Widening Access to Virtual Educational Scenarios

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D3.2 Creation of Demonstration Scenario(s)

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1. INTRODUCTION

As part of the WAVES project the partnership are providing guidelines, tips and tools to share with the wider community. The guidelines will take into consideration lesson learnt from using and implementing Virtual Scenario within their own projects and organisations. This deliverable reports on the collection of demonstration scenarios which have been put together by the partnership as part of the non-technical toolkit.

Scenario-Based Learning can be used within a range of different disciplines and learning activities. To showcase the range or different types of scenarios available and styles, a collection has been put together by the partners within the project to showcase some exemplar Virtual Scenarios.

By providing the demonstration scenarios we are removing the barriers to uptake Virtual Scenarios in the wider workplace. These exemplars will provide new or would-be authors with live demonstrations of the potential and capabilities of the scenario in different learning activities.

2. IDENTIFIED VIRTUAL SCENARIO FEATURES

Virtual Scenario can be used in many different learning activities and contain a wide range of features that make them fit for individual purposes, and not all of these features can be covered here. A sample of the features and types of scenarios, used in different disciplines, will be showcased to provide examples for the wider community.

2.1. Learning Activities

When developing any learning resource, it is important to consider the learning activity in which it will be used. For example, teaching learners in a large group setting with an hour-long video is not usually productive or engaging, it is too passive an approach to learning and teaching. Here we consider the different types of Virtual Scenarios which have been created for different learning settings. The intention is to create where possible, engaging narratives, a more immersive experience for the learner, and a sense of identity with the story, so that the learner becomes involved in the story, even emotional involvement. All these factors are known to improve learning from literature.

2.1.1. Large Group Teaching

Virtual Scenarios being developed for large group teaching or training would need to be engaging, challenging and realistic. These scenarios may allow learners to stop and discuss elements of the story several times during the course of the scenario. The questions within the scenario, or options which could be taken, should prompt discussion within the group; Different points of view would be expressed, and each viewpoint would need to be defended or supported, before moving on. This

works well for subjects such as Ethics or Law, where it may be difficult to define a 'right' answer and different viewpoints may appear to have equal validity.

Scenarios which are more entertaining and engaging would work well for large group teaching, so that they capture the attention of the audience and keep them engaged and immersed. This can be done by using minimal text i.e. there is no need to read streams of text from a projector or screen) or by using animations or videos to display the story of the Virtual Scenario.

2.1.2. Small Group Teaching

Virtual Scenario for small group teaching or training are similar to those used for large groups however the subject area of the scenario may be covered in greater depth; only a small group would be sharing the information and could move forward more quickly after discussion compared to larger groups.

In universities small group teaching may take many forms, for example variants of tutorial such as Case-based learning, Problem-Based Learning or Team-Based learning.

It is the narrative of the story which will immerse the learner in these sessions, the quality of the story within the scenario becomes very important. These scenarios can increase engagement and interactivity through the use of various media, links to online resources, or activities such as questions. The Virtual Scenarios would also provide points for discussion and be designed to allow the learners to stop and discuss at key points.

2.1.3. Self-Directed

There are many online teaching and training resources which are designed to be used by an individual, however many of these are not designed well and tend to leave the learner feeling that they are carrying out a tedious task and are not really engaged with the material. Virtual Scenarios can be used to replace many of these to provide a more engaging and immersive experience. These Virtual Scenarios are designed to be more detailed in terms of the amount of content included in any one page of the Virtual Scenario with interactivity. Interactivity within the scenario developed to be used for self-directed learning can include different question types and typically provide more feedback than those designed for large or small groups.

As individual learners have more flexibility with the use of their time they can dedicate to working through a Virtual Scenario, the scenario may vary in length depending on the number of learning objectives being addressed within the scenario.

2.2. Structure of Scenario

Virtual Scenarios can differ in their structure. The three main structures are linear, semi-linear and branched. Each type of Virtual Scenario structure can be used for any learning activity depending on the author's choice. There is a good description of these types published by Huwendiek et al[1].

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[1] Huwendiek S, de Leng B, Zary N, Fischer MR, Ruiz JG, Ellaway R. Towards a typology of virtual patients. Med Teach. 2009;31:743-48

2.2.1. Linear

A linear Virtual Scenario will take the learner through a single pathway journey in the scenario. The linear scenario may provide the learner(s) opportunity to discuss each step in the development of the scenario, however their decisions or hypotheses cannot influence the manner or direction in which the scenario develops. The scenario will have one start point and one end point.

