UNIVERSITY OF LEEDS

MedTech:
Trends and Product Design

Explore the product design process of MedTech devices and examine future trends in healthcare technology and the MedTech industry.

If your students are completing the whole of this course online and are not participating in the teacher-led lessons based on it, then they can complete useful and engaging activities based on the content covered. You can choose for your students to complete individual tasks by themselves or encourage group work. Though you may have your own ideas about what your students can do with the course content, we've made things easy for you by suggesting some activities that you can submit to your students below. Instructions for the students can be found later in this document.

Individual student tasks taken from the course

Reflection: Students write a 500 word reflection on what they learned from the course, including anything they might do differently now as a result of their learning, and anything additional they found out from their own reading around the topic. They will submit this reflection as a written essay, podcast or video.

Activity: Students produce a timeline of development for one of the following medical devices:

- The stethoscope.
- Wound dressings.
- Hip implants.

After producing their timeline, students could watch the video in Step 1.4, 'A history of innovation'.

Research task: Students watch the Youtube video on dCell Technology: Tissue Regenix, then choose a MedTech device of their own to research. Devices could be from companies such as Creavo, Neotherix, Medtronic, Oxford Nanopore, or any other (it may be helpful to prepare a list for students to choose from). Students should think about who could use the device and how they would benefit from it. They should conduct their research and answer the following questions:

- What is the technology behind the device?
- What needs does the device meet?
- Who will benefit from the device and how?
- What testing procedures have taken place to ensure that the device is safe to use?
- How does the device compare to what is already on the market?

After researching, students should write a short (no more than 500 words) video script for an informative video about their device, which answers the questions above.

Group tasks based on the course

Research task: Each group researches and considers four challenges faced by the MedTech industry:

- The impact of public perception.
- The automation of the healthcare profession.
- Negative perceptions of 'big data'.
- Getting technologies to 'talk' to each other.

The teacher could prepare an A4 sheet of four boxes with one challenge in each. Groups should brainstorm examples of each challenge, and possible solutions. Groups submit their challenge examples and solutions to the teacher.

Discussion task: Groups look at their individual medical device timelines together and compare them. Groups should discuss the following questions:

- What are the similarities and differences in the developmental processes of these technologies?
- Which factors are responsible for innovation in healthcare, either in the past or today?

Additional support

You can use the How to use FutureLearn guide with your students to get them started. There is also a school-facing Guide to safeguarding and security on FutureLearn if you need it.

Test

You can use the test questions listed in the student instructions below as a short assessment to enable your students to demonstrate what they have learned on the course. The assessment has 15 marks in total.

The questions have been designed to be flexible and open. The questions indicate which steps the answers can be found on. The marks available reflect the likely length and complexity of the answer expected, and how many points they are likely to make. For example, a 5-mark question might reflect a longer, more complex question, or one where they have asked to describe or explain a number of elements. Depending on the level and ability of your students, you can decide how you wish to award the marks so they are appropriate for your class.

Each question suggests which steps the students may wish to return to answer the questions. **You can decide if you want to include this information when you share the assessment with your students.**

Student instructions

Reflection

Write a 500 word reflection of what you have learned from the course. It should include anything you might do differently now because of what you learned, and anything additional you found out in your reading around the topic. Submit this reflection to your teacher as a written essay, podcast or video.

Activity

Produce a timeline of development for one of the following medical devices:

- The stethoscope.
- Wound dressings.
- Hip implants.

After producing your timeline, watch the video in Step 1.4, 'A history of innovation'.

Research task

Watch the Youtube video on dCell Technology: Tissue Regenix, then choose a MedTech device of your own to research. Devices could be from companies such as Creavo, Neotherix, Medtronic, Oxford Nanopore, or any other. You should think about who could use the device and how they would benefit from it. Conduct your research and answer the following questions:

- What is the technology behind the device?
- What needs does the device meet?
- Who will benefit from the device and how?
- What testing procedures have taken place to ensure that the device is safe to use?
- How does the device compare to what is already on the market?

After researching, write a short (no more than 500 words) video script for an informative video about the device, which answers the questions above.

Group discussion

Look at your individual medical device timelines together and compare them. In your group, discuss the following questions:

- What are the similarities and differences in the developmental processes of these technologies?
- Which factors are responsible for innovation in healthcare, either in the past or today?

Group research task

As a group, consider these four challenges faced by the MedTech industry:

- The impact of public perception.
- The automation of the healthcare profession.
- Negative perceptions of 'big data'.
- Getting technologies to 'talk' to each other.

Research and brainstorm examples of each challenge, and possible solutions. You should submit your examples and solutions to your teacher.

Test

Complete the assessment questions below to demonstrate your understanding of the course. You can refer back to the course to find the answers or more detail as you need to. You should not however share your answers with other students.

Your answers should be written in full sentences and be appropriately detailed. Make sure you read the questions carefully before starting to answer. Each question shows how many marks are available – use this to guide how much detail or how many points you need to include.

[The questions also indicate where you can start to look to find the answer. You can also include information from other steps if that is relevant.]

1. What is 'medical technology'? Give at least two examples. (3 marks) [Step 1.5]

2. Give examples of four historical moments in the history of medical technology innovation. (4 marks) [Step 1.4]

3. List three factors which drive the development of medical technology. (3 marks) [Step 1.6]

4. Why is public perception important to the MedTech industry? (2 marks) [Step 1.8]

5. List three challenges faced in the development of medical technology products and devices. (3 marks) [Step 1.8]