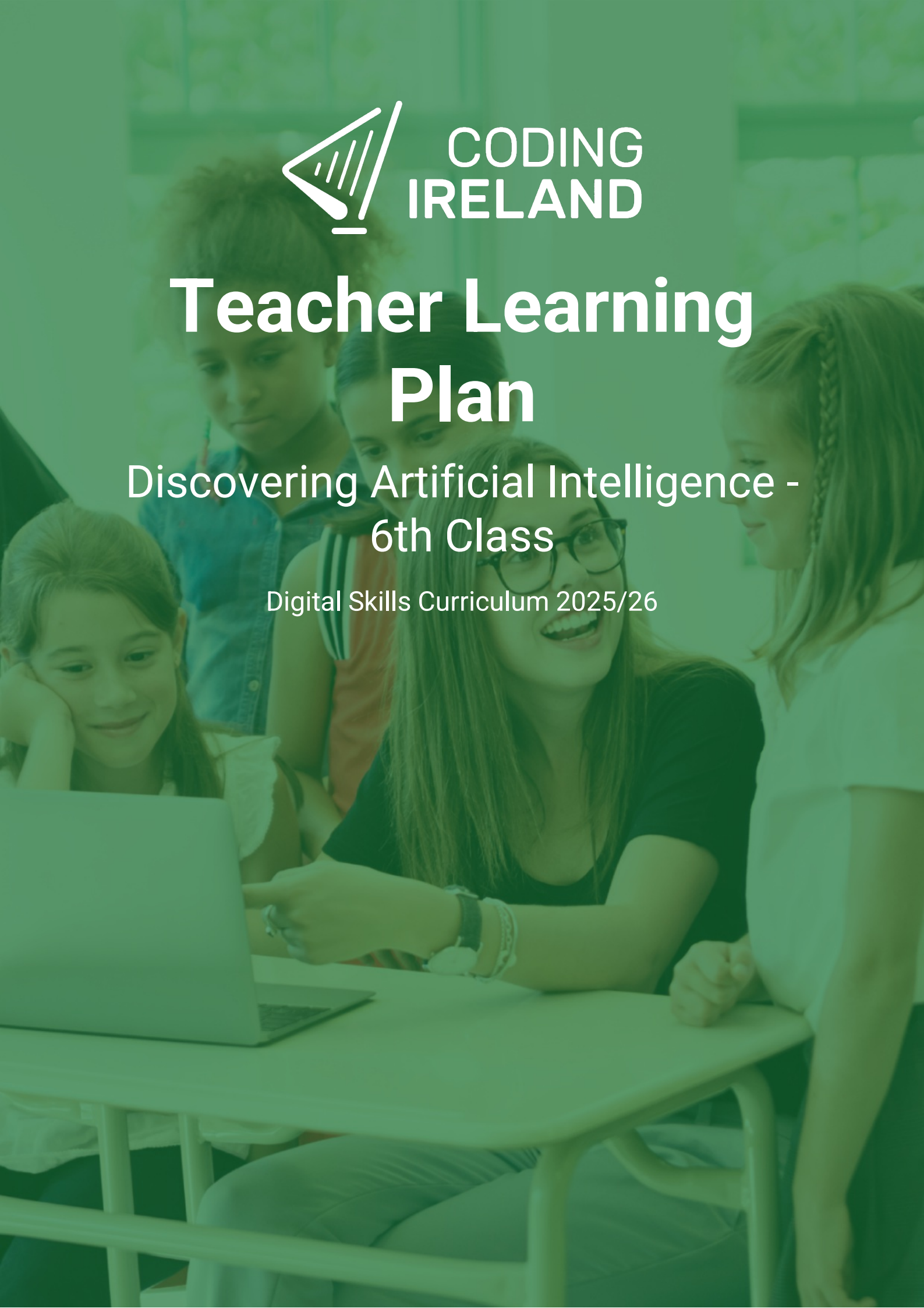

CODING IRELAND

Teacher Learning Plan

Discovering Artificial Intelligence - 6th Class

Digital Skills Curriculum 2025/26

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How to Use This Learning Plan

This learning plan provides an overview of the Discovering Artificial Intelligence for 6th Class, including it's structure, learning goals and outcomes, as well as guidance on how to effectively deliver the lessons.

Course Structure

The course is broken down into modules, units and lessons. Each unit focuses on a specific topic and contains several lessons that build on each other to develop students' skills progressively.

Student Access

Students log into the platform to access their lessons. They can follow the step-by-step instructions independently, or teachers can lead the lesson as needed.

Conducting a Lesson

Here's the recommended approach for starting a lesson:

1. Log in to your teacher account and open your class.
2. Locate and 'pin' the lesson you'll be covering.
3. Generate a login code for the students.
4. Have students visit codingireland.ie, enter the login code, and open the pinned lesson.

