Scenario

Using Augmented and Virtual Reality in Assessment

Target audience

Health and Social Care teachers, work placement supervisors. EQF Levels 2 and 3.

Problem to solve - Learning Situation

Health and social care qualifications in the UK require assessment of practice. This is usually undertaken in partnership between training providers (including Further Education Colleges and apprenticeship providers) and care homes. Observation of practice can be (and often is) intrusive. Furthermore, reflection on practice can be problematic as it relies on the memory of trainees of the practice situation.

Overview of scenario

The details in this scenario are based on EQF level 2 qualifications in Health and Social Care. However, the scenario is also applicable to EQF Level 3 social care qualifications.

Context: Social Care in the UK

According to Skillsforcare data, in 2020 in the UK, there were 1.6m jobs in social care[1]. The average age of a care sector worker in the UK was 44. There are around 112,000 vacancies at any one time within the care sector, although this figure has risen with the falling EU workforce and the impact of the Covid 19 pandemic.

Workforce Qualifications in Social Care

Following reform in 2018, in the UK at Level 2, there has been a common qualification for both health and adult care settings, proving training for entry to either the adult care or health

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[1] The data in this section is based on a report on the nurses UK web site: https://www.nurses.co.uk
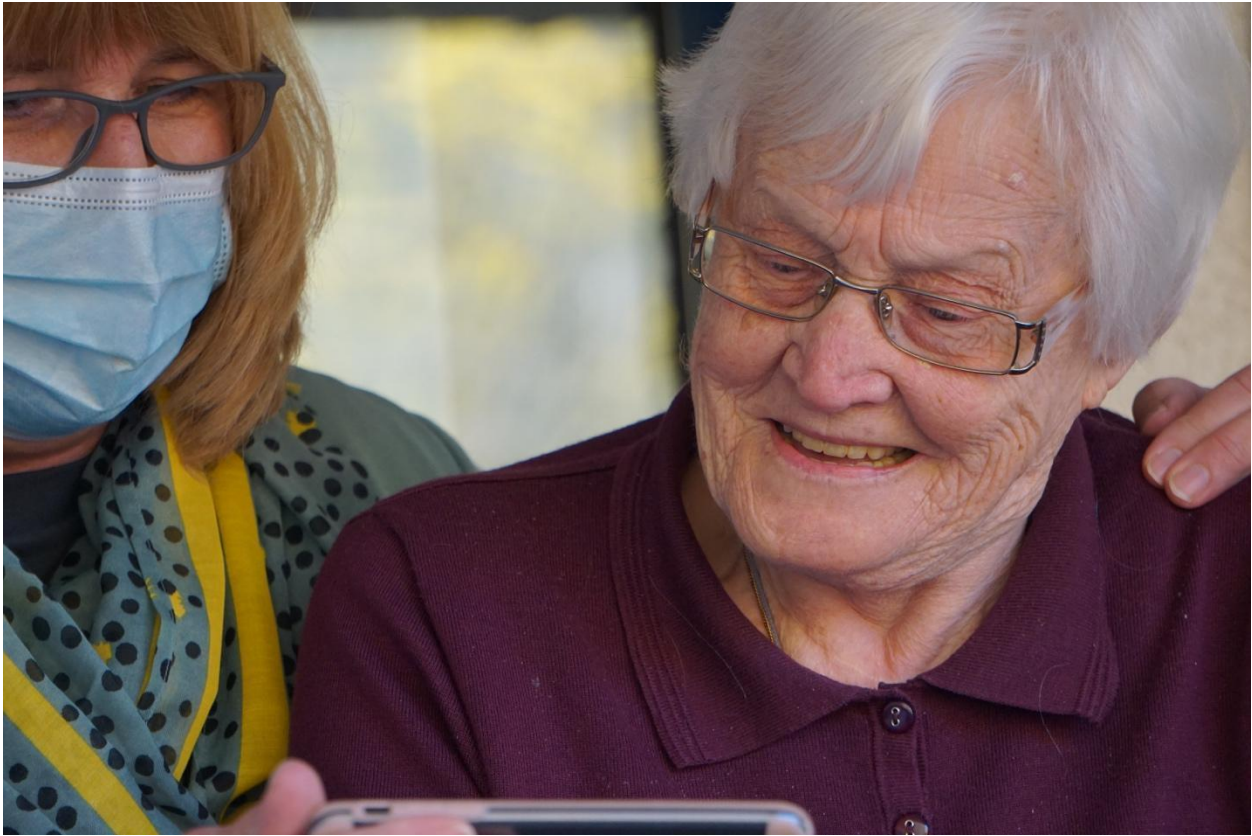
workforce[2].

