Dream Space TV: The brAIln_waves Series Episode 4
Episode Objectives

By the end of this episode, students should be able to:

2. Explain what is meant by Generative AI.
3. Provide examples of Generative AI in action.
4. Explain the importance of responsible AI.
5. Discuss bias in AI and examples of how this occurs.
6. Describe the ethical challenges that can occur with AI.

UNESCO: K-12 AI Curricula

Artificial Intelligence (AI) refers to machines that imitate some features of human intelligence.

Artificial Intelligence, is a rapidly growing field that has the potential to impact many aspects of our lives. To prepare students for this future, UNESCO, the United Nations Educational, Scientific and Cultural Organization, has included AI as part of their K-12 curriculum. This series has used the UNESCO K-12 AI curricula to curate lessons on AI to help students understand what AI is, what it can do, and how it might impact society. The goal is to equip students with the knowledge and skills they need to navigate a world where AI is increasingly prevalent.

Episode Timestamps

00:00 – 01:18: Introduction and learning outcomes
01:18 – 02:59: Advancements in AI
02:29 – 11:37: Deep Learning and Generative AI
11:37 – 17:00: Ethical AI
17:00 – 18:16: Episode closure
Ethical Terms, Definitions and Examples
- Understands what ethical terms such as ‘bias’, ‘fairness’ and ‘representation’ mean in relation to AI
- Describes the limitations of AI
- Understands the ethical considerations and dilemmas which may arise from AI

Bias
- Explains how the biases of the programmers influence the fairness of the AI rules
- Understands the effects of information quality in decision-making
- Understands algorithmic bias and types/sources of bias
- Analyses cases where AI has been clearly fair or unfair

Intellectual Property
- Understands intellectual property rights
- Defends a position on ownership of art generated or enhanced by AI
- Understands/respects basic intellectual property laws

Transparency / Explainability
- Understands the mechanisms of image and data manipulation

Human Agency
- Understands how to ethically create and/or use AI

AI Advantages and Disadvantage
- Understands how AI can benefit humans
- Outlines the advantages and disadvantages of AI in different social, educational, and professional contexts

UNESCO K-12 AI Curricula - Skills

Ethics of AI
- Identifies instances of bias in AI algorithms

UNESCO K-12 AI Curricula - Values

Critical Thinking and Reflection
- Explains how the programmers’ bias influences the fairness of AI rules
Episode Three: Lesson Plan

Curriculum Links

Leaving Certificate Computer Science
Social and ethical considerations of computing technologies: 1.11 discuss the complex relationship between computing technologies and society including issues of ethics

Social and ethical considerations of computing technologies: 1.12 compare the positive and negative impacts of computing on culture and society

Lesson Duration
This is a 45-minute lesson. This does not include extension activities.

Materials Needed
- Pens and paper

Lesson Procedure

Introduction to Episode (2 minutes): Students will get an insight into the episode and what the learning outcomes are.

Deep Learning and Neural Networks (2 minutes): Students will see the comparisons of how the human brain works and how deep learning is replicated in machines to work the same process.

Generative AI and Activity 1 (26 minutes): Students will be introduced to the concept of Generative AI and have the opportunity to see how it can be used in real life.

Intellectual Property (2 minutes): Here students will learn about IP and Copyright and how important it is to fact check where information is coming from.

Responsible and Ethical AI inc. Activity 2 and 3 (30 minutes): During this segment students are introduced to the responsible AI principals and have an opportunity to apply them to real world scenarios.
Episode 4 Activity 1: Image Creator Prompts

Put your entrepreneurial skills to the test – you’ve been given a grant to start your own company.

What is your company name?
What market are you operating in?
Write the prompt for Image Creator that will provide you with some logo options and an ad campaign.

Episode 4 Activity 1: Sample Answers

What is your company name?
Here students can be creative and produce their own name for a company or they can use a feature like Bing Chat to help them. Here is an example of a prompt and answer from Bing Chat.

Your personal and company data are protected in this chat

Sure, I can help you with that. Here are some possible names for a dog walking business that I came up with:

• **Pawsome Walks**: This name is catchy and fun, and it plays on the word “awesome” and “paws”. It also suggests that your service is amazing and that you love dogs.