2.2.2. Semi-Linear

A semi-linear structured Virtual Scenario takes a learner from one start point to one end point in the scenario, similar that of a linear scenario. The difference with the semi-linear scenario is that it allowed the learner to take options at key points in the scenario and take their chosen path for all learners end at the same end point.

2.2.3. Branched

A branched Virtual Scenario will allow the learner to choose their own pathway through the scenario. There will be one start point and potentially two or more end points. Through a branched scenario the learner(s) will be asked to make decisions in the scenarioand, each decision of the learner influences the path; learners may follow very different pathways through this and can even experience different endings of the scenarios. Consequently, they can learn realistically from the consequences of the choices they make within the scenario.

2.3. Interactive Scenarios

Virtual Scenarios can include many different types of interactivity. The interactivity forces the learner to be more engaged with the scenario and in some cases, makes the scenario more immersive for the learner.

2.3.1. Video

Videos are a good way to engage the user to a Virtual Scenario. They can help the learner to visualize the scenario and situation. They can be useful to use when using scenarios in a large group to provide the information in a more entertaining way. Videos can be done with actors or animations both work equally as well. The cost of animated videos could cost far more than using real life people however they are easier to update in the future.

2.3.2. Assessment

Assessment can make Virtual Scenarios more engaging for learners, who are required to apply their knowledge to an interactive activity by answering a question. These questions can be used for formative or summative assessment. If questions are being used within the Virtual Scenario the types will depend on the system being used to develop the scenario.

2.4. Disciplines

Virtual Scenario can be used in a range of different disciplines. These have been very popular within the medical and healthcare discipline known as virtual patients. With the wider dissemination

of Virtual Patients, they are now being used beyond medicine in veterinary medicine, dentistry, and beyond that within economics, law and as far as engineering. They allow the learners to be put in a real-life situation and make decisions or take actions as they would in real life. Therefore, Virtual Scenarios can be applied to any scenario, situation or issue which we face in real-life.

3. DEMONSTRATION SCENARIOS

A selection of demonstration scenarios has been put together by the WAVES consortium to showcase the different types of scenarios described above. These should provide new authors with an understanding of the potential of Virtual Scenarios, and inspiration to add their own scenarios. The scenarios are listed in Appendix 1 of this document with details on their key features. These have been made available to the public via the WAVES website as part of the non-technical toolkit.

3.1. Systems

The demonstration scenarios which have been put together as part of the toolkit have been mostly developed and delivered through the two exemplar systems we have been using throughout the project, CASUS and OpenLabyrinth. CASUS represents a commercial software and OpenLabyrinth represents the open source authoring software. There are many other tools or software which can be used to create and deliver Virtual Scenarios. Many tools will require some technical expertise to install and utilise and others will require a subscription or maintenance cost. For the purpose of the project CASUS has made some of their scenarios available freely and the authors of scenarios in OpenLabyrinth have made their scenarios openly available.

3.2. Languages

Virtual Scenarios can be developed in many languages, and Virtual Scenario authoring software will often support the use of other languages in the scenario itself, and in some cases even the interface will adapt for different languages. More about this can be found in the technical tool-kit where pilots have been carried out to adapt the interface. As the main languages of the consortium are English, German, Greek, Swedish and Czech the exemplar scenarios have been provided in these languages and in addition also in Slovak, French, and Persian.

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4. APPENDIX 1

No.	Institution	Name	Language	Discipline	Learning Activity	Features	Link
1	SGUL	Andy Dufrayne	English	Medical Ethics video case	Lecture/ large group	Video case	http://labyrinth.sgul.ac.uk/openlabyrinth/mnode.asp?id=qwnw2gcwnw2gcu3lpfvf4jesnf4jesn
2	SGUL	Costas Arroyo	English	Medical Ethics narrative driven case	Lecture/ large group	Narrative driven case	http://labyrinth.sgul.ac.uk/openlabyrinth/mnode.asp?id=qwnw2gctpr9kqgxlrdbarsx9qqajxhq
3	SGUL	Rory Gallagher	English	Training against medical error - Pediatrics	PBL/ small group	Error case	https://openlabyrinth.sgul.ac.uk/renderLabyrinth/index/279
4	SGUL	Bella	English / French	Training against medical error - Pediatrics	PBL/ Small group	Error Case	https://openlabyrinth.sgul.ac.uk/renderLabyrinth/index/364 https://openlabyrinth.sgul.ac.uk/renderLabyrinth/index/945
5	SGUL	Virtual Chest Clinic	English	Medical self-directed Assessment Case	Self-directed/ formative assessment	Assessment questions	https://openlabyrinth.sgul.ac.uk/renderLabyrinth/index/630