All lessons are divided into clear, manageable steps, and they can be delivered in one of these ways:

- Teacher-led (e.g., demonstrated on a shared screen);
- Student-directed, where learners work independently;
- Or a combination of both approaches.

Challenges

Most lessons include an optional challenge at the end. If time permits, these activities encourage students to extend their work from the lesson, enabling differentiation in learning.

Quizzes

Most lessons include an optional multiple-choice quiz at the end to reinforce key concepts. Students can select from three difficulty levels:

1. Easy: Focuses on basic concepts, simple recall, and foundational understanding.
2. Normal: Involves moderate complexity, requiring straightforward application of concepts.
3. Hard: Presents challenging questions that demand deeper analysis, application to edge cases, or complex scenarios.

Student Devices and Equipment

Students only need a Chromebook, laptop, PC, or tablet (such as an iPad). Some courses in the Digital Skills Curriculum may require additional equipment, like micro:bits or LEDs, which are specified in the course details. If you don't have micro:bits it's still possible to do most of the microbit lessons using the virtual micro:bit in the project editor.

If possible we recommend student devices with a physical keyboard (i.e. a Chromebook instead of an iPad). Student devices can be shared amongst students (with them working in a group of 2 or 3) if necessary.

Need Help?

We're always happy to answer your questions and give advice. You can contact our team at info@codingireland.ie or 01 584 9955.

Discovering Artificial Intelligence

This module explores the fascinating world of artificial intelligence (AI), starting with an introduction to AI models, their types, applications, and limitations. Students will gain hands-on experience creating image and pose models using Google's Teachable Machine, and applying these models in interactive games using Scratch. The module culminates in a project where students conceptualise, plan, and build their own AI Scratch project, applying their newfound knowledge and skills. Teachers should familiarise themselves with the tools and concepts, and be prepared to guide students through each step, encouraging creativity and problem-solving throughout.

Duration	**Equipment**
Classroom hours ~5 hours	Students can use any of these devices: • Chromebook/Laptop/PC • iPad/Tablet Required Equipment: • Webcam/camera
Learning Goals	**Learning Outcomes**
1. Understand the fundamentals of AI models, their types, applications, limitations, and ethical considerations. 2. Develop an image model using Google's Teachable Machine and apply it in a practical project. 3. Create an interactive game using Scratch and Google Teachable Machine, incorporating elements of randomisation and conditionals. 4. Design and develop a pose model using Google's Teachable Machine, and apply it in a space game project. 5. Conceptualise, plan, and execute an original AI Scratch project, demonstrating creativity, problem-solving, and application of AI knowledge.	1. Understand and explain the function, types, applications, and limitations of AI models, including ethical considerations. 2. Create an image model using Google's Teachable Machine for a rock, paper, scissors game. 3. Develop a Rock, Paper, Scissors game using Scratch and Google Teachable Machine, incorporating variables, randomisation, and conditionals. 4. Create a pose model using Google's Teachable Machine for a space game, understanding the importance of testing and adjusting the model. 5. Conceptualise, plan, and build a unique AI Scratch project, demonstrating creativity, problem-solving, and the ability to seek and incorporate feedback.

Module: Lessons

This module offers an insightfulintroduction to AI models, exploring their fundamentals, types, applications, and limitations. It provides hands-on experience in building image and gesture-based models using Google's TeachableMachine, while addressing real-world challenges through practical projects. Learners gain a foundational understanding of AI's potential and potential.

Unit	Lesson	Difficulty	Duration	Quiz	Challenge
Lessons	An Introduction to AI Models	Advanced	20	☑	
Lessons	Create an Image Model	Advanced	40	☑	
Lessons	Scratch AI Rock, Paper, Scissors Game	Advanced	60	☑	💡
Lessons	Create a Pose Model	Advanced	40	☑	
Lessons	Scratch AI Pose Space Game	Advanced	60	☑	💡
Lessons	Crafting Your Own AI Project	Advanced	60		

Unit: Lessons

An Introduction to AI Models

In this lesson, you'll explore the basics of AI models, understanding what they are and their different types. You'll also learn about their applications, limitations, and ethical considerations, gaining a well-rounded view of this fascinating technology.

Advanced	20 mins	Student Quiz

Teacher Notes: To captivate students, begin by linking AI models to everyday tech like voice assistants or recommendation systems, sparking curiosity about their relevance. Prepare by reviewing basic definitions and real-world examples to simplify complex ideas like supervised or unsupervised learning. Facilitate discussions on applications and ethical concerns to boost engagement, encouraging students to share opinions on fairness or privacy. Be mindful of potential challenges, such as varying tech familiarity, and adapt explanations accordingly. For effective delivery, use visuals or interactive demos to illustrate concepts, ensuring abstract limitations and ethical dilemmas feel tangible and relatable to all learners.