• **Walkies**: This name is simple and cute, and it is a common word that dog owners use to ask their dogs if they want to go for a walk. It also implies that your service is friendly and reliable.

• **Furry Friends**: This name is warm and inviting, and it shows that you care about the dogs and their owners. It also indicates that your service is more than just walking, but also providing companionship and socialization for the dogs.

What market are you operating in?
This is relative to the student's idea.
Prompt: Create a logo for a dog walking business that is cute and fun.

Prompt: Create a logo for a dog walking business that has a human and a dog in it, but also shows the dog is happy.
Episode 4 Activity 1: Sample Answers

Write the prompt for Image Creator that will provide you with what is needed for your ad campaign

Prompt: Create an image of a dog on a walk, the dog is happy, wearing sunglasses, it’s a sunny day and the human walking the dog is eating an ice-cream. Option 1.

Prompt: Create an image of a dog on a walk, the dog is happy, wearing sunglasses, it’s a sunny day and the human walking the dog is eating an ice-cream. Option 2.
## Episode 4 Activity 2: AI Principles

Match the AI principles to their definitions

1. Reliability and Safety
2. Privacy and Security
3. Fairness
4. Transparency
5. Inclusiveness
6. Accountability

### Episode 4 Activity 2: Answers

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<th>Definition</th>
</tr>
</thead>
<tbody>
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<td>4. AI should work for people across different conditions &amp; contexts, and should not cause harm to the world.</td>
</tr>
<tr>
<td>B. Privacy and Security</td>
<td>2. AI engineers should always review the sources of data and how the data is protected.</td>
</tr>
<tr>
<td>C. Fairness</td>
<td>6. AI should allocate opportunities, resources, or information in ways that are fair to the humans who use it.</td>
</tr>
<tr>
<td>D. Transparency</td>
<td>1. AI should be explained well so that people don’t misunderstand, misuse, or incorrectly estimate the capabilities of the system.</td>
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<td>E. Inclusiveness</td>
<td>3. AI should be inclusive of all populations and therefore supportive of all.</td>
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<td>F. Accountability</td>
<td>5. AI developers should be accountable with systems created and ensure that this isn’t interfered with in an inappropriate way.</td>
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2. AI engineers should always review the sources of data and how the data is protected.
3. AI should be inclusive of all populations and therefore supportive of all.
4. AI should work for people across different conditions and contexts and should not cause harm in the world.
5. AI developers should be accountable with systems created and ensure that this isn’t inferred with an inappropriate way.
6. AI should allocate opportunities, resources, or information in ways that are fair to the humans who use it.
Using the worksheet provided, complete the following:


Part 2: Complete the table by selecting two principles of Responsible AI that are being neglected and the steps you would take to rectify this.
### Activity 3: AI Principals in Real Life Worksheet

<table>
<thead>
<tr>
<th>Scenario A</th>
<th>Pick two principle(s) of Responsible AI being neglected</th>
<th>Steps that can be taken to rectify this issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>You’re the CEO of a new company operating in developing and selling AI technology. Your new system uses Generative AI to create adverts for other companies by using any image data it has gathered from the world wide web regardless of checking on consent. They put it out there so it must be okay to use?</td>
<td></td>
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</tbody>
</table>
### Activity 3: AI Principals in Real Life Worksheet

Name ____________________

<table>
<thead>
<tr>
<th>Scenario B</th>
<th>Pick two principle(s) of Responsible AI being neglected</th>
<th>Steps that can be taken to rectify this issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>You have developed a new AI image recognition tool that triages patients based on their scan results. You are happy that hospitals worldwide can start to use this based on the millions of images provided to the system which included scans of 4–55-year-old adults.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


### Scenario C

**Pick two principle(s) of Responsible AI being neglected**

**Steps that can be taken to rectify this issue**

<table>
<thead>
<tr>
<th>You have developed an AI hiring tool for HR departments. Your tool has utilised training data based on the populations of people in those roles right now and doesn’t consider anything else. You let companies who are purchasing this know that 99% of companies using this say it picks the right candidates for them, but you don’t explain to them how the AI works as this isn’t important for them to know.</th>
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Deep Learning is a branch of artificial intelligence that uses neural networks to learn from data and perform tasks. Neural networks are composed of layers of neurons, which are mathematical functions that mimic the way the human brain works. Neurons take some input, process it, and produce some output. By connecting many neurons together, we can create complex networks that can learn to recognize patterns, classify images, generate text, and more.

