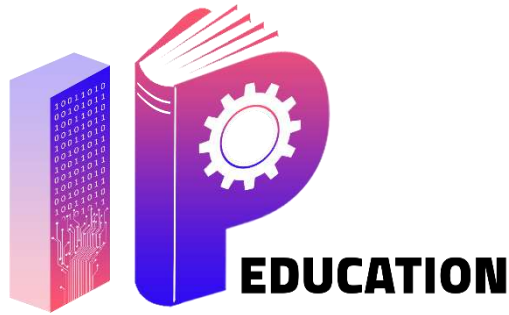




TOT Program

Course Syllabus

Course Title: Pictoblox

Prerequisites: Scratch coding

Credit hours: 12

Target audience: Trainers and Teachers

Course Description:

This is a TOT course meant for trainers who are interested in teaching and training the AI-integrated visual programming platform "PictoBlox," which builds on trainees' existing Scratch foundations and extends them into the fields of artificial intelligence and machine learning. Trainees are going to get specialized hands-on training based on a STEAM and AI-literacy framework. Starting from foundational design issues in interactive media and data representation (such as live data visualization, interactive video control, animated content, and three-dimensional content creation), passing by computer-vision and human-centered sensing components (camera-based motion tracking, face and body detection, image and text recognition), and not ending with applied artificial-intelligence and machine-learning skills (speech and language processing, generative AI integration, physical simulation, data logging, and training classifiers for images, poses, hand gestures, and audio. As well as, trainers are going to assimilate sophisticated skills and concepts.

Duration (hour)	The Content
2	Unit 1: Interactive Media and Data Subject 1: Data Visualization & Interactive Video • Extensions in use: Graph, Video Player • Blocks in use • Implementations: live classroom noise-level dashboard; auto-pausing interactive quiz video Subject 2: Animated, Spatial & Motion-Based Content • Extensions in use: Content Creation, Pen • Blocks in use • Implementations: Smart Classroom, motion-tracked air drawing
2	Unit 2: Computer Vision and Interaction Subject 1: Motion & Face Sensing • Extensions in use: Face Detection • Working principles and privacy safeguards • Implementations: expression-mirror, security system Subject 2: Body & Visual Recognition • Extensions in use: Human Body Detection, Text Recognition • Blocks in use • Implementations: body-controlled action game; lab-safety label reader
2	Unit 3: Language and Artificial Intelligence Subject 1: Speech & Translation • Extensions in use: Speech to Text, Translate • Blocks in use • Implementations: accessible spoken daily schedule; multilingual school-reception guide Subject 2: Symbols & Generative AI • Extensions in use: Cards Recognition, ChatGPT • Prompt design and critical output review • Implementations: card-driven calculator; ChatGPT-powered digital tutor
2	Unit 4: Science, Simulation and Data Subject 1: Real-World Data • Extensions in use: Weather Data. • Blocks in use • Implementations: weather-based outdoor-activity planner. Subject 2: Data Logging & Interpretation • Extension in use: Data Logger Attendance Tracker • Blocks in use

	• Implementations: duplicate-proof attendance tracker with exportable records
2	Unit 5: Applied Machine Learning Subject 1: Visual & Motion Classifiers • Extensions in use: Image Classifier, Pose Classifier, Hand Pose Classifier (ML) • Balanced data collection, training/testing, confidence • Implementations: paper-vs-plastic waste sorter; three-pose sports referee; hand-gesture command board Subject 2: Audio & Numeric Models • Extensions in use: Audio Classifier (ML). • Blocks in use • Implementations: clap/knock/noise event detector.
2	Unit 6: Pictoblox and Microbit Subject: Extensions with hardware

Course Requirements:

- Laptop with PictoBlox installed
- Stable internet connection (required for cloud-based extensions: ChatGPT, Translate, Weather Data)
- Microbit board (for the Unit 5 hardware-linked lesson)

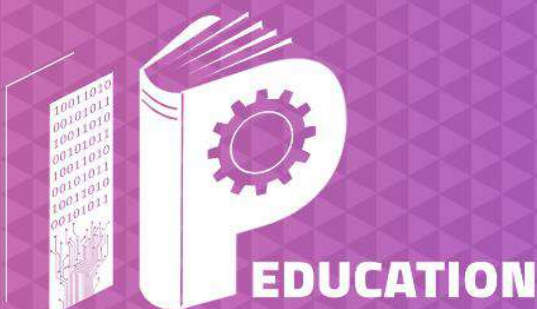
Learning Objectives: By the end of this course, trainees will:

1. Knowledge and Understanding

- A. Understand the functionalities of PictoBlox's extensions across interactive media, language AI, and machine learning.
- B. Deeply understand the programmatic logic required to combine sensing, data, and AI blocks into functioning applications.
- C. Comprehend foundational to upper-intermediate concepts of training-data design, model training, and confidence evaluation for classifier-based extensions.

2. Skills and capabilities:

- A. Design and build applied AI projects that integrate camera, audio, and data inputs with clearly measurable outputs.
- B. Use a wide range of programmatic commands to collect training data, train classifiers, and evaluate model performance.
- C. Develop and effectively employ the skill of problem-solving, to design test cases, detect failure points, and improve projects based on evidence.
- D. Facilitate PictoBlox lessons for their own students confidently, applying differentiated tasks (support / standard / challenge) and responsible-use practices for camera and generative-AI tools.
- E. Apply a digital-portfolio and assessment framework (attendance, submission, and documented outcomes) within their own classes.



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