How Art Impacts Learning

Art & Early Brain Development

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Introduction

Much has been written about how art enhances creativity, imagination and self esteem, but far less is said about how arts enhances cognition, critical thinking, and learning. Our current education system places great emphasis on academic development. As a result, arts programs are being reduced or even eliminated from classrooms to accommodate more didactic teaching methods. Art educators and child development specialists recognize that the arts are not a "frill" or enrichment activity; the arts are basic to education. With the many challenges our public education system faces today, combining art with academic subjects in the classroom becomes increasingly important. The US Secretary of Education recently published a report on "The Value Added Benefits of the Arts," in which he states "Studies have shown that arts teaching and learning can increase student's cognitive and social development. The arts can be a critical link for students in developing the crucial thinking skills and motivations they need to achieve at higher levels." (Deasy., R & Stevenson, L., 2002)

How Art Impacts Learning Outcomes

What makes art such a great teaching tool? Art engages children's senses in open ended play and develops Cognitive, Social, Emotional and Sensori-Motor skills. Art is a cooperative learning experience that provides pleasure, challenge, and mastery. Instruction in the arts is one of the best ways in which to involve the different modes of learning. Through art, children learn complex thinking skills and master many developmental tasks. (Belden & Fessard, 2001)

Child development is a sequential process where children progress from simple to complex abilities. Art activities provide children with sensory learning experiences they can master at their own rate. Art materials and techniques range from the simplest to the most complex. Young preschoolers can explore dozens of non-toxic art materials directly with their hands or with a myriad of painting and clay tools. Older children can select art materials that offer greater complexity and challenge. Art manufacturers provide an exciting range of tools to work with. Tree branches, shells, sponges, found objects or simple kitchen tools can easily become art accessories as well. Each art material and accessory provides different skill development and has the potential for new discoveries. A creative classroom offers a wide range of art materials and tools for exploration and learning.

The chart below outlines developmental skills that are faciliated through art. Twelve art activities are listed at left, with Cognitive, Emotional Social and Sensori-Motor outcomes assigned to each. There is much overlap in developmental skill development within these and other art activities. However, this chart outlines one of the main skills developed within each activity and become a starting point for analyzing other art ideas, including your own classroom favorites.

This Art Activty teaches……	These developmental skills and outcomes			
	cognitive	**social**	**emotional**	**sensori-motor**
Open Ended Drawing	planning & adapting	impulse control	individuality	fine motor skills
Easel Painting	decision making	works independently	self expression	fine & gross motor skills
Bioputty	cause and effect understanding	take turns	stress release	tactile stimulation
Handmade Art Journal	creative thinking	shares art and stories	self expression	eye-hand-brain coordination
Crayon Resist Picture	cause and effect understanding	focuses	sensory pleasure	spatial relations
Collage	plans, predicts, adapts actions	shares materials	makes choices	visual discrimination
Group Murals	large scale planning	group cooperation	adapts to group	gross motor / sweeps paint
Scrap Wood Sculptures	divergent thinking	shares materials	flexibility	small motor grasp
Craft Stick Picture Frames	spatial relations skills	makes giveaway gift	self discipline	responds to structure
Paper Mache	problem solving	delays gratification	sensory implosion	sensory integration
BioColor Ornaments	follows multi-step directions	makes giveaway gift	makes choices	works in 3-dimensions
Watercolor Coffee Filters	cause and effect understanding	impulse control	emotional release	controls fluid materials

Integrating Art into the Classroom

Art is an outstanding tool for teaching, not only for teaching developmental skills but also for teaching academic subjects such as math, science, and literacy. The most effective learning takes place when children do something related to the topic they are learning. Thus, when children study any given concept, they learn it better and retain it longer if they do an art activity that reinforces that learning. This information has been recognized and used by good teachers since the time of Confucious, when he said:

"I hear and I forget
I see and I remember
I do and I understand."

Art & Literacy

Art activities are a great way to promote literacy and language development. Children who draw pictures about stories they have read improve their reading comprehension, story understanding and motivation to read new materials they have not seen before. (Critical Links). Art tools provide early learners with pre-writing experiences, as they grasp tools that later help them hold a pencil for writing. Art develops expressive and reflective skills that enhance writing, and also promotes print awareness, spatial relations skills, visual literacy, and verbal creativity.

