

Michigan Early Childhood Standards of Quality

# **Engineering and Technology: 3-5 Years**

**Children use tools (digital or non-digital) to learn, create, accomplish tasks, and solve problems. 1**

**a Explore and experiment with different uses for the tools, objects, and materials in their environment. 1A**

**1a. 3 Years 3.1A**

- 1 Use a camera to take a picture of their block tower. 3.1A.1
- 2 Use a sand timer to know how long their turn is on a computer. 3.1A.2
- 3 Use a triangular block as a ramp for a small car. 3.1A.3
- 4 Use a large appliance box as a space for dramatic play. 3.1A.4
- 5 Use wood blocks to make a ramp for cars. 3.1A.5
- 6 Use wooden blocks to build a road for the animal toys to follow. 3.1A.6
- 7 With adult supervision, click on a specific, favorite game app on a tablet in the learning environment. 3.1A.7
- 8 Use a small mallet or hammer to pound golf tees into a Styrofoam block. 3.1A.8
- 9 Use a scoop to move water or sand from the sensory table into a container. 3.1A.9

**1a. 4 Years 4.1A**

- 1 Record the behaviors of a classroom pet on a tablet, on chart paper, or in a science journal. 4.1A.1
- 2 Work with a group to build a tunnel out of shipping boxes that is large enough to crawl through. 4.1A.2
- 3 Use an empty cereal box to support an unsteady “balcony” area of the castle they are building. 4.1A.3
- 4 Make walls, tunnels, and towers for their castle construction with paper towel tubes and cardboard boxes. 4.1A.4
- 5 Use a stylus to navigate an interactive technology device and find out how tall a T. Rex was. 4.1A.5
- 6 With adult supervision, choose a game from the PBS Kids website using visual cues. 4.1A.6
- 7 Use a screwdriver to drive large, flat-tipped machine screws in and out of a block of wood, using their fingers to twist and untwist a bolt on the other side of the screw. 4.1A.7
- 8 Use a small garden trowel to dig holes for planting seeds. 4.1A.8

**1a. 5 Years 5.1A**

- 1 Use a tablet, or clipboard and paper, to record other children’s responses to a survey of their favorite colors, then use blocks or paper and markers to create a graph to show the most common favorites. 5.1A.1
- 2 Use a tablet and stylus to “sign in” when they enter the learning environment. 5.1A.2

- 3 Use a tablet to watch a video of how crayons are made. 5.1A.3
  - 4 Use scrap supplies and paper to engineer an imaginary city. With adult supervision, identify a website of their choosing from the options bookmarked in the web browser. 5.1A.4
  - 5 Use a stencil, straight-edge ruler, and/or compass to draw shapes on paper. 5.1A.5
  - 6 Use an eyedropper to move liquid from one container to another. 5.1A.6
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**b Learns from their experiments and experiences. 1B**

**1b. 3 Years 3.1B**

- 1 Carry their toy cars to the hard floor or table to play “because they go faster” than when they’re on the carpet. 3.1B.1
- 2 Bounce balls on the sidewalk with more and more force, to get them to bounce higher. 3.1B.2

**1b. 4 Years 4.1B**

- 1 Add water to sand to make it moldable without turning into mud. 4.1B.1
- 2 Stop pouring milk into their cup before it’s full or overflows. 4.1B.2

**1b. 5 Years 5.1B**

- 1 Learn how to play Red Light, Green Light and explain the rules to another child. 5.1B.1
  - 2 Experiment to discover what a magnet will stick to. 5.1B.2
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**c Recognizes real-world problems in their environment and begins to experiment with tools and other strategies to solve those problems. 1C**

**1c. 3 Years 3.1C**

- 1 With adult support, look through the basket of playdough tools to find something that will cut playdough. 3.1C.1
- 2 Walk around the room touching a magnet to different things to find out what will stick to it. 3.1C.2

**1c. 4 Years 4.1C**

- 1 Ask a familiar adult to plug in a tablet that won’t turn on. 4.1C.1
- 2 Think of and test several ways to build a sturdy ramp for their toy cars. 4.1C.2

**1c. 5 Years 5.1C**

- 1 Ask a familiar adult to look up the directions for a card game they want to play. 5.1C.1
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**Children use tools (digital or non-digital) to communicate and collaborate with others. 2**

**a Explores tools for the purpose of communication or self-expression. 2A**

**2a. 3 Years 3.2A**

- 1 Use a mirror to watch themselves make happy and sad faces. 3.2A.1

**2a. 4 Years 4.2A**

- 1 Use a tablet to take pictures of themselves making different faces. 4.2A.1
- 2 Use adaptive devices to operate software on the computer. 4.2A.2
- 3 Join in with others of differing abilities in solving a puzzle or maze. 4.2A.3

**2a. 5 Years 5.2A**

- 1 Play a “coding” game using arrow cards to “program” another child’s movements. 5.2A.1
  - 2 Use a translation or interpreter app to help them communicate with a friend whose home language is not the same as their own. 5.2A.2
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**b Uses tools to work with others. 2B**

**2b. 3 Years 3.2B**

- 1 Work with other children to take pictures for a collage. 3.2B.1
- 2 Use a computer next to another child. 3.2B.2