Students can use any of these devices (and can share if necessary):

- Chromebook/Laptop/PC
- iPad/Tablet

Learning Goals	Learning Outcomes
1. Understand the concept and purpose of AI models. 2. Identify different types of AI models and their learning methods. 3. Recognise various applications of AI models in real-world scenarios. 4. Appreciate the limitations and challenges associated with AI models. 5. Reflect on the ethical considerations in the use of AI models.	1. Identify and describe the different types of AI models: Supervised Learning, Unsupervised Learning, and Reinforcement Learning. 2. Explain the various applications of AI models, including speech recognition, image recognition, natural language processing, recommendation systems, and autonomous vehicles. 3. Discuss the limitations of AI models, focusing on data quality, computational resources, transparency, privacy, and security. 4. Understand the ethical considerations related to AI models, including responsibility, privacy, transparency, and fairness. 5. Demonstrate a basic understanding of how AI models function, their uses, limitations, and ethical implications.

Create an Image Model

In this lesson, you'll build an image model with Google's Teachable Machine to recognise rock, paper, and scissors hand gestures. Follow step-by-step instructions to create classes, add images, train, and test your model for future projects.

Note: You will need a webcam or a camera on your computer to create the images for the image model.

Advanced	40 mins	Student Quiz

Teacher Notes: To spark student curiosity, begin by connecting the activity to real-world AI applications like gesture recognition in gaming. Prepare by ensuring webcam access and testing the online tool beforehand to avoid technical hiccups. Guide students through creating and training their model, encouraging them to experiment with varied hand positions for better accuracy. Highlight the concept of machine learning as pattern recognition, and address potential challenges like poor image quality by prompting retries with clearer gestures. Keep engagement high by celebrating small successes during testing, fostering a sense of achievement in building their own AI.

Students can use any of these devices (and can share if necessary):

- Chromebook/Laptop/PC
- iPad/Tablet

Required equipment for this lesson:

- Webcam/camera

Learning Goals	Learning Outcomes
1. Understand and utilise Google's Teachable Machine to create an image model. 2. Create and define classes within an image model project. 3. Add and manage image samples to each class for effective model training. 4. Train, test, and refine the image model to ensure accurate gesture recognition. 5. Export and save the created image model for future use in projects.	1. Utilise Google's Teachable Machine to create an image model. 2. Create and categorise classes within an image model project. 3. Add and record images to each class using a webcam. 4. Train the image model using the added images and understand the process of machine learning. 5. Test the model's performance, make necessary adjustments, and export the model for future use.

Scratch AI Rock, Paper, Scissors Game

In this lesson, you'll build an exciting Rock, Paper, Scissors game using Scratch and Google Teachable Machine. Learn to integrate your Teachable Machine Image model with hand gestures to compete against the computer.

Advanced	60 mins	Student Quiz	Student Challenge

Teacher Notes: To spark student excitement, begin by connecting the activity to real-world AI applications like gesture recognition, setting up a Scratch project with the TM2Scratch extension for camera integration. Prepare by testing webcam access and model URLs beforehand to avoid technical hiccups. Guide students through coding steps patiently, encouraging experimentation with gestures and confidence thresholds. Watch for challenges like camera permission issues or model inaccuracies, offering troubleshooting tips or the provided model as a backup. Foster engagement by challenging students to enhance their game with sounds or improved models, ensuring a creative and interactive learning experience.

Students can use any of these devices (and can share if necessary):

- Chromebook/Laptop/PC
- iPad/Tablet

Required equipment for this lesson:

- Webcam/camera

Learning Goals	Learning Outcomes
1. Develop a Rock, Paper, Scissors game using Scratch and Google Teachable Machine. 2. Understand and apply the use of variables in Scratch for storing player's choice, computer's choice, and the result of the game. 3. Implement randomisation in Scratch to simulate the computer's choice in the game. 4. Integrate Google Teachable Machine Image models in Scratch projects for gesture recognition. 5. Understand and adjust the confidence threshold for AI model to improve accuracy of gesture recognition.	1. Develop a Rock, Paper, Scissors game using Scratch and Google Teachable Machine. 2. Set up Scratch and TM2Scratch for the game development. 3. Create and utilise variables to store player's choice, computer's choice, and the game result. 4. Implement randomisation for computer's choice in the game. 5. Load and use a Teachable Machine Image model for hand gesture recognition. 6. Set and adjust the confidence threshold for the AI model. 7. Recognise and interpret player's choice through hand gestures. 8. Develop game logic to determine the game result: draw, win, or lose. 9. Improve the game by enhancing the image model, adding new features like sound effects, and improving user interaction.

Create a Pose Model

In this lesson, you'll create a pose model using Google's Teachable Machine to play a space game with your webcam!

Note: You will need a webcam or a camera on your computer to create the images for the pose model.

