worked. He moved the object around playfully. He inserted a second paper inside the folded strip now labeled “pages in a book.” The boy experimented for several minutes creating multiple spatial relationships with tissue inserted and/or wrapped around the stiffer folded paper. His actions suggested both the reversing of contents/container relationships (Piaget, 1936/1952) and wrapping objects or the “presents” or “parcels” phenomena of young children (Piaget 1937/1954; Sinclair, Stambak, Lezine, Rayna, & Verba, 1989). These actions provided foundations of learning and prefigure later operations in development.

While some of the older children spontaneously explored the tactile qualities of the papers, most began immediately to construct multiple relationships toward an established goal. Past experiences informed their physical knowledge of tearing and crumpling activities. These 4-year-olds thought about their actions, chatted about the stages of progress, and often gave their pieces names when finished. They showed pleasure and focused attention toward creating objects of personal expression.

The emerging visual representation (Figure 1) aspect of the study became an outgrowth of the attempt to understand the construction of knowledge as children explored art materials and is worthy of further study in other media. However, this additional data captured early symbolic images that are a part of the complete range of children’s relationship activities listed in Table 2. Each child was represented by their most complex visual configuration response in terms of organized placement and constructed mental relationships. Some of
### Table 2. Responses to Exploring Collage Papers in 3- and 4-Year-Olds.

<table>
<thead>
<tr>
<th>Age</th>
<th>Sex</th>
<th>Physical Knowledge</th>
<th>Age</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.4</td>
<td>F</td>
<td>P-RP, P-TA, P-T/W, P-TT, P-KA</td>
<td>4.0</td>
<td>F</td>
</tr>
<tr>
<td>3.4</td>
<td>M</td>
<td>P-KA, P-T/W, P-RP, P-D/F, P-FR, P-TT</td>
<td>4.1</td>
<td>M</td>
</tr>
<tr>
<td>3.5</td>
<td>M</td>
<td>P-TA, P-FR, P-T/W</td>
<td>4.2</td>
<td>F</td>
</tr>
<tr>
<td>3.6</td>
<td>M</td>
<td>P-TA, P-TT, P-D/F, P-KA</td>
<td>4.3</td>
<td>M</td>
</tr>
<tr>
<td>3.8</td>
<td>F</td>
<td>P-TA, P-RP, P-KA, P-FR</td>
<td>4.4</td>
<td>M</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>Sex</th>
<th>Symbolic Representation</th>
<th>Age</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.4</td>
<td>F</td>
<td>S-P</td>
<td>4.0</td>
<td>F</td>
</tr>
<tr>
<td>3.4</td>
<td>M</td>
<td>S-P</td>
<td>4.1</td>
<td>M</td>
</tr>
<tr>
<td>3.5</td>
<td>M</td>
<td>S-A</td>
<td>4.2</td>
<td>F</td>
</tr>
<tr>
<td>3.6</td>
<td>M</td>
<td>S-P, S-V</td>
<td>4.3</td>
<td>M</td>
</tr>
<tr>
<td>3.8</td>
<td>F</td>
<td>S-W</td>
<td>4.4</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4.4</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4.11</td>
<td>F</td>
</tr>
</tbody>
</table>

---

4 Age has been given in years and months for all sections of Table 2.
the configuration responses (Figure 1) may have represented early symbolic functioning, but also appeared to be a function of the rectangular pieces of paper randomly juxtaposed.

Several easily identifiable examples of symbolic representations were represented:

- **Writing** (Figure 1, D & E,) in which the children identified the letters “T” and “X” respectively, as they were making them.
- **Play** (Figure 1, L) in which the child created a verbal scenario of the symbolic play activity.
- **Artistic expression** (Figure 1, C, I, & J) in which the children created no play narratives, but clearly identified the subject matter while they were working.

A broad perspective of representation and a shared cognitive base (Kindler & Darras, 1994; 1997; Matthews, 1984, Smith, 1979) united early symbols of communication—pretend play, the formation of letters and numbers, and verbal routines of play scripts and stories about their families. Smith (1979)
Annette C. Swann

believed that it is important for symbol formation that children, for a while, keep their signs and symbols overlapping and flexible. By taking symbols apart and examining them in various ways such as in play, art, and writing children have learned about their uniqueness. However, for purposes of this study, graphic outlines and three-dimensional forms of symbolic representation that stood alone without a play scenario were earmarked artistic development, although these symbolic objects also resembled objects that sometimes accompany play events. The representational objects of play were designated accordingly even though they overlapped with the representational objects of artistic expression in their symbolic nature.

In a lone study, Stevenson and Duncum (1998) affirmed that collage is a valid symbolic activity that reflects children’s artistic development similar to other art media, although the process of tearing, cutting, and pasting is often more important to preschool children than the finished work. In my study of collage papers, three children created products that met the artistic criteria of symbolic representation:

- A 3-year-old produced a basic symbol for an “airplane” (Figure 1, C.).
- A 4-year-old created a series of objects starting with a slide, and turning into a series of books, presents, or gifts (Figure 1, I).
- Another 4-year-old briefly outlined a “TV set,” and then created a “girl clown” out of the same strips of paper (Figure 1, J).