**2b. 4 Years 4.2B**

- 1 Work with other children to use a tablet to collect data on their peers’ favorite fruit. 4.2B.1
- 2 Use glue sticks, scissors, and paintbrushes to create a mural with other children. 4.2B.2
- 3 Take turns using a tablet with another child. 4.2B.3

**2b. 5 Years 5.2B**

- 1 Work as a group to draw a map on a tablet or chart paper. 5.2B.1
  - 2 Plan and build a complex block construction with other children. 5.2B.2
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**Children explore and interact with (digital or non-digital) tools and resources. 3**

**a With adult support and supervision, explores (digital or non-digital) tools and resources to find information. 3A**

**3a. 3 Years 3.3A**

- 1 With adult support and supervision, use a tablet to look for pictures of a plant's life cycle. 3.3A.1
- 2 Look at a picture of a block tower as an example of what they can build. 3.3A.2

**3a. 4 Years 4.3A**

- 1 With adult support and supervision, use a computer to look up instructions for how to plant seeds. 4.3A.1
- 2 With adult support, use non-standard measuring tools, such as blocks or carpet squares, to figure out how long something is. 4.3A.2
- 3 Look through a book about birds to find out how many different colors a parakeet can be. 4.3A.3

**3a. 5 Years 5.3A**

- 1 With adult supervision, look up dinosaurs in an encyclopedia app to find out what color dinosaurs were. 5.3A.1
- 2 Use a cup, compass, or stencil to draw a circle. 5.3A.2

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**b Communicates about their experiences with (digital or non-digital) tools and resources. 3B**

**3b. 3 Years 3.3B**

- 1 Describe a game they play on a family member's phone at home. 3.3B.1
- 2 Draw a picture of one of the characters from a favorite game. 3.3B.2
- 3 Show a familiar adult how they used scoops and funnels in the sensory table. 3.3B.3
- 4 Use adaptive devices for support when telling peers about themselves. 3.3B.4

**3b. 4 Years 4.3B**

- 1 Use a tablet to take pictures of themselves making different faces. 4.3B.1
- 2 Tell about something they learned from a video clip about penguins. 4.3B.2
- 3 Draw pictures of their bicycle with more and more detail. 4.3B.3
- 4 Show others a video they made of themselves dancing. 4.3B.4

**3b. 5 Years 5.3B**

- 1 Follow along with a simple YouTube Kids video as it demonstrates how to draw a cat. 5.3B.1
  - 2 Record their measurement of the rain in their science journal. 5.3B.2
  - 3 Use an encyclopedia app to answer their questions about where penguins live. 5.3B.3
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**Children begin to use digital tools and resources responsibly. 4**

**a With adult support and supervision, uses digital tools and resources responsibly. 4A**

**4a. 3 Years 3.4A**

- 1 Engage in a large group activity to make a short list of what is expected when they are using digital tools in the learning environment. 3.4A.1
- 2 When reminded, leave their food or drink on a table away from the device they're using. 3.4A.2
- 3 With modeling and guidance, turn a device on and off, and navigate to favorite apps. 3.4A.3
- 4 When reminded, shut down a device when they are finished using it. 3.4A.4
- 5 With modeling and practice, return a device to an adult when they see a low battery warning. 3.4A.5

**4a. 4 Years 4.4A**

- 1 Ask questions and engage in a conversation about how to use digital tools responsibly when the group is making a list of expectations. 4.4A.1
- 2 With modeling and guidance, carry a device carefully around the room to take photos. 4.4A.2
- 3 When reminded, and with modeling and guidance, plug a tablet into its charger when they see a low battery warning. 4.4A.3

**4a. 5 Years 5.4A**

- 1 Make suggestions about how to use digital tools responsibly when the group is deciding on expectations for their use. 5.4A.1
- 2 With modeling and guidance, use a mouse to navigate a computer screen. 5.4A.2
- 3 With support, use different apps on a device to take a series of photos of a plant, and then include those photos in a slideshow of the plant's growth. 5.4A.3
- 4 With guidance and support, explain that a photo on the internet belongs to the person who took the picture. 5.4A.4

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**b With adult guidance and supervision, begins to demonstrate an understanding of internet safety** 4B

**4b. 3 Years** 3.4B

- 1 Emerging 3.4B.1

**4b. 4 Years** 4.4B

- 1 Ask questions and engage in a conversation about how to use the internet safely when the group is making a list of expectations. 4.4B.1
- 2 Use only provided apps and digital resources on their device. 4.4B.2
- 3 Share pictures by showing the device to other children. 4.4B.3

**4b. 5 Years** 5.4B

- 1 Make suggestions about how to use the internet safely when the group is deciding on expectations for their use. 5.4B.1
- 2 Use a tablet to take pictures of themselves making different faces. 5.4B.2
- 3 With guidance and supervision, use only those websites listed in a web browser's bookmarks. 5.4B.3
- 4 With guidance, remember to only open a web browser or internet-connected software when an adult is supervising. 5.4B.4
- 5 With modeling and support, use the share feature of a photo app to upload a photo of their block tower to an archive managed by a familiar adult. 5.4B.5
- 6 With modeling and support, remember that they should not share any personal information (name, age, address, phone number) online. 5.4B.6