Image 1. Care worker and patient. Photo by Georg Arthur Pflueger on Unsplash

The content is applicable to a variety of roles, for example:
- adult care worker
- healthcare assistant/support worker

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[2] This section is based on the Level 2 Diploma in Care - Criteria for qualification.
https://www.skillsforcare.org.uk/resources/documents/Developing-your-workforce/Qualifications/Diplomas-and-certificates/QS-Level-2-Diploma-in-Care.pdf

- personal assistant

As part of their training, care workers are required to demonstrate practical skills and interaction with clients and reflection, including:
- Show interaction with individuals that respects their beliefs, culture, values and preferences.
- Support an individual in a way that promotes a sense of identity and self-esteem.
- Demonstrate ways to contribute to an environment that promotes well-being.

Assessment
The UK based educational technology charity for vocational learning, Ufi, has said in evidence to a recent Government consultation, that "technology that enables learning and assessment must be embedded throughout vocational education. Contextual learning, digital credentialing and innovative assessment methods will be central to both re-skilling the existing workforce and developing the skills of future generations."

Competencies covered from DigCompEdu
This Scenario is based on the DigCompEdu Area 4: Assessment and the following Progression and Proficiency Statements:

4.1 Assessment Strategies

B 1	Employing and modifying existing digital assessment tools and formats.	I have tried using several different digital tools for formative or summative assessment I have tried using several different formats and assessment using digital tools according to my VET students needs and profile

B2	Strategically using a range of digital assessment formats.	I have designed an assessment strategy using a range of different formats with digital technologies I select digital tools for the ongoing and final assessment of students knowledge and competence in their vocational area

4.2 Analysing evidence

B2	Strategically employing digital tool for data generation.	I have used digital tools in order to generate data which is needed for evaluating learner activity and performance, informing teaching and learning approaches or improving the learning environment. I can analyse data from different sources to better understand the VET curriculum and delivery for supporting students

4.3 Feedback and Planning

B1	Using digital technologies to provide feedback.	I often use digital tools to provide feedback to my VET students I know how to provide detailed feedback to my VET students by using digital tools
B2	Using digital data to enhance the effectiveness of feedback and support.	I can use digital data to offer personalised feedback to my VET learners I use digital tools to update my VET learners about their progress that helps them to make the right choices on future learning opportunities
C1	Using digital technologies	I support learners in VET in understanding their digital data and how it relates to their learning

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	to personalise feedback and support.	I use digital data in order to evaluate VET teaching strategies and adapt them accordingly.

Curriculum Constructs

According to Revised Bloom's Taxonomy (Anderson and Krathwohl, 2001)[3]

The scenario applies to four areas of the Revised Bloom's Taxonomy:

- Understanding: Understanding the needs of people in care
- Applying: Applying knowledge gained through theory to practice in care work in real contexts
- Analysing: Analysing the needs of patients and appropriate treatment and care
- Evaluating: Evaluating and reflecting on own performance in practice

Scenario description

This scenario is using Virtual Reality applications for providing formative feedback and assessment to participants in a social care training course.

While the major focus for the scenario is formative assessment, the data could also be used for summative assessment, where evidence of practice-based competence is required.

The scenario is based on social care trainees, but it is equally applicable to any education and training programme aiming to provide feedback and reflection on communication and practice, particularly where there may be restraints on real time observation, for instance in hospitality industries.

