



## Design Virtual Learning Environments for use in patient education

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The General Medical Council (GMC) describes the duties of a doctor as “giving patients the information they want and need in a way they can understand” and to “support patients in caring for themselves to improve and maintain their health” (GMC, 2017). As clinicians, we therefore have the responsibility not only to treat, but also to educate our patients. With the advent of new technologies there are increasing numbers of options and modalities for clinicians to use in educating patients in a virtual learning environment. This encompasses any modality where the learners (patients in this case) and educators are separated in time or space or both (Moseley and Dessinger, 2007). The challenge is how best to make use of these advances in order to effectively inform and empower patients to improve their care. The purpose of this document is to highlight good design principles when considering the use of the virtual learning environment to educate patients.

### The benefits of using technology to teach patients

Being able to use virtual learning technologies provides great opportunity in terms of widening access with learners, i.e. patients, being able to get involved from all over the globe. Clinicians already use a vast array of virtual learning tools such as patient information websites, Royal College guidelines and learning modules.

Possible applications of virtual learning environments include:

- ▶ Patients being briefed using video animation.
- ▶ Use of multimedia workbooks to educate on diagnoses, pathogenesis, prognosis, management options and relapse prevention.
- ▶ Patients sharing their experiences on proposed procedures.
- ▶ Use of online forums where patients can interact with others with similar problems for support. These could be patient- led or clinician- moderated discussions.

With so much information available to patients online, the importance of directing them towards reliable, valid and relevant information is increasingly important. By embracing technology and addressing possible barriers, clinicians can curate the information to patients' specific needs.

### Recognising and overcoming barriers

As with any learning process, the use of new technologies can be impacted by barriers and it is important to recognise the diversity of your patient population in terms of needs and ability. Barriers can be associated with the learner's characteristics such as learner age, expectation, skills, motivation and attitude towards technology. They can also be related to the context in which they live such as availability of support, resources, time, confidentiality issues and family expectations (Girvan and Savage 2012; Wiener et al. 2015).

These barriers can be minimised and sometimes overcome by adhering to sound educational and design principles.

### Adhering to the basic principles of designing an educational activity

#### Consider this clinical example:

*As a clinician you realise there is too long a wait for the education programme for newly diagnosed diabetes patients. You decide to design an e-learning package for them. What would you need to consider?*

Gagne's (1981) steps of Instruction provides a useful framework. Adapting this framework, here are some examples applied to the given clinical scenario.

#### 1. Gain attention

Gaining attention is to ensure the patient is ready to learn, understands the relevance of the activity and is motivated. You could potentially use a stimulus such as a short case history of a patient with diabetic complications, a thought provoking question, use photographs or pictures to capture the attention.

#### 2. Provide a learning objective

It is important that the patient understands what they could achieve as a result of completing this activity. More specifically, clearly identify and align what it is that you wish patients to take away from the materials. The learning objective needs to be relevant to that specific patient in order to motivate them to learn about diabetes and how it can be better managed.

#### 3. Stimulate recall of prior knowledge

It is important to associate new information with prior knowledge.

This could be as simple as establishing what they know already using a short quiz. This could be used as a foundation on which more advanced knowledge can be built.

A useful strategy of pre-loading patients with small chunks of information prior to follow-up consultations based on constructivist principles (Vygotsky, 1978) can help focus subsequent conversations. For example, a patient with diabetes being given personalised information about different management strategies. This can benefit both patients and clinicians in terms of time. Individual patient concerns could be covered in the pre-loaded information that provides generic information addressing frequently asked questions therefore avoiding repetition. The patient can digest the information in their own time and at their own speed. The materials can also stimulate further discussion which will enable shared decision making. This can also act as reference material after the consultation.

#### 4. Present the content

Mayer's design principles for use of multimedia can be applied in the context of patients as well as traditional learners. Some key principles in relation to patients are given below (Mayer, 2005).

- **Coherence Principle** - Avoid superfluous medical terminology and pictures.
- **Redundancy principle** - Avoid on-screen text in favour of narration in combination with animations.
- **Segmenting principle** - Patients will benefit from information broken down into small sections.
- **Multimedia principle** - Use relevant pictures to aid learning.
- **Personalization principle** - Use a conversational style of writing rather than a formal style.
- **Voice principle** - Use a friendly personal voice for narration.

#### 5. Provide learning guidance

Simple instructions to the learner on how to utilise the resources so they can learn from them more effectively. This could also include using analogies, visual images, mnemonics and metaphors related to diabetes to enable patients to enhance retention and apply them to their individual situation.

#### 6. Access performance and provide feedback

The patient's new learned information has to be assessed and applied in practice. This could be achieved by giving patients short tasks related to diet, exercise and diabetes with accompanying specific feedback.

#### 7. Enhance retention

Consider ways to consolidate the newly acquired knowledge. This may include suggestions for further reading, online discussion forums and tasks with links to resources.

### Conclusion

The principles of educational design should be considered when using technology to educate patients. However, remember that technology is a tool that supports instruction. You should ask yourself some important questions to ensure that the learning materials you design meet your patients objectives. Make sure you have the resources to keep materials updated and that the patient can have access to IT support. It is important that materials are inclusive and designed in a way that can be accessed by a population with diverse needs.

- ▶ Focus on the key take home messages
- ▶ Don't let the technology be a distraction
- ▶ Consider a blended approach where technology is used to supplement face to face teaching

### References and Further Reading

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