



# TECHNOLOGY

MONTESSORI CURRICULUM

# INTRODUCTION

## Montessori Methods in a Technology Curriculum

Maria Montessori believed that education should nurture the **whole child**—intellectually, socially, emotionally, and physically. While traditional technology education often focuses on rigid skill acquisition, a **Montessori-aligned approach** integrates technology in a way that respects **child-led exploration, purposeful work, and real-world connections**.

### Key Montessori Principles in Technology Education

#### 1. Prepared Environment

- Technology tools (e.g., tactile coding robots, child-friendly apps) are **accessible, age-appropriate, and purposeful**.
- Materials progress from **concrete (physical Bee-Bots) to abstract (block-based coding, then text-based programming)**.

#### 2. Freedom Within Limits

- Children choose **from structured tech activities** (e.g., "Would you like to design a digital story or program a robot?").
- No forced screen time—tech is **a tool, not a babysitter**.

#### 3. Hands-On, Experiential Learning

- Coding is taught through **physical movement first** (e.g., kids act out algorithms before programming them).
- Robotics and circuitry use **tangible manipulatives** (e.g., Snap Circuits, LEGO WeDo).

#### 4. Mixed-Age Collaboration

- Older students mentor younger ones (e.g., a 10-year-old helps a 6-year-old debug a Scratch project).
- Tech projects often involve **teamwork**, not just solo screen work.

#### 5. Connection to Practical Life & Cosmic Education

- Technology is linked to **real-world problem-solving** (e.g., using a digital camera for nature documentation).

- For ages 9–12, tech lessons integrate **ethics, sustainability, and social impact** (e.g., "How can AI help the environment?").

## 6. Observation-Based Assessment

- Progress is measured through **project portfolios, peer feedback, and self-reflection**—not just quizzes.
- Focus on **process over product** (e.g., "How did you troubleshoot your code?" vs. "Did your game work?").

## Why It Works

A Montessori technology curriculum avoids **passive consumption** and instead fosters:

- **Creativity** (digital storytelling, 3D design).
- **Logical Thinking** (coding, robotics).
- **Digital Citizenship** (safe online habits, ethical discussions).
- **Interdisciplinary Connections** (linking tech to science, art, and culture).

By embedding these principles, technology becomes **a natural extension of the child's curiosity**—not a separate, isolated subject.

## Suggested Additions for Your Curriculum

- **Nature + Tech:** Use apps for bird identification or weather tracking.
- **Minimalist Tech:** Avoid overloading young children with screens; prioritize **hands-on tech** (e.g., circuits, unplugged coding games).
- **Parent Involvement:** Workshops on **balancing tech at home** in line with Montessori values



## TECHNOLOGY CURRICULUM BY AGE RANGE

**Montessori Technology Curriculum** for ages **3–6**, **6–9**, and **9–12**, structured across **27 terms** (9 terms per age group). Each term includes **age-appropriate activities, learning outcomes, assessment methods, and key vocabulary**.

At the end, a **comparison table** aligns this curriculum with the **UK National Curriculum (Computing)**.

### Montessori Technology Curriculum (Ages 3–12)

| Age Group | Term   | Technology Activities                           | Learning Outcomes                          | Assessment Methods                  | Key Vocabulary                 |
|-----------|--------|---|--|-------------------------------------|--------------------------------|
| 3–6 Years | Term 1 | Using child-friendly tablets for simple puzzles | Develops basic touch-screen interaction    | Observation, Participation tracking | Tap, Swipe, Puzzle, Screen     |
|           | Term 2 | Digital storytelling (listening to audiobooks)  | Enhances listening & sequencing skills     | Verbal recall, Engagement level     | Listen, Story, Play, Stop      |
|           | Term 3 | Interactive shape/color matching apps           | Reinforces shape/color recognition         | Accuracy checks, Self-correction    | Match, Circle, Red, Blue       |
|           | Term 4 | Using a digital camera to take photos           | Introduces basic photography & framing     | Photo review, Peer sharing          | Camera, Click, Zoom, Picture   |
|           | Term 5 | Simple coding games (e.g., Bee-Bot)             | Introduces directional logic               | Observation of command sequences    | Forward, Backward, Left, Right |
|           | Term 6 | Voice-recording devices (recording sounds)      | Encourages auditory awareness & expression | Playback & discussion               | Record, Sound, Play, Speak     |
|           | Term 7 | Sorting games on interactive whiteboards        | Improves categorization skills             | Group participation, Accuracy       | Sort, Group, Same, Different   |

