Raspberry Pi Foundation

Experience AI: Ecosystems — Biology (11–14)

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This lesson plan suggests how the lesson can be structured. You should adapt the lesson to suit your context. Please refer to the teacher guide for additional material to support you in delivering the lesson.

Learning objectives

At the end of this lesson, students will be able to:

- Recall the importance of maintaining biodiversity
- Describe why artificial intelligence (AI) is a useful tool in helping to maintain biodiversity
- Discuss some of the benefits and drawbacks of using AI

You will need:

- Slide deck.
- Concept cartoon (one or two copies for each group to support Activity 4). It may be useful to print and laminate these cartoons so that they can be used with other groups.
- Workbook (one per student). This can also be printed as separate worksheets if you do not plan to do all the activities.

Lesson plan

Starter and lesson objectives — 5 minutes

Slides 2–3

Slide(s)	Teacher	Students	Assessment for learning (AFL)
2	• Display slide 2 (starter activity).	• Answer the three questions posed on the slide.	Probe answers given by students.
3	• Display slide 3 (learning objectives).		

Activity 1: The Serengeti ecosystem — 10 minutes

Slides 4–15

Slide(s)	Teacher	Students	AFL
5	• Use the example of the Serengeti to review knowledge of ecosystems and biodiversity.	• Answer questions to demonstrate knowledge and understanding.	Use targeted questions to probe knowledge and understanding.
6	• Review knowledge of what happens when an ecosystem is put under risk.	• Answer questions to demonstrate knowledge and understanding.	Use targeted questions to probe knowledge and understanding.
7	• Explain the purpose of the cameras and the labelling process.	• Listen. • Ask questions.	

Slide(s)	Teacher	Students	AFL
8–13	• Display each image and the answers (shown on alternate slides). • Manage the activity.	• Label the images.	Use observation to check understanding of the labelling process.
14	• Display the questions on the slide.	• Answer the two questions posed.	Probe answers given by students.
15	• Explain why the time taken to get the images labelled was a problem.	• Suggest other possible consequences.	Use targeted questions to probe levels of understanding.

Activity 2: Artificial intelligence (AI) — 10 minutes
Slides 16–21

Slide(s)	Teacher	Students	AFL
17	• Introduce the term ‘artificial intelligence’. • Ask students to suggest examples of where they have come across AI.	• Give examples. • Discuss whether they think something does or does not use AI.	Use targeted questions to check initial understanding.
18	• Explain that traditional computer systems are ‘rule based’. • Ask students for an example of where they have written or followed a set of rules to carry out a task. • Explain that AI systems use data-driven models.	• Suggest ideas for rules (these could be computer programs or instructions for manual processes such as a recipe). • Suggest data sources.	Use targeted questions to probe understanding.

Slide(s)	Teacher	Students	AFL
	• Ask students where they think these “vast quantities of data” come from.		
19 **optional**	• Introduce **nowcasting** as a use of AI. • Highlight the use of data to produce a model to make predictions.	• Listen.	
20–21 **optional**	• Ask who would benefit from very immediate rainfall predictions.	• Suggest answers.	Use targeted questions to check understanding.

Activity 3: AI in the Serengeti — 10 minutes

Slides 22–28

Slide(s)	Teacher	Students	AFL
23	• Reinforce the idea that the AI system will make predictions.	• Answer targeted questions.	Check understanding of the term ‘prediction’.
24	• Organise students to answer the questions on the slide.	• Suggest answers.	
25–27	• Discuss and expand on the answers.	• Ask questions to clarify understanding.	
28	• Summarise who benefits from the use of an AI system in this conservation work.		Use targeted questions to check understanding.

Activity 4: The impact of AI — 10 minutes
Slides 29–30

Slide(s)	Teacher	Students	AFL
30	• Reinforce the idea that AI can be used to solve scientific problems. • Split the class into groups (we recommend a maximum of 6 students per group). • Give each group a copy of the concept cartoon. • Allow 5 minutes for students to discuss the statements. • Facilitate a class vote (this could be done with voting cards or by a show of hands).	• Discuss and debate the statements in the cartoon. • Vote for or against the use of AI.	All students should be engaged and participating in discussion.

Plenary: Careers in science using AI — 10 minutes
Slides 31–36

Slide(s)	Teacher	Students	AFL
32	• Reinforce the idea that AI can help scientists in a number of areas. • Ask students to suggest other areas of science where it would be beneficial to use AI applications.	• Suggest answers.	Use targeted questions to check understanding.
33	• Summarise that AI systems can identify patterns to make predictions using new data.		

Slide(s)	Teacher	Students	AFL
34 **optional**	• Show the video (4 minutes). • Ask what subjects students might want to study in the future to support a career in scientific research using AI.	• Suggest answers. • Ask questions.	
35 **optional**	• Link to Zooniverse for homework or planned study.		
36	• Revisit the lesson objectives.		Use targeted questions to check whether the objectives have been met.

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We'd love to hear how you have used this Experience AI Lesson and what you thought about it.

After using the lesson, please take a few minutes to:

- Share your feedback in our user survey: rpf.io/exai-2mf
- If you are an educator, ask your students to complete a short survey: rpf.io/exai-st

Your feedback supports us to make Experience AI accessible to everyone, and we really appreciate you giving your time to share what you think.