6	SGUL	Chest MCQ	English	Medical self-directed assessment case	Self-directed/ formative assessment	Assessment questions	https://openlabyrinth.sgul.ac.uk/renderLabyrinth/index/571
7	Isfahan	Otitis media in outpatient setting	Persian	Antimicrobial resistance	Self-directed/ formative assessment	Key-feature questions, VPs in new cultural context	http://demo.openlabyrinth.ca/renderLabyrinth/index/1245
8	UJ	Eva Miller*	Polish	Medicine	Self-directed/ formative assessment	Concept map enhanced clinical reasoning	http://waves.casus.net (demo course or access via EduGain)
9	LMU	Leslie Smith*	German	Medicine	Self-directed/ formative assessment	Concept map enhanced clinical reasoning	http://waves.casus.net (demo course or access via EduGain)
10	Instruct	Frau Schneider kommt in die Apotheke*	German	Pharmacy	Self-directed/ formative assessment	clinical reasoning	http://waves.casus.net (demo course or access via EduGain)
11	Instruct/ NeTWorm project	Running nose and Breathlessness**	English, Polish, Romanian, Spanish	Occupational & Environmental Medicine	Self-directed/ formative assessment	Occupational medicine scenarios adapted to also local legal issues from a base	http://networm.casus.net (demo course)

						English scenario	
12	Instruct/ VetVip project	8 VS	English, Polish	Veterinary Medicine	Self-directed/ formative assessment	8 scenarios on linking basic science to scenarios	http://vetvip.casus.net
13	LMU	Johannes Maier	German	Clinical reasoning	Self-directed/ formative assessment	Student in the role of the patient	http://waves.casus.net
14	Instruct/IN QA	Gesunde Lunge: Ausbildung zum Mechatroniker *	German	Mechatronic technician	Self-directed/ formative assessment	High School Students special professions	http://waves.casus.net (demo course or access via EduGain)
15	KI	Linda	Swedish	Assessment in Dentistry	Self-directed/ formative assessment	Assessment questions	https://olabeval.lime.ki.se/renderLabyrinth/index/12
16	MU, UPJŠ, UVLF	German Shepherd	Slovak	Vet: apatia in breeding dogs with one death			http://ol.mefanet.cz/renderLabyrinth/index/70
17	MU	Unknown agitated patient	Czech	Psychiatry			http://ol.mefanet.cz/renderLabyrinth/index/20
18	UJ	Historia z meblami*	Polish	Economics	Self-directed/ formative	Financial audit in a	http://waves.casus.net (demo course or access via EduGain)

					assessment	furniture company	
19	MU	Bulka v prsu	Czech	Medical - Lump in the breast			http://ol.mefanet.cz/renderLabyrinth/index/32
20	MU	Akutní bolest břicha	Czech	Acute Abdominal pain			http://ol.mefanet.cz/renderLabyrinth/index/64
21	MU	Myokarditída spôsobená bakteriálnou infekciou z nevyhovujúcej endodontickej koreňovej výplne	Slovak	Dentistry - Myocarditidis caused by bacterial infection from inconvenient endodontic root filler			http://ol.mefanet.cz/renderLabyrinth/index/40
22	AUTH	Murder or accident?	Greek	Forensic Medicine	Self-directed/ formative assessment	Crime Solving Forensics	http://vp.med.auth.gr/renderLabyrinth/index/90
23	AUTH	Red Eye Patient	Greek	Ophthalmology	Self-directed/ formative assessment	Image Rich Ophthalmology	http://vp.med.auth.gr/renderLabyrinth/index/83
24	AUTH	Abrupt cough and facial edema	Greek	Medicine - Emergency treatment Anaphylaxis	Self-directed/ formative assessment	Treatment of life threatening	http://vp.med.auth.gr/renderLabyrinth/index/115
25	Bayer	Compliance	English	Compliance	Self-directed	Video game	https://drive.google.com/open?id=1I-hBt1I5ID

		SBL				example	
26	Bayer	Clinical trial team	English	Team skills (soft skills)	Self-directed	Video	https://drive.google.com/open?id=1zzDmJDIoS9ZwDutyy0CJabcVKhzzb1OV

* demo course or access via EduGain
** demo course