

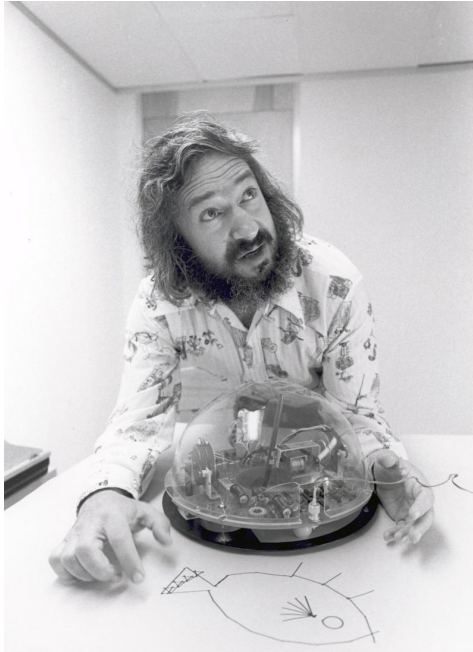
The Life, Theories, and Contributions of Seymour Papert

by David V. Black

Born in South Africa in 1928, Papert received his undergraduate and first PhD in mathematics from the University of Witwatersrand in mathematics. Emigrating to England because of his protests of apartheid, he received a second PhD in mathematics from Cambridge in 1959. In Geneva he worked with Jean Piaget. In 1963 was offered the position of research assistant in artificial intelligence at MIT where he worked with legendary computer pioneer Marvin Minsky.

By 1967 he was appointed to an endowed professorship and helped to found the MIT Media Lab, where he co-invented the Logo programming language, meant to make computers easier and more intuitive to program for children. Logo provided motion commands to a “turtle”-like device to draw out figures, and children who participated at MIT showed high levels of engagement and problem-solving in an atmosphere of play, following Piaget’s learning theories.

Papert became a highly vocal proponent of putting computers into classrooms, ultimately championing the One-computer-per-child movement and the “children’s machine,” a \$100 laptop built to last for at least five years that could be provided to every student. He traveled the world tirelessly to promote his vision of what education could be if schools truly realized the potential of computers as learning tools.



Contributions to Curriculum Theory:

Constructionism:

Seymour Papert developed the constructionist theory of curriculum based on Piaget’s cognitive constructivism. Constructivism postulates that children construct their own learning through experiences, gradually developing complex schemata for concepts that change over time through assimilation and accommodation. Papert took this idea further by stating that children should demonstrate their learning through constructing or building a product, which could be a computer program with Logo, a physical model, or some type of virtual project which they can then display and describe to others. Much of constructionist theory can be found in project-based learning pedagogy.

Themes of Papert’s Career:

Learning Theory and Machine Learning:

Papert was an early pioneer in artificial intelligence and machine learning along with Marvin Minsky at MIT. To understand learning theory so that machines could be designed to mimic the human process, Papert studied under Jean Piaget in Geneva.

Logo Programming Language:

To demonstrate the children can learn through experimentation, discovery, problem-solving, and play, Papert and colleagues developed the Logo programming language and turtle robot to teach math concepts and computer algorithms. He wrote the groundbreaking book

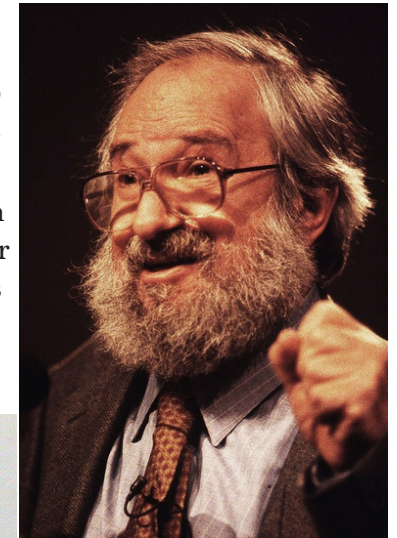
Mindstorms: Children, computers, and powerful ideas (1981) to describe their research findings and his theories of constructionism and learning by play and experimentation.

The Children’s Machine:

Papert proposed that instead of expensive desktop computers, schools should purchase a rugged \$100 computer that would go with the student through school and become fully integrated into education.

LEGO Mindstorms:

In 1985 Papert collaborated with the LEGO Company to develop a robotics system based on and named after his Mindstorms book. Using modular pro-



gramming based on bricks of code that could be assembled, the Mindstorms system as introduced millions of students to the fun of robotics. Papert is probably the only curriculum theorist who has his own LEGO mini-figure.



Timeline of Seymour Papert's Life

