

Slide 3

Several studies support the educational use of the Calliope mini.

Schröer et al. (2024) investigated robotics education in primary school using a spiral curriculum with block-based programming and robots such as BlueBot and the Calliope mini. Their approach followed enactive, iconic, and symbolic learning stages, meaning students first learned through physical interaction, then through images, and finally through abstract programming.

The study showed that this method supports **student autonomy, collaboration, and inclusive learning**, especially in diverse classrooms.

Lübbbers and Jansen (2018) focused on practical classroom projects with around 50 pupils aged 11 to 17. They developed hands-on activities such as a light-controlled brush-bot and multi-device traffic lights to teach **if–then logic**.

Their results indicated positive usability and showed that sensor-based programming with the Calliope mini effectively supports **computational thinking and learner motivation**.

Slide 4 – What Is a Digital House Pet?

A digital house pet is a virtual creature that behaves similarly to a real pet — but in a digital way.

It reacts to environmental conditions such as light, temperature, movement, touch, and communication.

The key idea is that the pet does not act randomly. Everything it does is the result of **programmed rules** created by the learner.

This allows students to clearly see how code influences behavior.

Slide 6 – Pet Needs System

The digital pet has several needs, similar to a real living being.

These include temperature comfort, sleep, hunger, movement, play, and social interaction.

Each need is stored as a variable that increases or decreases over time.

The pet's overall mood is calculated from all these variables combined.

Slide 7 – Why This Project Matters

This project is important for several reasons.

First, it strongly engages learners through interaction and emotional connection.

Second, it clearly demonstrates cause and effect — students immediately see the consequences of their code.

Third, it encourages experimentation.

Students are not afraid to change values, test ideas, and improve their solutions.

Slide 8 – Sensors and Inputs Overview

The Calliope Mini includes several built-in sensors.

These sensors continuously collect data from the environment.

Accessibility

This project was designed so that beginners can understand it without prior programming knowledge.

Clear Learning Goals

This structured approach allows teachers to use the project step by step instead of all at once

Active Participation

When something does not work, they immediately see it through the pet's reaction.

Project-Based Learning

Instead of isolated tasks, students work toward a meaningful final product — a functioning digital pet.

This gives purpose to every programming step.

Learners understand why they are using variables or sensors, because these elements directly affect the pet's behavior.

Motivating Feedback

Students do not need the teacher to tell them whether their code works.

Creative Freedom

This means every digital pet can behave differently, even though the basic structure is the same.