SCIENCE THROUGH THE EYES AND HANDS OF A PRESCHOOLER

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INTRODUCTIONS

- WHO IS IN OUR AUDIENCE?
- PARTNERSHIP WITH EDUCARE AND UNIVERSITY OF MIAMI
- APPLICATION OF ESI AT EDUCARE

OBJECTIVES FOR TODAY

- EARLY SCIENCE FRAMEWORK
- IDENTIFY COMMON SCIENCE PRACTICES, CROSSCUTTING CONCEPTS AND CORE IDEAS IN EVERYDAY LEARNING OPPORTUNITIES
- EXPLORE EVERYDAY OPPORTUNITIES WHERE SCIENCE IS ALWAYS PRESENT
- MAKE SCHOOL TO HOME CONNECTIONS
- IDENTIFY OTHER OPPORTUNITIES IN OUR DAY FOR SCIENCE

EARLY SCIENCE FRAMEWORK PRACTICES

THE BEHAVIORS THAT SCIENTISTS ENGAGE IN TO EXPLORE AND DEVELOP KNOWLEDGE

- MAKING OBSERVATIONS (*HOW CHILDREN USE THEIR SENSES AND TOOLS FOR OBSERVATION TO COLLECT INFORMATION ABOUT THEIR WORLD)*
- ASKING QUESTIONS AND DEFINING PROBLEMS (*HOW CHILDREN DISPLAY INTEREST AND CURIOSITY, DEMONSTRATE WHAT THEY KNOW AND WHAT THEY DON'T)*
- MAKING PREDICTIONS (*HOW CHILDREN USE KNOWLEDGE FROM OBSERVATIONS AND PRIOR EXPERIENCES TO MAKE AN INFORMED HYPOTHESIS)*
- DEVELOPING AND USING MODELS (*HOW CHILDREN MENTALLY AND PHYSICALLY REPRESENT REAL WORLD PHENOMENA TO DEVELOP AND DEEPEN THEIR UNDERSTANDING)*
- PLANNING AND CARRYING OUT INVESTIGATIONS (*HOW CHILDREN ORGANIZE AND IMPLEMENT A PROCEDURE TO TEST A HYPOTHESIS)*
- USING MATH AND COMPUTATIONAL SKILLS (*HOW CHILDREN USE MATHEMATICS TO QUANTIFY AND DESCRIBE THEIR WORLD)*
- DOCUMENTING, ANALYZING AND INTERPRETING DATA (*HOW CHILDREN RECORD, ORGANIZE, AND MAKE SENSE OF DATA)*
- CONSTRUCTING EXPLANATIONS AND DESIGNING SOLUTIONS (*HOW CHILDREN INTERPRET DATA TO GENERATE EVIDENCE-BASED ANSWERS TO THEIR QUESTIONS AND DESIGN SOLUTIONS TO PROBLEMS)*
- COMMUNICATING INFORMATION (*HOW CHILDREN DOCUMENT AND SHARE THEIR EXPLANATIONS AND CONCLUSIONS)*

EARLY SCIENCE FRAMEWORK CROSSCUTTING CONCEPTS

BIG IDEAS THAT HELP SCIENTISTS CONNECT KNOWLEDGE FROM VARIOUS EXPERIENCES TO DRAW CONCLUSIONS AND CREATE A COHERENT VIEW OF THE WORLD

- PATTERNS (THE IDEA THAT EVENTS, PROCESSES, AND STRUCTURES REPEAT)
- CAUSE AND EFFECT (THE IDEA THAT A CHANGE IN ONE EVENT, PROCESS, OR STRUCTURE IS THE RESULT OF SOMETHING ELSE)
- SCALE, PROPORTION, AND QUANTITY (THE IDEA THAT THINGS DIFFER IN SIZE AND QUANTITY, WHICH CAN BE USED TO HELP IDENTIFY PATTERNS AND DRAW CONCLUSIONS)
- SYSTEMS AND SYSTEM MODELS (THE IDEA THAT ALL THINGS EXIST AND INTERACT IN ORGANIZED SYSTEMS)
- STRUCTURE AND FUNCTION (THE IDEA THAT THE WAY THINGS ARE BUILT AND/OR ORGANIZED DETERMINES WHAT THEY DO AND HOW THEY DO IT)
- STABILITY AND CHANGE (THE IDEA THAT SOME THINGS CHANGE AND SOME THINGS STAY THE SAME)

EARLY SCIENCE FRAMEWORK CORE IDEAS

THE CONTENT THAT PROVIDE A CONTEXT FOR ENGAGING IN PRACTICES AND DEVELOPING AN UNDERSTANDING OF CROSSCUTTING CONCEPTS

- **PHYSICAL SCIENCE**
  - MATTER AND ITS INTERACTIONS
  - MOTION AND STABILITY
  - ENERGY
  - WAVES AND THEIR APPLICATIONS
- **EARTH AND SPACE SCIENCE**
  - EARTH'S PLACE IN THE UNIVERSE
  - EARTH'S SYSTEMS
  - EARTH & HUMANITY
- **LIFE SCIENCE**
  - FROM MOLECULES TO ORGANISMS
  - ECOSYSTEMS
  - HEREDITY AND TRAITS
  - BIOLOGICAL EVOLUTION
- **ENGINEERING, TECHNOLOGY & THE APPLICATION OF SCIENCE**
  - ENGINEERING DESIGN
  - LINKS AMONG ENGINEERING, TECHNOLOGY, SCIENCE AND SOCIETY

LOOKING FOR LEARNING

- WATCH THE VIDEO
- IDENTIFY COMMON PRACTICES THAT THE CHILDREN ARE ENGAGING IN
- WHAT CROSSCUTTING CONCEPTS MIGHT THEY BE EXPLORING?
- WHAT CORE IDEA DOES THIS FIT INTO?
- WHAT OTHER LEARNING DOMAINS BESIDES SCIENCE ARE INVOLVED?

TIME TO EXPLORE

- EXPLORE THE MATERIALS AS PRESCHOOLERS MIGHT EXPLORE
  - PLAY-DOH
  - NATURE
  - WATER
  - BALLS AND RAMPS
- USING THE EARLY SCIENCE FRAMEWORK IDENTIFY:
  - COMMON PRACTICES THAT THE CHILDREN ARE ENGAGING IN
  - WHAT CROSSCUTTING CONCEPTS MIGHT THEY BE EXPLORING?
  - WHAT CORE IDEA DOES THIS FIT INTO?
- USING THE RIGHT QUESTION AT THE RIGHT TIME HANDOUT IDENTIFY:
  - WHAT QUESTIONS MIGHT YOU AS A CAREGIVER ASK THE CHILDREN

WHAT DID WE DISCOVER?

- WHAT PRACTICES, CROSSCUTTING CONCEPTS AND CORE IDEAS ARE POSSIBLE?
- WHAT QUESTIONS COULD WE ASK CHILDREN?
- HOW COULD WE MAKE A SCHOOL TO HOME CONNECTION?
- WHAT OTHER MATERIALS COULD WE USE WITH THESE MATERIALS?

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OTHER WAYS TO APPLY SCIENCE CONCEPTS

- WHAT OTHER EVERY DAY ACTIVITIES PRESENT OPPORTUNITIES FOR ENGAGING IN SCIENCE PRACTICES?
- HOW MIGHT THIS FIT INTO A THEME/PROJECT/STUDY?
- WHAT OTHER WAYS CAN YOU BUILD A SCHOOL TO HOME CONNECTION?