The Developmentally Appropriate Teaching of Data Collection and Analysis (DCA):
What do Preschool Teachers Think?

ASHLEY LEWIS PRESSER, JESSICA YOUNG, MICHELLE CERRONE, LINDSAY CLEMENTS, & HEATHER SHERWOOD
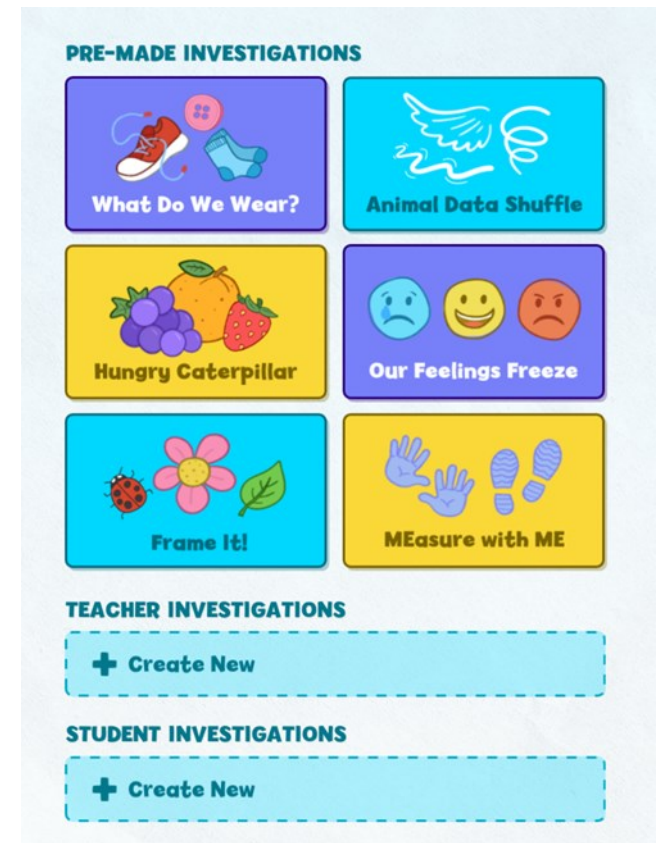
Focus on Math and CT

- Early mathematics knowledge is the most powerful predictor of children's later academic success (over and above reading and attention skills)

- Computational Thinking (CT) is an area of early mathematics problem solving that is quickly being integrated into state and district early learning standards because of its applications across content areas
  - Using data to solve problems is a CT skill!

Preschool Data Collection and Analysis (DCA): Project Goals

▶ Use **data-focused "investigations"** to foster **preschool mathematics** and **computational thinking (CT) skills** in a developmentally appropriate and fun way

▶ 9 investigations

▶ 1 teacher-facing app

PRE-MADE INVESTIGATIONS

What Do We Wear?
Animal Data Shuffle
Hungry Caterpillar
Our Feelings Freeze
Frame It!
MEasure with ME

TEACHER INVESTIGATIONS
+ Create New

STUDENT INVESTIGATIONS
+ Create New

Investigations Steps

Ask or Think about Research Question	Collect & Organize Data	Analyze Data	Interpret Data (i.e. Data Talks)

Example: What Do We Wear? Investigation

This investigation uses attributes (or characteristics) of clothing to sort groups, create a graph, and discuss data.