To understand more about neural networks and how they work, teachers can play this video to dive into that subject a little bit deeper. https://www.youtube.com/watch?v=JrXazCEACVo
Generative AI: Extra Teacher Resource

Throughout the episodes and throughout this educator guide an AI technology called “Generative AI” is being used.

**Generative AI** is a form of artificial intelligence that can create new content, such as text, images, audio, and video, based on existing data. Generative AI uses techniques like neural networks, which are mathematical models that learn from data and can perform various tasks.

Large language models (LLM’s) like ChatGPT and Bing Chat have been all over the news lately as this new wave of AI is taking off. It is important for students to know how these LLM’s work, even at a basic level.

This video will inform teachers and students of how they work [https://www.youtube.com/watch?v=X-AWdfsFCHQ](https://www.youtube.com/watch?v=X-AWdfsFCHQ)

By learning how to use ChatGPT / Bing Chat correctly, students can benefit from its capabilities and potentials, while also being responsible and ethical users of artificial intelligence.

It is important for students to learn how to use ChatGPT correctly because ChatGPT is a powerful tool that can help them with various tasks, such as writing essays, summarising texts, generating creative content, and more. However, ChatGPT is not perfect, and it has some limitations and challenges that students need to be aware of. For example:

- ChatGPT is based on a large amount of data from the internet, which may not be accurate, reliable, or appropriate. Students need to verify the information and sources that ChatGPT provides and avoid using biased or offensive content.
ChatGPT may not always understand the context or the intention of the user, and it may generate irrelevant or nonsensical responses. Students need to check the coherence and logic of the texts that ChatGPT produces and edit them accordingly.

💡 Students will more than likely have heard of ChatGPT and its capabilities, therefore try to use it for some of their schoolwork. By teaching students how to use it correctly it can benefit them in school rather than hinder them.

DALL-E and Bing Image Creator / Microsoft Designer are a system that can create images from text descriptions using a large dataset of text–image pairs.

DALL-E is cool because it can create images from text descriptions using a large dataset of text–image pairs. It can generate images that are creative, diverse, and sometimes surprising. It can also combine different concepts and attributes in ways, such as creating an armchair in the shape of an avocado, or a snail made of a harp. DALL-E can also modify existing images based on text inputs, such as changing the colour, style, or perspective of the image. DALL-E is a powerful example of how artificial intelligence can be used for artistic and expressive purposes.

✍️ Can AI be creative?
https://www.youtube.com/watch?v=X994dDnmRmY&t=1s
Extension Activity 1: AI Debate

Objective: To develop students’ communication and critical thinking skills by discussing the advantages and disadvantages of AI in various domains.

Materials: Three sheets of paper with “Agree”, “Disagree” and “Not Sure” written on them, markers, flipcharts, pens.

Procedure:
1. Introduce the topic of the walking debate and explain the rules. Each student will choose whether they “Agree”, “Disagree” or are “Not Sure” by standing in a specific side of the room. They will then have to persuade others to join their side by explaining their reasons.

2. After all four topics have been discussed. Divide the class into small groups of four or five students. Assign each group a topic a stance i.e for or against. Give them some time to research it using Bing or other online sources. They should look for information about the pros and cons of AI in that domain, such as how it can improve efficiency, accuracy, safety, etc., or how it can pose ethical, legal, social, etc., challenges.

3. Have each group present their findings to the rest of the class using posters. Encourage them to use facts, statistics, examples, quotes, etc., from credible sources to support their arguments.

4. Repeat steps 3 until all topics have been covered or until time is up.

5. Wrap up the lesson by summarising the main points of each topic and highlighting some common themes or issues that emerged from the debate. Ask students to reflect on what they learned from this activity and how they can apply it to their own lives or future careers.

💡 This activity was created by BingChat and quality controlled by the teaching team

Prompt: create a detailed lesson plan for students to take part in a walking debate about different AI topics. These topics are: - should AI take over from human judges in criminal trials - should self-driving cars be the only cars allowed on the road - should facial recognition be used to identify and arrest criminals - should social media sites check a user’s wellbeing