As the examples described above indicate, this small class of children revealed a wide variation of explorations but generally revealed progressive development with age. The sequence of relationship knowledge and symbolic development did not appear perfectly linear across the group nor did the sequence of all individual actions, as each child plotted his or her own course (Gardner, 1982). A few exceptions were found. In Figure 1, children B, age 3.4; G, age 4.1; and K, age 4.4 diverged slightly from the levels of their counterparts in organized placement of papers for a configuration response, although children B and G were quite active in physical knowledge responses. Child K (Figure 1), with some known learning disabilities, planfully tore small pieces of paper for elaborate organized placements with no symbolic responses.

Looking back at the Bellilli infants and toddlers who responded with more sensorimotor activity using their whole bodies as receptors, we see the American 3-year-olds still actively involved in bold, robust movements but more selective in their sensory indulgence. As Table 2 reveals, the 3-year-olds tended to respond with more purely raw physical knowledge actions than the 4-year-olds who created more complex mental relationships and examples of symbolization. A couple of older children (Table 2, Male, age 4.3 and Male, age 4.4) appeared to be somewhat passive and engaged in only random physical exploration as described by Piaget and Inhelder (1971). When older children tore, twisted, or wadded papers, they planned to use them specifically as components in a construction.

Henceforth, the 4-year-olds’ activities marked the beginning of extended mental relationships in which they anticipated the effects of an action on the medium and planned their symbolic activity accordingly. These organized mental relationships in the form of deliberate or thoughtful actions of combining parts,
changing shapes or surfaces, and sequencing multiple actions paved the way for a more elaborated symbolic representation. Across the range of children's ages, we see that preoperational children have assimilated the bits and pieces of physical knowledge from their explorations of media, that will in turn progressively accommodate more and more mental relationships for symbolic representation as reflected by their older counterparts.

**Implications**

Through this small window of 3- and 4-year-olds exploring art media, we can see the breakdown of activity, the construction of relationships, part to part, and better understand how the intimate understanding of the media by Reggio Emilia students contributes to high quality artwork and constructivist foundations. By looking at the exploration of media by preoperational children, we can also begin to understand the importance of children's development in relational attention and using the same materials over and over again instead of making adult-pleasing products. As children move from one activity to another, they accommodate (modify) old theories to knowledge gained from each new experience. Kamii and DeVries (1993) pointed out that “learning in the physical-knowledge approach is always rooted in children's natural development” (p. 15).

Therefore, art curriculum for young children should tap into children's spontaneous interest by encouraging them to structure knowledge-building activities in ways that are natural extensions of the knowledge they already possess.

As the Bellelli infants and toddlers acquired physical knowledge about art materials, expressions of meaning evolved through the forms of “non-representational compositions” with the facilitation of teachers. Werner and Kaplan (1963) stated that, “the nonrepresentational construing of objects as expressive is basic, and genetically prior, to the use of expressive properties in representation” (p. 20). In subsequent lessons at the Bellelli School, teachers led the children to make compositional choices about combining and recombining their earlier products of exploration to create more complex relationships.

Vecchi and Giudici (2004) described the process as follows: “A recombination that searched for equilibrium with other gestures and other thoughts: recombining means re-seeing, re-listening, re-imaging. It was a process of becoming that ended only when the 'compositional tuning' was complete” (p. 27).

The underlying developmental characteristics of the sensorimotor child are echoed throughout this language of pedagogy as we are reminded of the progressive increments of co-ordinations and syntheses. Although the children in my study explored carefully, they, nonetheless, revealed their developmental abilities by constructing a range of relationships resulting in simple configurations. There we also saw a range of nonrepresentational products by most of the younger children resulting from explorations of materials and early classifications. The connection linking all of these various extensions of knowledge by both groups of children is the opportunity and potential to construct progressively more complex relationships in open-ended art activities as children assimilated new experiences into their repertoire of schemes.

Although the sophistication of the Reggio Emilia approach may not be accessible to every American preschool, a sample of Reggio-inspired project work like that of Topal and Gandini's (1999) *Beautiful Stuff* is an introduction
Studies in Art Education

Annette C. Swann

to the adventurous exploring of beautiful found objects, sorting into categories, and creating simple classifications. Special attention is paid to detailed exploration and the physical properties of objects. The text includes examples of the kinds of student-led activities that reflect documentation and careful planning by adult facilitators.

**Summary and Discussion**

Although the early roots of the Reggio Schools were steeped mostly in constructivist activities involving numbers, mathematics, and perception, the theoretical base has since broadened to include the expressive media of the art studio as the central focus (Malaguzzi, 1998). Forman (2005) pointed out that in Reggio Emilia, constructivism no longer refers to the scientific experiments of Piaget but the “relations between elements that children explore when they ‘play’ with the facts” (p. 217). However, it appears that both Piagetian and Reggio scholars would now agree that as children become more knowledgeable of the affordances of the media, creating relationships with confident intentionality, they become more expressive. While much has been written about Reggio’s relational pedagogy (Malaguzzi, 1998; Rinaldi, 1998; Vecchi & Guidicci, 2004), the allure of today’s Reggio approach is the aura of aesthetics, imagination, and expressive charm of the learning environment and the artwork of the children. Reggio Emilia teachers assert that self-expression evolves out of the explorations of media of even the youngest children as they create the poetic languages that transcend their experience (Vecchi & Guidici, 2004). The “transcendence of expressive qualities,” that pervades the salient qualities of art media motivates the exploring child to create richer, more meaningful symbols (Smith, 1979; Werner & Kaplan, 1963). From this definition, we can infer that expressivity also finds a metaphor, a gesture, or a symbol for constructing relationships—and also instances of feeling and emotion in the exploration of art media.

**References**