- Math Goals: sorting and classifying, counting, comparing
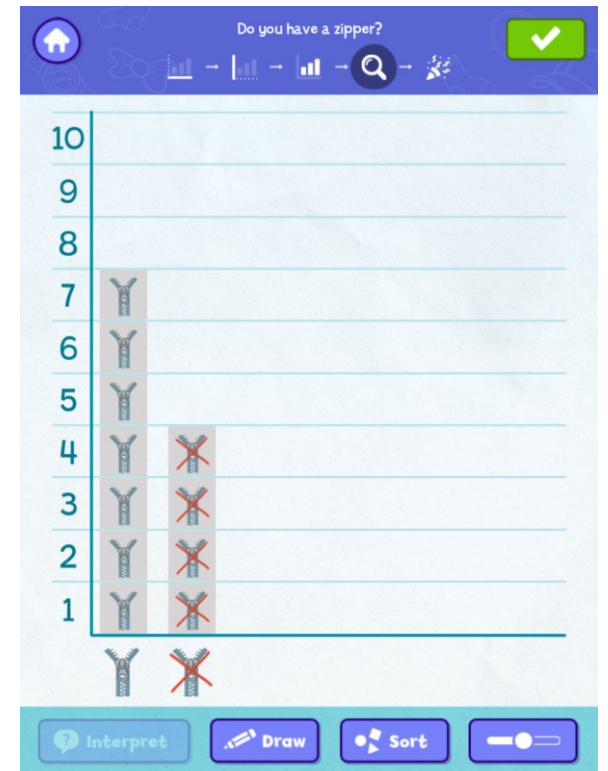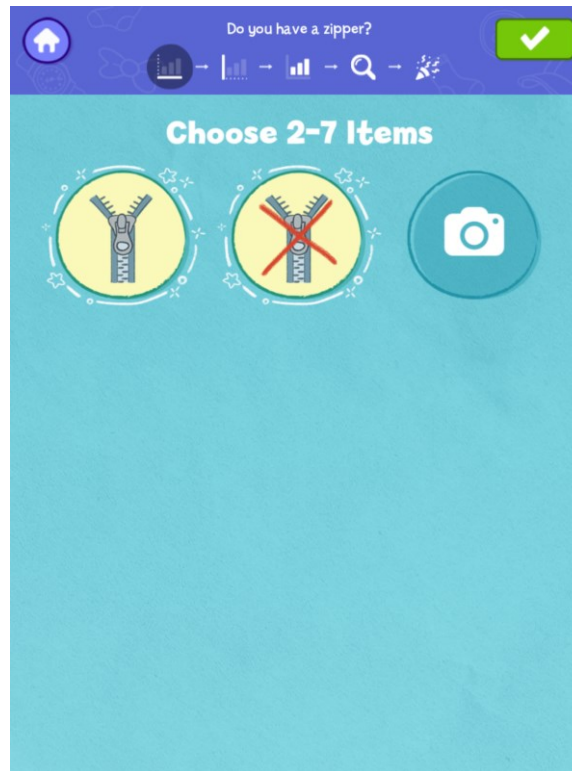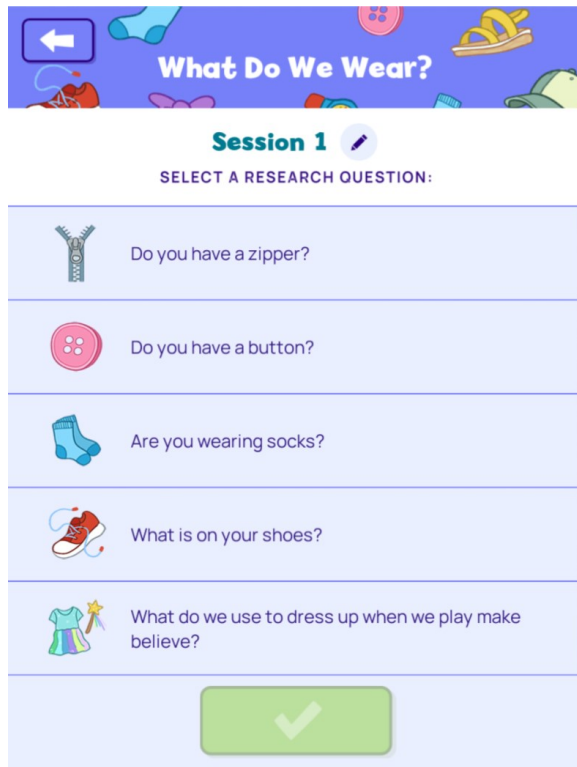- CT Goals: organizing and representing data in order to compare and analyze it

Example: App Screens

Data Collection

- Preschool Teacher Interview (n=10) and Survey (n=19)

