MakerShoe:
Towards an E-Textile Construction Kit to Support Creativity, Playful Making, and Self-Expression

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Light Up Shoes...
Self-Expression

Experiential Learning About Electronics and Craft!

Provide Creative Outlet Support
"BuzzStep"

- Power source
- Tilt sensor
- Oscillator
- Buzzer
"BuzzStep"

- Power source
- Tilt sensor
- Oscillator
- Buzzer
"BuzzStep"

- Power source
- Tilt sensor
- Oscillator
- Buzzer
"LightUp"

- Power source
- Tilt sensor
- LED x 3
"LightUp"

- Power source
- Tilt sensor
- LED x 3
what children want to make on their shoes and how they want to do that
Cooperative Inquiry
User-Centered Design

A participatory design method that focuses on the intergenerational partnership and collaboration between adults and children to brainstorm, design, develop, and test technology for children.
1st Co-Design Session
Method

A ‘blue sky’ method to elicit unbounded ideas for interactive shoes.

participatory design sessions with 6 children + 5 adults
Shoes + adhesive cardboard pieces + large post it pads + markers
The themes and design ideas that emerged:

- Personalization
- Gestures
- Achievements
- Communication
- Programming
what children want to make on their shoes and **how** they want to do that
2nd Co-Design Session

Rapid Prototyping Design Activity
Part of the second co-design session where the team made a Morse-code shoe.
2nd Co-Design Session
Outcomes

Make Noise when walk

Shoelaces Light-up in the Dark

Sound Activated Foot-Massaging

Air-Conditioner Shoes
Design Goals

- Responsiveness
- Self-Expression
- Fun & Playfulness
- Easy & Accessible
- Programmable
Co-design Session 1

Co-design Session 2

System Design
Current Prototype
System Design

E-Textile Shoe

Magnetic Hexagon Modules
Four Types of Hexagon Modules
System Design

- **Power**
- **Input**
- **Modifier**
- **Output**
Layer 1: Hardware
Hexagon Modules
System Design

Layer 1: Hardware

Layer 2: Shell
Layer 1: Hardware

Layer 2: Shell

Layer 3: Conductive Cover
E-Textile Shoe
System Design
E-Textile Shoe
System Design
E-Textile Shoe
System Design
Self-Expression

Experiential Learning About Electronics and Craft!

Provide Creative Outlet Support
First Scenario: FlashLight Shoe

Scenarios

a. LED
   Light Sensor
   Power Source

b. Circuit diagram

c. Shoe with integrated components

d. Daytime illustration

e. Nighttime illustration
"Headlights"

- Power source
- Light sensor
- LED x 3
"Headlights"

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MakerShoe is a new e-textile construction kit platform to support young children in self-expression, experiential learning, and creative making.
Future Plans:

Expand our module library based on our co-design sessions

Apply our approach to other worn objects besides shoes

Run more user studies with children
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