| Age Group | Term   | Technology Activities                                 | Learning Outcomes                         | Assessment Methods                     | Key Vocabulary                 |
|-----------|--------|---|---|--|--------------------------------|
| 6–9 Years | Term 8 | Using magnifying apps to explore nature digitally     | Connects tech to real-world observation   | Nature journal entries                 | Zoom, Observe, Insect, Leaf    |
|           | Term 9 | Digital musical instruments (touch-screen piano)      | Introduces cause-effect in sound creation | Rhythm imitation, Creativity           | Press, Sound, High, Low        |
|           | Term 1 | Basic block coding (Scratch Jr)                       | Introduces sequencing & loops             | Project completion, Debugging attempts | Code, Block, Repeat, Start     |
|           | Term 2 | Typing practice (child-friendly programs)             | Develops keyboard familiarity             | Speed/accuracy tracking                | Type, Keyboard, Space, Enter   |
|           | Term 3 | Creating digital art (e.g., MS Paint, Tux Paint)      | Encourages creativity & tool use          | Art showcase, Peer feedback            | Draw, Color, Erase, Save       |
|           | Term 4 | Researching simple topics (supervised internet use)   | Teaches safe online information gathering | Summary presentation                   | Search, Website, Fact, Source  |
|           | Term 5 | Building simple circuits (Snap Circuits)              | Introduces electronics basics             | Circuit functionality test             | Wire, Battery, Light, Connect  |
|           | Term 6 | Stop-motion animation (iPad + clay/figures)           | Teaches frame-by-frame storytelling       | Short animation playback               | Frame, Move, Capture, Play     |
|           | Term 7 | Email etiquette (writing & sending supervised emails) | Develops digital communication skills     | Email drafting practice                | Send, Receive, Subject, Attach |
|           | Term 8 | Basic robotics (LEGO WeDo)                            | Introduces mechanical problem-solving     | Robot function demonstration           | Build, Motor, Sensor, Program  |

| Age Group  | Term   | Technology Activities   | Learning Outcomes                      | Assessment Methods           | Key Vocabulary                  |
|------------|--------|---|--|------------------------------|---------------------------------|
| 9–12 Years | Term 9 | Digital citizenship (safe online behavior)                    | Teaches internet safety & privacy      | Scenario role-play           | Private, Share, Password, Safe  |
|            | Term 1 | Advanced Scratch coding (games/stories)                       | Develops logical thinking & creativity | Code review, Debugging       | Variable, Sprite, Event, Debug  |
|            | Term 2 | 3D design (Tinkercad basics)                                  | Introduces spatial modeling            | Printed 3D object assessment | Design, Rotate, Layer, Print    |
|            | Term 3 | Website creation (Google Sites/Wix for kids)                  | Teaches digital publishing             | Website navigation test      | Page, Link, Publish, Header     |
|            | Term 4 | Python/JavaScript basics (Code.org)                           | Introduces text-based coding           | Small program execution      | Function, Loop, Syntax, Run     |
|            | Term 5 | AI exploration (chatbots, image recognition)                  | Demystifies artificial intelligence    | Discussion on AI ethics      | AI, Chatbot, Recognize, Train   |
|            | Term 6 | Video editing (iMovie/CapCut for kids)                        | Teaches sequencing & storytelling      | Edited video showcase        | Clip, Trim, Transition, Export  |
|            | Term 7 | Cybersecurity basics (password creation, phishing)            | Reinforces safe online habits          | Quiz on safety practices     | Hack, Secure, Phishing, Encrypt |
|            | Term 8 | Arduino projects (LED blink, sensors)                         | Combines coding & electronics          | Functional prototype test    | Sketch, Upload, Sensor, Output  |
|            | Term 9 | Tech for social good (digital presentations on global issues) | Encourages ethical tech use            | Presentation & peer Q&A      | Impact, Solution, Present, Data |

## Alignment with UK National Curriculum (Computing)

| UK National Curriculum Area                                | Montessori Technology Activities            | Overlap   |
|--|---|---|
| <b>Computer Science</b> (Algorithms, Programming)          | Bee-Bot, Scratch, Python, Robotics          | ✓ Strong (Sequencing, Debugging, Loops)             |
| <b>Digital Literacy</b> (Safe Internet Use, Communication) | Email, Digital Citizenship, Research Skills | ✓ Strong (Privacy, Online Safety, Etiquette)        |
| <b>IT &amp; Creativity</b> (Multimedia, Data Handling)     | Digital Art, Video Editing, 3D Design       | ✓ Strong (Creative Tools, Presentation Skills)      |
| <b>Technology &amp; Society</b> (AI, Ethics)               | AI Exploration, Tech for Social Good        | ✓ Developing (Critical Thinking, Real-World Impact) |

### Key Notes:

- **Montessori Focus:** Less on standardized testing, more on **exploration, creativity, and ethical use.**
- **UK Curriculum Alignment:** Covers all key areas (CS, IT, Digital Literacy) but with a **child-led, hands-on approach.**
- **Progression:** Starts with tactile tech (3–6), moves to coding/robotics (6–9), and advances to real-world applications (9–12).