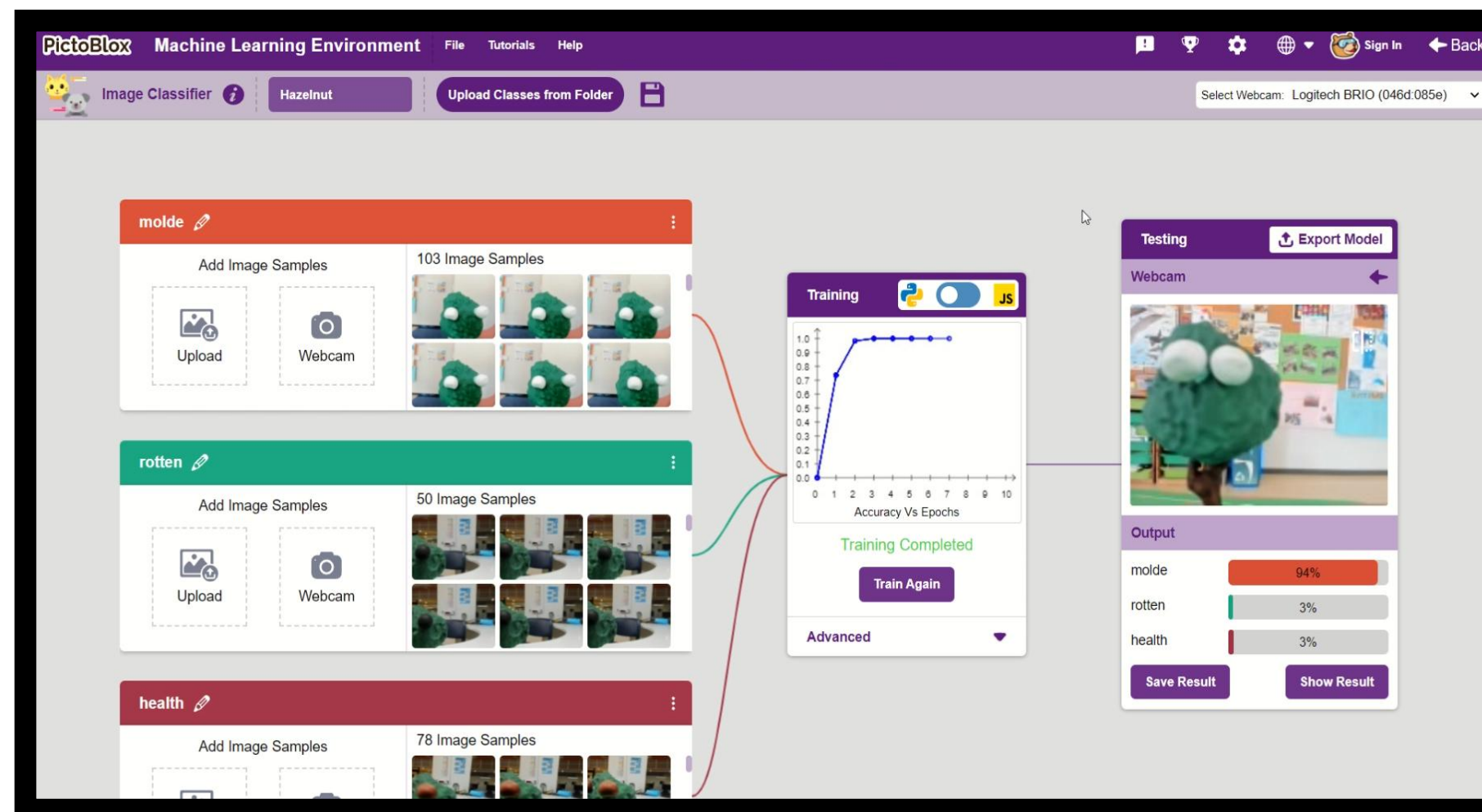


# AI in Action: Students Innovating Hazelnut Sorting with Machine Learning



**Rationale:** Turkey, the world's top hazelnut producer, exporting 80-85% of its yield and generating \$2 billion in revenue. Various factors negatively impact production.