- Researchers led participants through a series of PowerPoint slides with short videos demonstrating each investigation.
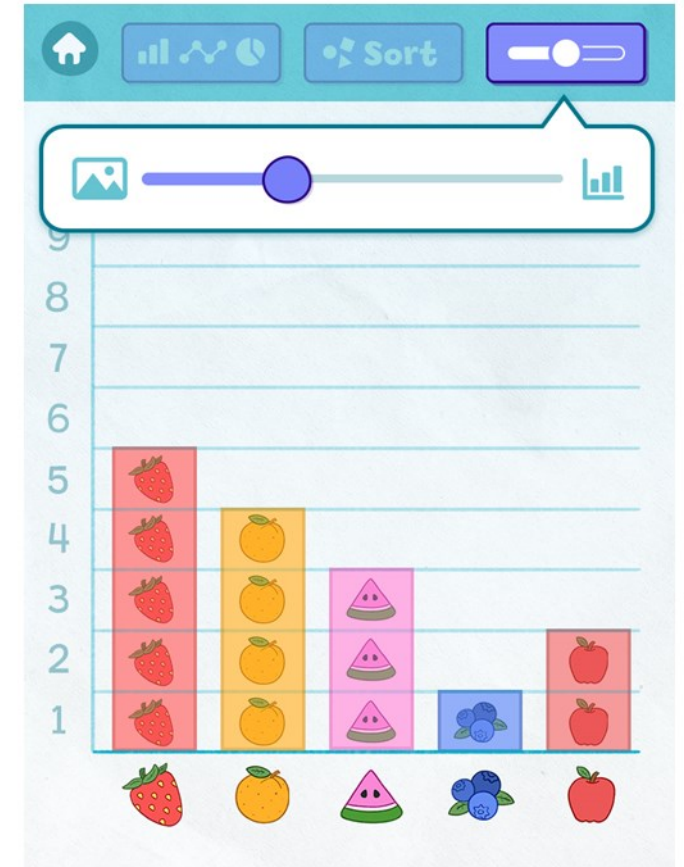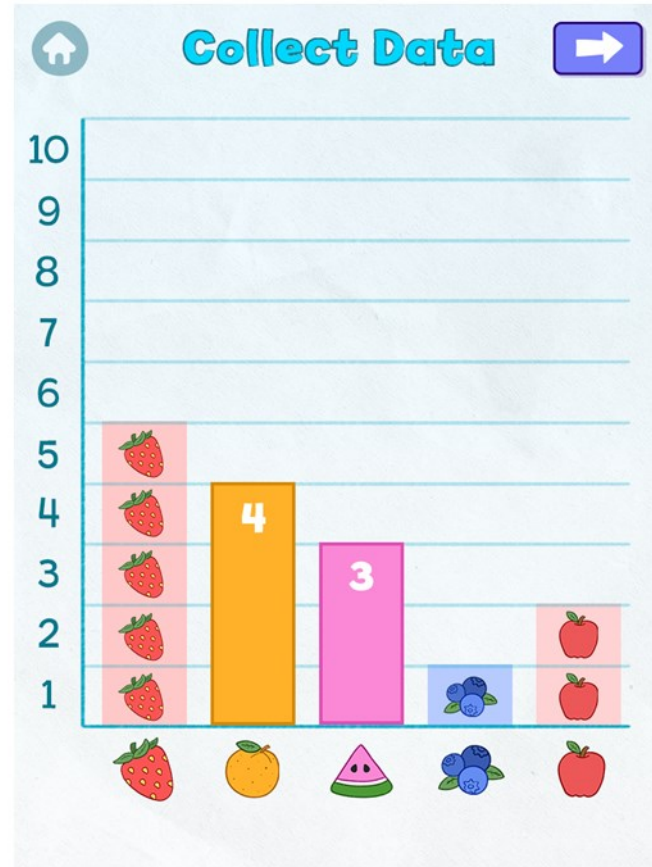
Findings - 1

- The **integration of mathematics and DCA** are welcome additions to the preschool classroom.
  - Built on and extended what children are already learning
  - Inclusion of hands-on activities and multiple visual representation
  - Engaging, play-based activities with real-world characteristics

Findings – 2

- **Developmentally appropriate**
  - Can be adapted based on the age (3-5 years) and readiness of children in the class
  - Scaffolding remains important!

Findings - 3

- Teachers anticipated some **DCA content** would be more challenging than other content.
  - Least Challenging: sorting, representing data
  - Moderately Challenging: making predictions
  - Most challenging: interpreting and discussing data

Findings – 4

▶ **Teacher preparation and pacing** was reasonable in terms of space, materials, and time.

▶ **Technology provides unique affordances** to create meaningful learning opportunities. Example affordances include features such as: Camera, Drawing, and Sorting features.

Conclusion

- DCA intervention likely to make a meaningful contribution to preschool classrooms, adding important math and CT content that is not currently included in preschool classrooms.

- Intervention supports current math learning goals and extends them.

- Content adaptable for wide range of ages (3-5) and ability levels.

- App provides unique affordances that are not typically available to preschool teachers and children.