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Brains in a box: Do new age toys deliver on the promise?

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It has become dangerously fashionable to label general --even trivial-- pedagogical advice that is not grounded in scientific fact as “brain-based learning.” For instance, findings about rapid synaptic proliferation in young children’s brains have nurtured hopes that cognitive capabilities can be increased by teaching infants vocabulary and basic facts with audiovisual material. But proponents of these early education programs have conveniently overlooked the lack of direct empirical evidence linking neurological and learning processes. (Stern, 2005, p. 745)

The brain-based learning movement that has swept education has become a societal preoccupation as well-intentioned parents scurry to find the best way to give their children a head start in learning. Fueled by findings of infant capabilities in perception, quantity and language and by a research focus on the brain, parents and educators are looking for ways to enhance children’s competencies before it is too late – before the mythical learning window closes at age 3. Toy companies were perfectly poised to quell parental fears – to offer what one toy chain boasted as “baby brain boosters” based on the exaggerated and sometimes unfounded science. And so it began...

In the past, toys aisles were filled with costumes, blocks, toys and play dough. Today, these same aisles chime and blink with electronic learning pads, video games, DVD players, and so called “educational” toys. In 2004, the National Retail Federation boasted sales for these toys reaching in the hundreds of billion of dollars. And many of

these dollars were spent on toys designed to increase infant and preschool intelligence despite any evidence suggesting that filling children's minds with discombobulated facts translated into meaningful learning. In fact, some of these toys even claimed to raise newborn *intelligence*, a promise that in scientific terms was untenable at best. Nonetheless, desire for these products was palpable. In 2002, Genius Products Inc., producers of the Baby Genius products, announced an 81% increase in gross revenues. That same year, Disney saw Baby Einstein yield \$17 million in sales, up from \$13 million the year before. Just as the car industry was using sex to sell cars, the toy industry started using brain development to sell toys.

In the last 30 years, researchers in child development have accumulated a great deal of information on how children learn. The science strongly suggests that this does not happen by assuming that children are empty vessels and that our job is to fill children's heads with facts. In this post Skinnerian, Piagetian era, infants and toddlers are seen as *active* explorers of their environments – capable discoverers who engage in meaningful learning. Infants also enter the world with some core knowledge. Their world is not one of William James' "blooming, buzzing, confusion," but rather one filled with discrete objects that move along trajectories, of language almost tailor-made to suit infants' capabilities, and of faces and social interaction. With these beginning points, infants are poised to delve into their surrounds and to construct (with the help of their mentors) a view of the physical and cultural world that resembles that of the adult.

Ah, but here is the rub – if infants can see objects and if they are sensitive to gravity at 8 months, should we not produce toys that encourage the learning of physics? If infants can distinguish different amounts of "stuff" and know that 3 is different than 2

should we not build toys that teach mathematics? If infants are sensitive to sounds in all of the world's languages, should we not offer toys that expose children to language so that they can become bi- or tri-lingual at the mere press of a button? Are we not building better brains and advancing children's natural propensities when we build on core knowledge and morph it into pedagogical learning? NO! Importantly, science considers babies and toddlers to be ready learners who understand concepts **in context**. They learn that floors will support crawling by crawling and later walking. They learn that blocks will be supported in a structure by placing the block atop the pile and watching it balance or fall. They learn language not by passively overhearing isolated words or watching a video, but by having "conversations" with interactive partners. They learn quantity by asking for more juice or by setting a table for 3 versus 4. Learning is not memorization. However, the toys (and some modern curricula in our schools) are selling the decontextualized learning of facts as the keys to later academic success. Parents have come to believe that young children need to watch educational videos, attend tutoring classes, drill with facts, and use expensive educational software to promote their well-being and intellectual growth.

How can we remedy the situation? When we remember that the world is a virtual classroom and that guided play is the best teacher, we can buy toys that encourage children to be the masters of their own play. We can buy toys that are 90% child and 10% toy as opposed to the other way around. We would avoid toys that direct children to look for one right, "fill in the blank" answer. Why would we do these things? Because **PLAY = LEARNING**, and research from early advances in reading and mathematics strongly suggests that this is so (Hirsh-Pasek & Golinkoff, 2003; Singer, Golinkoff & Hirsh-

Pasek, in press). Children who learn through play do better academically and socially. As members of the “Google” generation, 21st century children will have facts at their fingertips. They don’t need to be fed information through toys. They need to *play* and to become problem solvers and creative thinkers. Countless science lessons await children who play in the backyard exploring anthills and blades of grass. Lessons in mathematics abound when children divide birthday cake and separate the trail mix into sets of nuts and fruits. Cardboard boxes from local supermarkets offer foundations for makeshift taxicabs and storylines. Finger painting with pudding on freezer paper provides lessons in texture. Building blocks and construction toys build knowledge in physics. And, costume drawers, puppets, red rubber balls, books, crayons, paints, rhythm instruments, and dolls all allow children to invent and discover.

It is time to bridge the gap between what we can learn from the science of child development and brain development and the kinds of toys we are buying for young children. To *truly* prepare children for their future in our global society, we must not be data blind and ignore the ways that children learn best. We must invent toys that can be assembled in more than one way and that serve as props for children’s creativity. Learning occurs best in meaningful contexts, and not when children are served “Fact Food” in isolated clumps. Good toys are accoutrements that make everyday interactions more fun and expand the boundaries of children’s ordinary experiences. Good toys naturally build social skills, academic skills, and bigger brains.

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