An article that connect to the presentation **Sci Tech to STEMulate the Mind** with Cynthia Brawner, for Preschool to Second Grade

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Article Two

The T in STEM: Creating Play-Based Experiences That Support Children's Learning of Coding and Higher Order Thinking

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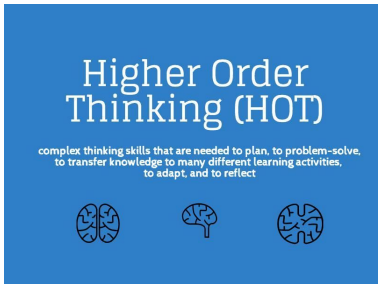
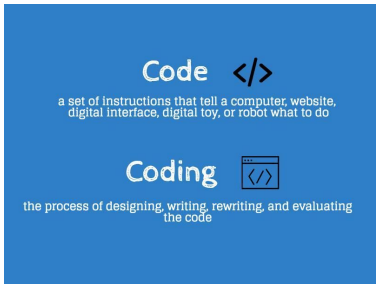
By: Tamara Kaldor

From Google Creative Labs announcing their new Project Bloks research project, to tangible technology toys aimed at parents, it can feel like excitement for coding is everywhere. Coding can be engaging and fun, but it's only meaningful when there are strong higher order thinking (HOT) foundational skills first put in place, helping young children understand the process of coding. Young children can't create meaningful experiences through coding without these foundational skills and without adults to help support their learning.

"Developmentally appropriate practices must guide decisions about whether and when to integrate technology and interactive media into early childhood programs."

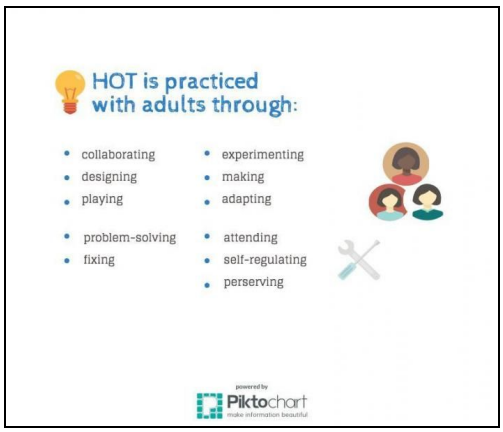
–NAEYC and Fred Rogers Center Joint Position Statement on Technology in Early Childhood (2012)

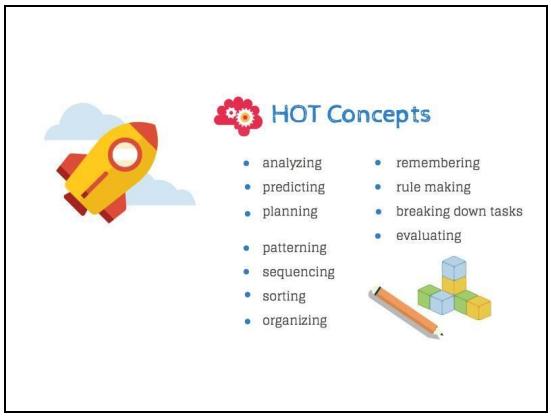




What are higher order thinking (HOT) skills?

Computational thinking (CT), higher order thinking (HOT), and executive functioning (EF) skills are phrases we see daily in education media and educational research. At their core, these skills are quite similar because they help us reason, think critically, and problem solve. They develop at different rates for children depending on context and exposure to play and learning experiences that support their development. Play experiences like problem-solving, collaborating and designing during their playing and making are powerful experiences that all children need to be successful in life, to innovate, and to learn how to think through complex problems, such as coding. The adults in a young child's life play a critical role as mentors, role models, and facilitators to help young children learn these skills through their use of language and their behavior. For this blog post, I will use the term higher order thinking (HOT) to refer to these combined skills.





For infants and toddlers, responsive interactions between adults and children are essential to early brain development and to cognitive, social, emotional, physical, and linguistic development.

–NAEYC and Fred Rogers Center College Joint Position Statement on Technology in Early Childhood (2012)

Early childhood educators have long helped young children hone their HOT skills through play-based experiences. Now there is a call from researchers and many others to deepen HOT skills in early childhood by introducing technology tools and coding when appropriate. We are just starting to put these

ideas into practice in early childhood settings, and we are learning right along with the children, families, and educators we support.

It is a very exciting time in the world of education, young children, and technology, but it can also feel overwhelming if you are trying to figure out how to get started in your classroom. Before we introduce technology tools to use for coding, let's first get started practicing our HOT and coding muscles with children in our classroom.

Developmentally appropriate teaching practices must always guide the selection of any classroom materials, including technology and interactive media.

–NAEYC and Fred Rogers Center College Joint Position Statement on Technology in Early Childhood (2012)

Five tips to get started practicing HOT and early coding foundational skills without any technology:

1. Block play

- Set up a variety of colored and shaped blocks where children can easily create and identify ***patterns*** with you. As children master the ***pattern*** and ***sequence*** making, you can ***collaborate*** to create more complex ***patterns*** and ***sequences*** that act as secret ***codes*** that children and adults have to ***analyze*** and ***problem-solve*** together to ***decode the pattern and together to decode the pattern and sequence.***

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Click on the title to continue reading the blog from NAEYC's site.

If for some reason the link doesn't work, here it is below.

http://www.naeyc.org/blogs/early-coding-higher-thinking