UNIVERSITY OF LEEDS

MedTech: AI and Medical Robots

Scheme of Work

	Lesson 1	**Lesson 2**	**Lesson 3**
Length	Approx. 1 hour	Approx. 1 hour	Approx. 1 hour
Objectives	To identify the main characteristics of a robot. To consider how robots and artificial intelligence might impact healthcare. To understand the history of robots in medicine.	To investigate specific ways in which robots and AI can assist patients and clinicians. To investigate specific ways in which robots and AI can assist clinicians. To reflect on the implications of using robots and AI for patient trust and safety.	To analyse the implications of using robots and AI in medicine. To give recommendations on how robots should be used in clinical settings.

Lesson plans for each session can be found on the following pages.

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Lesson 1 plan

Starter activity	Learning objectives
In groups, students brainstorm answers to this question: • In what ways can robots and artificial intelligence impact healthcare?	• To identify the main characteristics of a robot. • To consider how robots and artificial intelligence might impact healthcare. • To understand the history of AI and robots in medicine.

Main activities	Resources required
Share and discuss answers as a class. Still in their groups and using the internet/provided materials, students now create a timeline which shows the progression of AI and robots in medicine. Each group should share their timeline, and then the class can view the timeline in Step 1.5 together. Lead a discussion around this timeline, asking: • How does this timeline compare to your group's? • Did you find anything that surprised you?	1. Large/flipchart paper and pens for brainstorming. 2. Devices for research and creative materials for creating timelines. 3. Timeline PDF or webpage (Step 1.5). 4. Materials for individual reflections.

	Assessment for Learning
	Discussion contributions, timelines, individual reflections.

	Differentiation
	SEND: Teacher-led support. **Low ability**: Peer-learning. **Gifted and Talented**: Peer-teaching.

	Plenary
	Students write a brief individual reflection answering these questions: • Do you think there could be a point in the future where robots could look and behave in a way that makes them indistinguishable from humans? • What impact do you think this could this have?

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Lesson 2 plan

Starter activity	Learning objectives
As a class, ask students to identify any specific challenges faced by the NHS (or other health service) that could be tackled using robots and AI?	• To investigate specific ways in which robots and AI can assist patients. • To investigate specific ways in which robots and AI can assist clinicians. • To reflect on the implications of using robots and AI for patient trust and safety.

Main activities	Resources required
Divide class into two or four groups. Each group is going to create a leaflet, poster, video (storyboard), or any other creative media they wish, to advertise medical robots. Half of the class will research the ways in which robots can assist patients, and their advertisement will be aimed at patients. Their research should include the following: • Exoskeletons • Robots as caregivers • Therapy chatbot The other half of the class will research the ways in which robots can assist clinicians, and their advertisement will be aimed at clinicians. Their research should include the following: • Surgical applications for robots/AI • Diagnostics using robots/AI • Health apps Groups then share their adverts with each other.	1. A variety of creative materials for creating advertisements. 2. Devices for performing research.

	Assessment for Learning
	Group advertisements, discussion contributions.

	Differentiation
	SEND: Teacher-led support. **Low ability**: Peer-learning. **Gifted and Talented**: Peer-teaching.

	Plenary
	Ask the class to vote 'yes' or 'no' to this question: • Would you feel comfortable trusting AI to diagnose an illness and recommend care for you? Select a few students to share their reasoning.

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Lesson 3 plan

Starter activity	Learning objectives
In pairs, students discuss their learning over the last two lessons. Each student should list three things they have learned about the use of robots and AI in medicine. Ask two or three pairs to share their discussions with the class.	• To analyse the implications of using robots and AI in medicine. • To give recommendations on how robots should be used in clinical settings.

Main activities	Resources required
Explain that students will now complete a short individual report (no more than 500 words but can be less), after which there will be peer review and feedback. Reports should give recommendations on how robots should be used in clinical settings. Students should perform research and try to answer the following questions: • Will robots create a loss of human care? • Will they enable doctors to provide more of a personal touch to consultations by freeing them from repetitive tasks? The reports should consider the balance between relieving the burden of work on the clinician, but also maintaining a decent level of human care and respecting human dignity. Then in their pairs, students should swap and read each other's reports.	1. Devices for performing research. 2. Devices or materials for completing reports. **Assessment for Learning** Individual reports and peer feedback. **Differentiation** **SEND**: Teacher-led support. **Low ability:** Peer-learning. **Gifted and Talented**: Peer-teaching. **Plenary** Use this time for students to give each other detailed feedback. When reviewing work and giving feedback, advise students to consider: • the clarity of the response • the quality of writing • the strength of arguments • the use of evidence.