Art can facilitate these literacy concepts:

Art Activity	Art Process	Literacy Concept
Group Murals	Children select mural theme then paint one large artwork cooperatively	Self expression, narrative story development
Open Ended Drawing	Child works within boundaries of large or small paper, organizing content and composition	Spatial relations
Easel Painting	Child develops painting with sweeping paintbrush motions, controllings fluid paints.	Visual literacy
Handmade Art Journal	Using paper, paper bags, or specialty collage papers, create journal cover, pages and binding. Illustratepages.	Book knowledge and appreciation

Art & Science

Art and science go hand in hand. Artists materials have scientific properties or physical attributes, many of which undergo a "change of state" when mixed with other art materials or left to dry. Science concepts taught during Preschool years include 1)Cause and effect 2) Properties of Materials 3) Changes of State. (Kilmer, S.J. 1995) These concepts are all easily explored with art materials. In later years, science standards include an "Investigation and Experimentation" category that also readily adapts to art. You can also add a science component to any art activity by taking out magnifiers and describing physical attributes, by using your five senses to experience a clay or paint, or by predicting what will happen when combining different art materials – such as crayon resist or BioPutty. Do you think the paint will cover the crayon? Do you think the BioColor will become a slippery putty? Why or why not? What is your prediction, or hypothesis? Science involves keen observation and inspires curiosity and questions.

Art can facilitate these science concepts:

Art Activity	Art Process	Science Concept
Watercolor Coffee Filter	Drops of liquid color expand, absorb, evaporate (dry) on porous material	Change of State
Crayon Resist Drawing	Wax crayon (solid) resists Watercolor (Liquid). Materials repel each other. Wax is "insoluble" to liquid.	Properties of Materials
"BioPutty"	Liquid BioColor mixes with BioPutty solution and changes to solid. Molecules in BioColor bond with molecules in solution.	Cause & Effect
Paper Mache	Torn paper & paper mache paste layered onto a fixed form dry and conform to that same shape. Absorbent, soluble materials tranform into one solid layer.	Change of State

Art & Math

Art can be thought about in a mathmetical way. In early years children work with simple collage materials and beads which can teach them numbers, positive and negative space, classification, and sequencing and pattern recognition. Tangrams can be introduced, and art journals can become creative number or shape books. Older children create drawings, paintings and 3-D models of more complex geometry forms as well as tesselations, fractals and fibonacci numbers. “Math is not just about numbers, formulas and logic, math is also about structure, symmetry, shape and beauty,” says University of Colorado math professor Carla Farsi. “Conversely, art is not only about emotion, color and aesthetics, but also about rhythm, patterns and problem solving.”

Art can facilitate these math concepts:

Art Activity	Art Process	Math Concept
Collage	Glue paper and collage materials onto paper in composition of your choice	Sequencing, rhythm, pattern
Scrap Wood Sculptures	Glue wood scraps together to create abstract 3-D sculpture, dry then paint.	Pattern, volume, classification
Craft Stick Picture Frames	Place craft sticks into square or rectangle, glue corners, dry then paint.	Shape, structure
BioColor Ornaments	Lay clear ornament on counter, sprinkle with BioColor shimmer powder and 3-4 colors BioColor. Close and shake. Dry then hang.	Volume, symmetry

Conclusion

I wish someone would invent a brain wave meter that we could set on child’s head to measure brain activity. Then we could have “proof” of art’s impact on learning! This imaginary brain meter might be a simple hat with sensitive brain wave receivers on the inside. If we used our meter during art activities, we would be surprised just how much brain stimulation takes place. Our meter would be spinning very fast! The problem solving, critical thinking, planning and adaptation required by art activities is enormous – much more than most people realize. Each of many hundreds of art materials and tools provide new and different learning.

Art can be incorporated across the curriculum and can also be encouraged as a family activity. Parents are valuable resources for facilitating childrens learning. To reach out to the parents in her Kindergarten class, Mrs. Miller began the year with a parent presentation on

"What is Child Art?" As a result, parents understood and valued their children's art in a different way. (Althouse, R. 2003) In the classroom we often hear parents get excited about their children's art and talk about how charming it is. "Oh, my! What a beautiful picture!" As educators, we can help parents become more aware about the value of art.

Art activities involve processes as well as products. It is the process of doing art that is so important to learning. While parents tend to focus on the product, educators can call attention to the process and help parents realize how important it is. Once parents acknowledge the value of art, they are more likely to keep art supplies at home, designate a household area for "messy art," and become more involved in art generally. Statements to parents about their children's art can have a big impact on their attitudes and actions. When a parent praises a child's art in front of you, try making a statement about the learning process involved, such as "Yes, I love that picture, too – Jesse enjoyed drawing this month, and drawing helped improve his writing skills."

Children love art because it's fun and provides them with authentic self expression: the freedom of choice, thought and feeling. Art teaches important skills for living and develops young minds. The US Department of Labor recently published a report that supports these views by concluding "arts education helps students develop skills needed for most jobs in later life, including creative thinking, problem solving, exercise of individual responsibility, sociability and self esteem."

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