Advanced	40 mins	Student Quiz

Teacher Notes: To spark student curiosity, begin by linking the activity to real-world applications like gesture-controlled games, ensuring they see the relevance of their efforts. Prepare by testing Google's Teachable Machine on your device to troubleshoot webcam or permission issues in advance. Guide students through creating and training their pose model, encouraging them to experiment with clear, distinct poses for better accuracy. Be ready to assist with renaming classes or re-recording images if recognition fails, and foster engagement by having them test each other's models. Emphasise the concept of machine learning as pattern recognition, keeping the process interactive and iterative.

Students can use any of these devices (and can share if necessary):

- Chromebook/Laptop/PC
- iPad/Tablet

Required equipment for this lesson:

- Webcam/camera

Learning Goals	Learning Outcomes
1. Develop an understanding of Google's Teachable Machine and its application in creating pose models. 2. Acquire skills to create and categorise classes within a pose model. 3. Learn to add and manage image samples for each class to train the model. 4. Gain proficiency in training and testing the model for different poses. 5. Master the process of exporting the model for future use in other projects.	1. Operate Google's Teachable Machine to create a pose model. 2. Define and create classes for the pose model. 3. Add and categorise images into the respective classes: Tilt Left, Tilt Right, and No Tilt. 4. Train the pose model using the categorised images and test its performance. 5. Export the created pose model and obtain a shareable link for future use.

Scratch AI Pose Space Game

In this lesson, you'll create an exciting space game using Scratch and Google Teachable Machine. Learn to control a spaceship with tilt poses using a Teachable Machine Pose model, or use the provided model if needed.

Advanced	60 mins	Student Quiz	Student Challenge

Teacher Notes: To spark student excitement, begin by linking the activity to real-world tech like gesture-controlled games, setting up a Scratch project with the TMPose2Scratch extension to integrate pose detection. Ensure students have camera access and guide them through adding sprites and coding movement with tilt poses, reinforcing AI concepts like confidence thresholds. Watch for technical hiccups with camera permissions or model loading, offering provided model links as backups. Encourage creativity in the challenge step, fostering engagement, and adapt tasks for varying skill levels by simplifying code or adding complexity for advanced learners.

Students can use any of these devices (and can share if necessary):

- Chromebook/Laptop/PC
- iPad/Tablet

Required equipment for this lesson:

- Webcam/camera

Learning Goals	Learning Outcomes
1. Develop skills in using Scratch and Google Teachable Machine to create a game. 2. Understand how to control a sprite using pose models. 3. Learn to set up and adjust the confidence threshold for an AI model. 4. Gain knowledge on how to create and manipulate clones of sprites in Scratch. 5. Apply creativity to enhance and personalise the game with additional features.	1. Create a Space game using Scratch and Google Teachable Machine. 2. Set up Scratch and TMPose2Scratch for a new project. 3. Integrate a Teachable Machine Pose model into the Scratch project. 4. Control a sprite's movement using pose labels and confidence thresholds. 5. Enhance the game by adding falling sprites and scoring mechanisms.

Crafting Your Own AI Project

Unleash your creativity and knowledge in this step-by-step lesson, where you'll conceptualise, plan, and build your own AI Scratch project. From brainstorming ideas to presenting your finished project, you'll navigate through each stage of the process, refining your idea, seeking feedback, and overcoming challenges. Enjoy the journey of bringing your unique idea to life!

Advanced	60 mins

Teacher Notes: In this lesson, students will utilise their knowledge of AI and Scratch to create their own AI project. They will brainstorm ideas, focusing on real-life routines or challenges that could be enhanced with AI. After selecting their favourite idea, they will create a project proposal, seek feedback, refine their idea, and plan their project. They will then prototype and code their project, before presenting and demonstrating their work. Finally, they will reflect on their learning journey and the process of creating their project.

Students can use any of these devices (and can share if necessary):

- Chromebook/Laptop/PC
- iPad/Tablet

Required equipment for this lesson:

- Webcam/camera

Learning Goals	Learning Outcomes
1. Develop the ability to conceptualise and plan an AI project. 2. Enhance brainstorming skills and generate creative AI project ideas. 3. Gain proficiency in creating and refining a project proposal. 4. Acquire skills in prototyping and coding an AI project using Scratch and Google Teachable Machine. 5. Improve presentation skills and ability to reflect on the learning process and project outcomes.	1. Generate and evaluate 3-5 AI project ideas, drawing inspiration from daily routines or challenges. 2. Formulate a detailed project proposal, including project name, purpose, required features, and necessary components. 3. Seek and incorporate feedback from peers or teachers to refine the project idea and plan. 4. Code, prototype, and test the core features of the AI project, using problem-solving skills to overcome any issues. 5. Present and demonstrate the final AI project, reflecting on the challenges faced, solutions found, and lessons learned.

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