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### FROM BABY SCIENTISTS TO A SCIENCE OF SOCIAL LEARNING

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Andrew Meltzoff

#### **What does the science of learning tell us about the nature of intelligence?**

People sometimes think of intelligence as a reflection of individual problem-solving skills. But we're increasingly realizing that humans have special brain and cognitive mechanisms for social interaction. A powerful aspect of intelligence is the ability to solve problems collaboratively.

Individuals and groups incorporate knowledge passed along from others into new problem solutions and innovations. Computers and other modern technologies have greatly increased the impact of this type of intelligence. In business and science, innovative breakthroughs now come from those who leverage the intellectual power of groups. These advances aren't going to come from a lone genius in a garret.

#### **Do findings about learning have any practical implications for education?**

More and more kids come to school as bilingual speakers or speaking a language other than English. Second-language learning, whether of English or another language, can

potentially be improved by integrating social interactions into teaching methods.

Research shows that individual, face-to-face tutoring is the most effective form of school instruction. Learning researchers are now trying to develop intelligent tutoring systems that provide key elements of human tutoring while avoiding its extraordinary financial cost.

In one approach, adults learn a second language by interacting with a simulated tutor on a computer screen.

### **Are educational videos and scheduled activities preferable to free play for young children?**

We now know that early learning sculpts the brain in important ways. This has led to an industry of selling products that promise to increase babies' IQs and learning abilities. But there is no scientific evidence that any product on the market does that. This situation has led to much confusion among parents and much frustration among developmental scientists.

There is no dichotomy between early educational activities and free play. In the first three years of life, free play *is* an educational activity. Driven by their own natural curiosity, infants solve problems for the pure joy of learning about the physical and social world. If you watch babies' faces as they build block towers and see gravity in action, it's obvious that they're learning.

People are the favorite playthings of young children, who are drawn to faces, voices, colors and movement. Through play, kids learn about others' goals and intentions — what makes people tick.

A baby is like a little scientist running experiments. And babies love to replicate their experiments. An infant will drop a block from one angle, then from another and then try a third approach, to see what happens in each case. It's like running pilot studies on the world.

### **Is it worthwhile to identify gifted children in kindergarten or earlier?**

Testing for exceptional abilities can level the playing field and identify promising students who might not otherwise get noticed, such as those from poor neighborhoods. On the other hand, if a child does poorly on a test at one age, he or she can get labeled as a slow learner.... A self-fulfilling prophecy then occurs, with the child meeting teachers' low expectations.

Society's desire to help every child succeed is running ahead of scientists' ability to design tests that identify specific talents early on. Children with special talents often pop out at us by virtue of what they do, not by what they score on a test. For now, that may

be the more humane way to identify them.

**What question about the nature of learning would you most like to answer?**

What makes social interaction such a powerful catalyst for learning? This is the key that will unlock more effective educational practices. Also, how do we design learning environments that capitalize on ... social interaction rather than having kids work alone at desks?

One element of social learning involves having a mentor, someone you identify with who frames important issues and provides an example that can be imitated and emulated. Having a mentor can change a child's, and an adult's, social identity.

Lucky scientists have kind and supportive mentors.... My mentor was Jerome Bruner, a psychologist who inspired me by connecting cognitive science to education. Scientists who have effective mentors learn to learn for the joy of it. They go back to being like baby scientists in the crib.