**Aim:** To leverage AI technologies to enhance the efficiency and accuracy of hazelnut classification by applying computer vision and machine learning.

## Methodology:

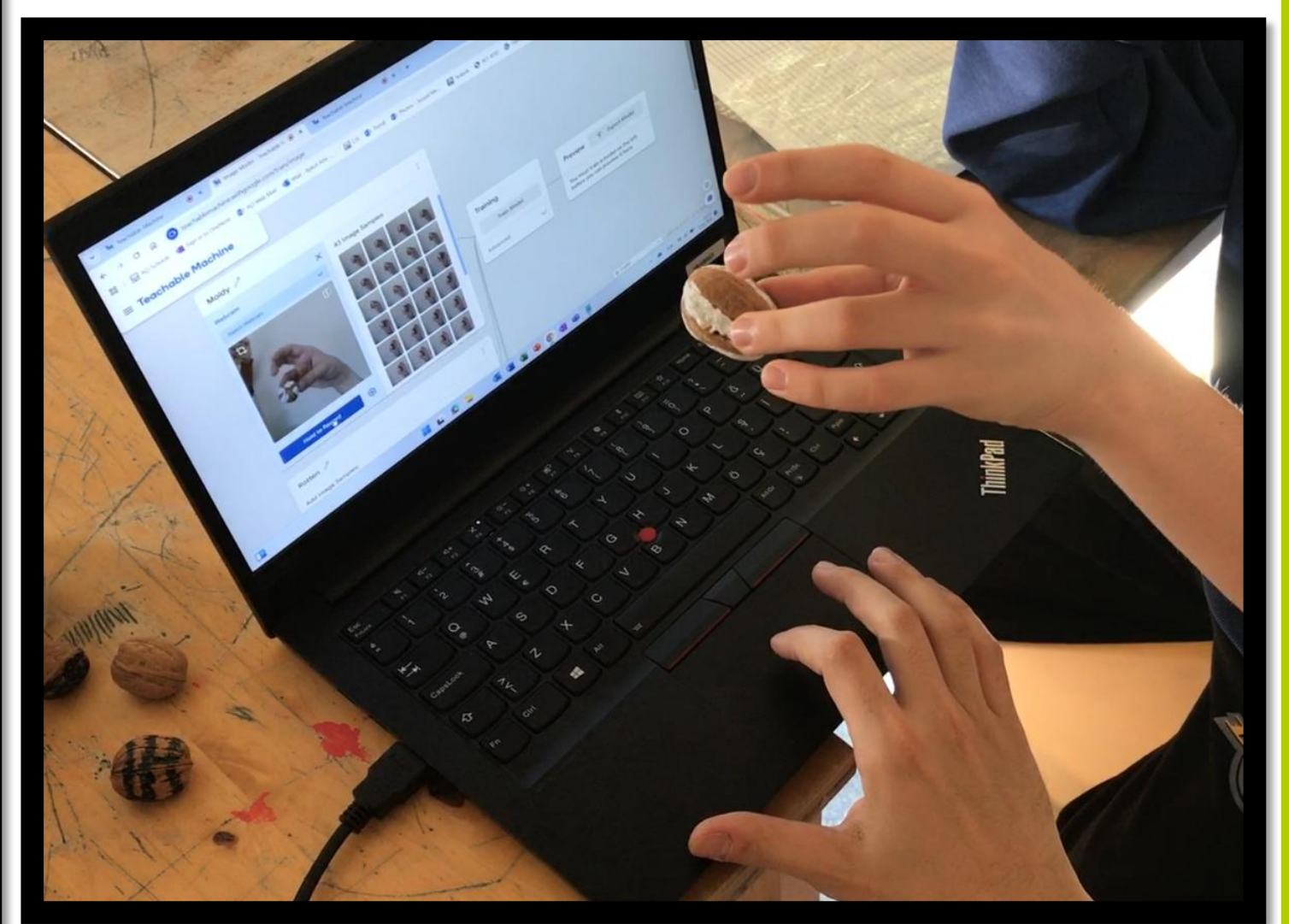
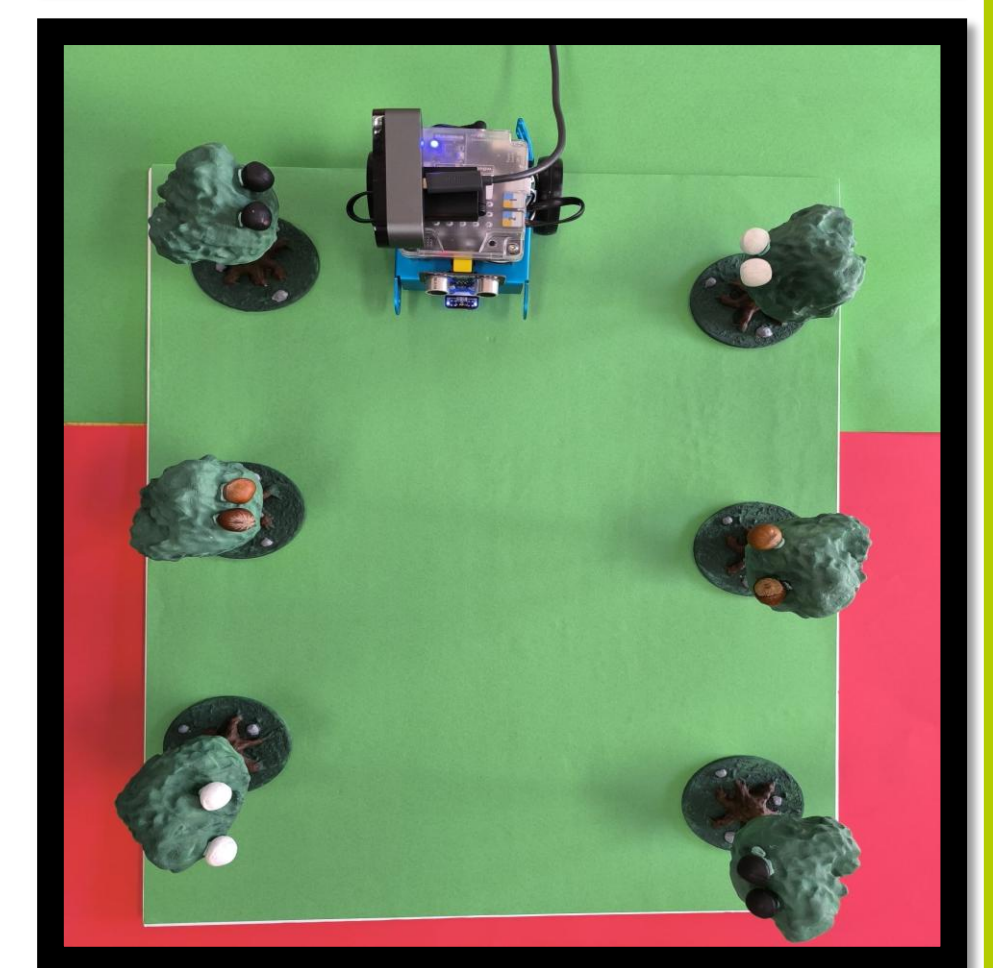
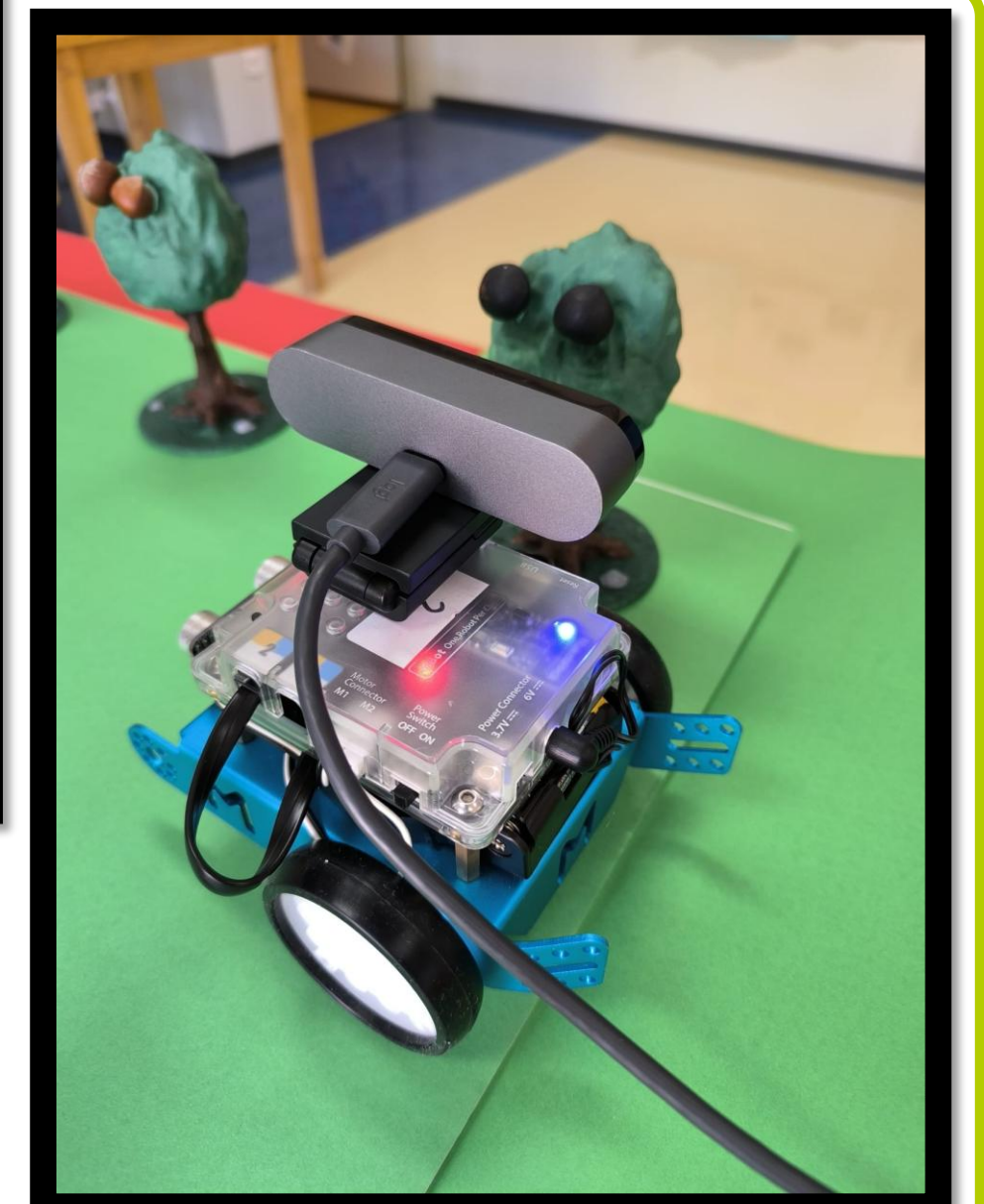
- **Data Collection:** Color-coded hazelnuts photographed for AI training (healthy, defective, ripe, moldy) to create a dataset.
- **AI Training:** Supervised learning teaches AI to classify based on visual features like size, color, and texture.
- **Deployment:** AI automates real-time sorting for accuracy and efficiency.

## Project Implementation Phases:

- Phase 1: Build an after-school AI club
- Phase 2: Identify & Define the Problem
- Phase 3: Explore AI Solutions & Ideation
- Phase 4: Design & Code the AI Model
- Phase 5: Test, Improve & Validate
- Phase 6: Real-World Impact & Application
- Phase 7: Presentation & Showcase
- Phase 8: Reflection & Future

## Outcomes & Benefits

- Higher Sorting Accuracy
- Enhanced Efficiency & Reduced Costs
- Sustainability & Waste Reduction
- Student-Led AI Innovation



This project automates sorting, reduces waste, and optimizes quality assurance by integrating real-world AI applications with STEM education. **Faster, smarter, and more precise!**  
**Accessible & Cost-Effective & Aligned with ESD**