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SURREY-VANCOUVER KINDERGARTEN CURRICULUM TRIAL IMPROVED STUDENT SUCCESS AND REDUCED TEACHER BURNOUT



A kindergarten program emphasizing more play, hands-on learning, and students helping one another has been shown to improve academic outcomes, self-control, and attention regulation, according to the results of a new study by [Dr. Adele Diamond](https://www.centreforbrainhealth.ca/diamond-adele) (<https://www.centreforbrainhealth.ca/diamond-adele>), published today

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in the journal *PLoS One* (<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0222447>). The program also enhanced children's joy in learning, teachers' joy in teaching, and reduced bullying, peer ostracism, and teacher burnout.

The randomized controlled trial, led by Dr. Diamond, a Professor in the Department of Psychiatry and Canada Research Chair in Developmental Cognitive Neuroscience, introduced the *Tools of the Mind (Tools)* curriculum to willing kindergarten teachers and 351 children with diverse socio-economic status in 18 public schools across the school districts of Vancouver and Surrey.

Previous studies have demonstrated that *Tools* produces better results for reading and math and on laboratory tests of executive functions. Dr. Diamond's new study demonstrates for the first time that *Tools* also dramatically improves writing (exceeding the top level on the provincial assessment scale), improves executive functions in the real world, and has a host of social and emotional benefits not previously documented.

Tools is a curriculum developed in 1993 by a pair of American researchers, Drs. Elena Bodrova and Deborah Leong, who were inspired by the work of Russian psychologist Lev Vygotsky. The program emphasizes the role of social dramatic play in building executive functions. Its foundational principle is that social-emotional development and improving inhibitory control is as important as teaching academic skills and content. In 2001, the International Bureau of Education, a partnership with the United Nations Educational, Scientific, and Cultural Organization (UNESCO), declared that *Tools* is "an exemplary educational intervention."

Executive functions (EF) are cognitive control functions that rely on the prefrontal cortex and other interrelated brain regions. EF skills include inhibitory control (self-control and selective attention), working memory, cognitive flexibility, reasoning, and planning.

"Executive functioning skills are necessary for learning, and are more strongly associated with school readiness than intelligence quotient (IQ)," said Dr. Diamond. "This trial was the first to show EF benefits in a real-world setting, far away from the laboratory."

Teachers reported more helping behavior and greater sense of community in the *Tools* classes. Cliques developed in most control classes, but in few *Tools* classes. Late in the school year, *Tools* teachers reported still feeling energized and excited about teaching; control teachers were exhausted.

"I have enjoyed seeing the enormous progress my students have made in writing and reading," said Susan Kochan, a *Tools* teacher in Vancouver. "I have never had so many students writing two or three

sentences by the end of kindergarten. I have also enjoyed seeing the students get so excited about coming to school and learning. They loved all the activities we did so much that many students didn't want to miss school, even if they were sick!"

"Before children have the ability to sit for long periods absorbing information the way it is traditionally presented in school (through lectures), they need to be allowed to be active and encouraged to learn by doing," said Dr. Diamond. "Indeed, people of all ages learn better by doing than by being told."

TAGS: DIAMOND, EXECUTIVE FUNCTION, LEARNING, DEVELOPMENTAL NEUROSCIENCE

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