MPOWERME, LLC (Pediatric OT & SLP Services) Play To Do™ (Education Consulting • Toy/STEAM Design • Research) OT-Informed Project-Based Learning for Inclusive K–5 Classrooms

The OT-Informed PBL Guide

Designing Inclusive, Whole-Child Learning Through Story-Based Coding

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Introduction

Coding and computational thinking are increasingly embedded in early and elementary education. Yet many coding tools and kits are designed with the assumption that learners already possess the executive function, language, motor planning, and self-regulation skills needed to engage in open-ended problem-solving.

OT-informed Project-Based Learning reframes how coding experiences are designed and facilitated -- intentionally supporting how children **think, move, communicate, regulate, and collaborate** while engaging with STEM content.

In MPOWERME's **Coding Adventure Pilot**, our team demonstrated how **non-PBL coding materials** can be transformed into **developmentally aligned, OT-informed PBL experiences** through intentional storytelling, structured challenges, and embedded occupational therapy principles. Rather than following a pre-written PBL curriculum, the pilot focused on **adapting existing coding tools into story-driven problem-solving experiences** that supported whole-child participation and access.

Across sessions, children demonstrated measurable growth in **executive function, emotional regulation, communication, collaboration, and engagement** when OT-informed supports were intentionally layered into coding and STEM instruction.

Coding Adventure Pilot used adapted Codie Blocks® coding materials within OT-informed, story-based PBL experiences – visit https://codieblocks.com/ Antonia Llull, MOT, OTR/L
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"OT-informed Project-Based Learning supports how children think, move, feel, and communicate -- transforming coding activities into accessible, meaningful learning experiences."

Why OT-Informed PBL Matters in Coding & STEM

Traditional coding instruction -- even when hands-on -- often assumes learners can independently plan, sequence, persist through errors, manage frustration, and collaborate with peers. For many children, particularly neurodivergent learners, these demands can become barriers to participation rather than pathways to learning.

OT-informed PBL bridges this gap by **designing supports directly into the learning experience**, rather than relying on pull-out services or reactive behavioral strategies. When applied to coding and STEM tools, this approach strengthens access and engagement **without diluting technical rigor or learning goals**.

The Coding Adventure Pilot illustrates that **PBL is not limited to pre-packaged curricula** -- it can be intentionally designed through how materials are introduced, structured, narrated, and scaffolded.

What Makes Coding "OT-Informed PBL"?

Rather than publishing our full proprietary framework, this guide provides a **high-level overview** of the core elements that guided MPOWERME's OT-informed adaptation of coding materials into Project-Based Learning.

1. Story-Based Entry Points

Narrative contexts give purpose to coding challenges, supporting motivation, language development, and sustained engagement.

2. Sensory & Motor Readiness

Brief, predictable warm-ups prepare children's bodies and nervous systems for focused problem-solving and collaboration.

3. Material & Concept Fluency

Intentional exploration of coding pieces and commands reduces cognitive overload and supports independent problem-solving.

4. Executive Function Scaffolding

Visual supports, structured challenges, and guided reflection make planning, sequencing, and flexible thinking visible and teachable.

5. Collaboration With Belonging

Defined roles and communication supports strengthen peer interaction and reduce frustration during debugging and iteration.

Who Benefits From OT-Informed Coding PBL?

This approach is especially effective for:

- Neurodivergent learners (autistic students, ADHD, language-based learning differences, sensory processing disorder)
- Inclusive early childhood and elementary classrooms
- Coding clubs, maker spaces, and STEM enrichment programs
- Edtech and toy-based learning tools seeking stronger developmental alignment

Educators and organizations also benefit through:

- Increased student persistence during problem-solving
- Reduced dysregulation during errors and debugging
- Stronger communication and collaborative learning
- Greater return on investment from existing STEM materials

Why We Don't Publish the Full Guide

Effectively transforming coding tools into OT-informed PBL experiences requires **intentional design, expertise, and adaptation** based on learners, materials, and instructional contexts. For that reason, MPOWERME delivers full implementation guidance through **consultation and professional learning partnerships**, not as a static download.

We partner with schools, districts, and organizations to:

- Adapt existing coding, STEM, and STEAM materials into OT-informed PBL
- Design story-based coding challenges and learning progressions
- Support educators through coaching and professional development
- Consult with toy, edtech, and curriculum developers on inclusive design

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Let's Build Coding Experiences That Work for More Learners

If you are interested in:

- Strengthening executive function and SEL through while engaged in STEM lessons
- Designing inclusive, story-driven STEM experiences
- Improving access without reducing rigor
- Adapting existing products or curricula into OT-informed PBL

We'd love to talk.

Contact MPOWERME at mpowermekids@gmail.com to explore OT-informed PBL consultation and professional learning partnerships.

This resource provides a high-level introduction. Full implementation guidance is available through MPOWERME consultation and professional learning partnerships.
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