



MedTech: Digital Health and Wearable Technology

Scheme of Work

	Lesson 1	Lesson 2	Lesson 3
Length	Approx. 1 hour	Approx. 1 hour	Approx. 1 hour
Objectives	<p>To define the term 'digital medicine'.</p> <p>To compare digital and traditional medicine.</p> <p>To explain the benefits of digital medicine and wearable technology to patient healthcare.</p>	<p>To explore sensors and how they work in different parts of the body.</p> <p>To describe the purpose of different wearable technologies and their functions.</p> <p>To evaluate the benefits and challenges of wearable technology.</p>	<p>To consider the future of digital medicine and investigate the uses of wearable and implantable technology.</p> <p>To debate the ethics and implications of implantable technology.</p>

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

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Lesson 1 plan

Starter activity	Learning objectives
<p>In pairs, students discuss the following questions:</p> <ul style="list-style-type: none"> • What do you think of when you think of digital medicines? • How does this compare to what you think of as traditional medicine? • Can you think of any examples of wearable health technology? <p>Collect the responses in a brief class discussion.</p>	<ul style="list-style-type: none"> • To define the term 'digital medicine'. • To compare digital and traditional medicine. • To explain the benefits of digital medicine and wearable technology to patient healthcare.
Main activities	Resources required
<p>Share the definition of digital medicine given in Step 1.3 (from the Topol report) and ask the class how this compares with the definitions they discussed in pairs. Does anything surprise them? What was missing from their definitions?</p> <p>Put the class into small groups. Each group should create a mind map, brainstorming all of the ways in which digital medicine and wearable technology can assist the healthcare system. Mind maps should include specific examples and uses of technology, as well as the stakeholders involved (who will benefit from digital medicine). Information from Step 1.4 will be useful for eliciting ideas from students.</p> <p>Each group then presents their mind map to the class.</p>	<ol style="list-style-type: none"> 1. Device for watching video. 2. Prepared definition of digital medicine from Step 1.3. 3. Materials for creating mind maps and writing reflections.
	Assessment for Learning
	<p>Mind maps and individual reflections.</p>
	Differentiation
<p>SEND: Videos have subtitles. Low ability: Peer-learning. Gifted and talented: Peer-teaching.</p>	
Plenary	
<p>Share the infographic from Step 1.4 with the class. Thinking now about the people or groups they identified in their mind maps, students write a brief individual reflection answering the following:</p> <p>What do you think these improvements in patient healthcare mean to the different stakeholders in the healthcare industry?</p>	

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Lesson 2 plan

<p>Starter activity</p> <p>Ask the class to recap on the last lesson by sharing examples of wearable technology.</p> <p>Do they or anyone they know wear any specific technology? What is its purpose?</p>	<p>Learning objectives</p> <ul style="list-style-type: none"> • To explore sensors and how they work in different parts of the body. • To describe the purpose of different wearable technologies and their functions. • To evaluate the benefits and challenges of wearable technology.
<p>Main activities</p> <p>Share the diagram from the 'Body sensors diagram' PDF in Step 2.2 (without the descriptions). In groups, students should attempt to identify what kind of sensors might be at points 1-4, and what they could measure.</p> <p>Share the answers and lead a brief discussion – does anything surprise them about the sensors diagram?</p> <p>Students should then start an individual research project on a wearable device of their choosing. They should list the design considerations, and consider the following:</p> <ul style="list-style-type: none"> • What is the purpose of the device? • What are some benefits or challenges of using the device? 	<p>Resources required</p> <ol style="list-style-type: none"> 1. Prepared body sensor diagram and separate answer sheets, taken from Step 2.2. 2. Devices for researching wearable technology. 3. Materials or devices for research projects. <p>Assessment for Learning</p> <p>Body sensors activity answers, individual research projects.</p> <p>Differentiation</p> <p>SEND: Teacher-led support. Low ability: Peer-learning. Gifted and Talented: Peer-teaching.</p> <p>Plenary</p> <p>Students can continue to work on their research, or share their findings so far with the class, depending on progress.</p>

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Lesson 3 plan

Starter activity	Learning objectives
<p>The class watches the video in Step 2.7 'From wearable to implantable technology'. Students can take notes to inform their work for the rest of the class.</p>	<ul style="list-style-type: none"> • To consider the future of digital medicine and investigate the uses of wearable and implantable technology. • To debate the ethics and implications of implantable technology.
Main activities	Resources required
<p>Put students into small groups. Give each group a prepared handout with information on both of the two implantable medical devices in Step 2.7 (Electroencephalogram and VERASENSE). Students should discuss the examples and the ethics of the devices. What do they think are the implications of a device being implantable? Groups can research the idea further online if they wish.</p>	<ol style="list-style-type: none"> 1. Device for watching video. 2. Prepared handouts on implantable devices. 3. Space for spectrum debate activity. 4. Materials or devices for writing reflections.
<p>Then ask the class to clear the room and stand (or move to sit if preferred) in the centre.</p>	Assessment for Learning
<p>Ask students to consider how they feel about the use of implantable medical devices. They should place themselves on an imagined spectrum line which ranges from 'completely agree with' on one end, to 'completely disagree with' on the other.</p>	<p>Debate contributions and personal reflections.</p>
<p>Once students have placed themselves on the spectrum, lead a debate by asking individuals to speak about why they have chosen to stand where they are. Other students can reconsider their position and move around the line as the discussion happens (if someone is particularly persuasive, for example).</p>	Differentiation
	<p>SEND: Videos have subtitles. Low ability: Peer-learning. Gifted and Talented: Peer-teaching.</p>
	Plenary
	<p>Students write a brief personal reflection on what they have learned and how they feel about digital medicine and wearable technology, including reference to the future of digital medicine (and implantable technology).</p>