[3]https://www.researchgate.net/publication/264675976_Transitioning_from_Teaching_Lean_Tools_To_Teaching_Lean_Transformation/figures?lo=1

Image 2. Virtual Reality headset. Photo by Jessica Lewis on Unsplash

The scenario includes **two different approaches to the use of VR technologies**.
In the **first approach** the teacher / trainer works together with the care provider to identify tasks to be undertaken to fulfill competences from the course curriculum. The interaction and practice of the tasks are streamed and recorded in real time using a 360 degree / 3D camera. The teacher / trainer can follow the activities using a 3D headset. Following the end of the session, the teacher / trainer and the student can review the activity using it as the basis for reflection. Although best undertaken using immersive 3D headsets, it is also possible to use 2D technologies, a computer or mobile device, for playing back the activity.

The **second approach** uses branching video. A branching scenario is a flexible assessment content type that enables authors to present a variety of rich interactive content and choices to learners. At various points in the video, questions prompt learners to make choices that determine the content they subsequently can see.

The video content can be structured as a tree with multiple branches and endings.

The video can be recorded using a 360 degree/3D camera for authoring with 3D authoring software and playback through a 3D headset. Alternatively, it can be shot in 2D for example using a mobile phone and authored using a Branching Video application.

The application can be used for individual formative assessment and reflection or can be used to scaffold group discussion.

Branching video may be particularly useful where access to work practice is limited, as during the Covid 19 pandemic.

Scenario Objectives

- To use Virtual Reality for providing formative assessment of learners in a social care situation
- To develop and use branching scenarios as an approach to the use of VR for the assessment of learners in a social care situation
- To use Virtual reality as an approach to supporting self reflection for learners and to scaffolding group discussion/

Requirements

Technology Requirements
- 360 degree / 3D camera
- Video camera (although for 2D video a smartphone may be adequate)
- 3D headset(s) Note learners can share headsets as long as appropriate cleaning protocols are in place and followed
- 3D editing software / branching video software depending on what exact scenario is being followed.

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Teacher competencies and skills
Teachers require knowledge and skills in the use of 360 degree / 3D camera, Video cameras and 3D headset(s) and, for the branching scenario in using editing software and in storyboarding branching scenarios.

Learners competencies and skills
There are no requirements in terms of learners use of technology

Outline plan

Activity	Using a 360 degree / 3D camera to provide feedback of practice to social care students
Timing	Two hours preparation / one hour practice / half hour feedback/reflection (although may vary greatly dependent on nature of the activity/practice
Methods	The teacher / trainer works together with the care provider to identify tasks to be undertaken to fulfill competences from the course curriculum. The interaction and practice of the tasks are streamed and recorded in real time using a 360 degree / 3D camera. The teacher / trainer can follow the activities using a 3D headset. Following the end of the session, the teacher / trainer and the student can review the activity using it as the basis for reflection. Although best undertaken using immersive 3D headsets, it is also possible

	to use 2D technologies, a computer or mobile device, for playing back the activity.
What the tutor is doing	Selection and preparation of activity / tasks involving care provider and college tutor / work practice supervisor. Setting up of equipment. Demonstrating to student / trainee how to use equipment (if new to them.) Watching student undertake tasks / activities (making notes on performance). Conducting feedback on 3D recording with student and supporting self-assessment / reflection /evaluation. Providing feedback to student / trainee.
What the learners are doing	Undertaking practical activities tasks and interacting with social care patients. Viewing recording of activity and undertaking self-assessment / reflection /evaluation on performance. Reflection on what went well, what could have gone better, needs for future learning
Equipment and Support	360 degree / 3D camera; 3D headset(s)
Reference to DigCompEdu	**4.1 Assessment Strategies**: Employing and modifying existing digital assessment tools and formats. Strategically using a range of digital assessment formats. **4.2 Analysing evidence:** Strategically employing digital tools for data generation 4.3 **Feedback and Planning**: Using digital technologies to provide feedback. Using digital data to enhance the effectiveness of feedback and support. Using digital technologies to personalise feedback and support.
Assessment of/for learning	Formative assessment: Self reflection on learning based on

	video playback, feedback from teacher / trainer based on video playback.
Resources/links/relevant content/Examples	Video: eCom Scotland were granted funding through VocTech Seed which supports the development of early-stage ideas that demonstrate the benefits of using digital technology to give people better skills for work. eCom Scotland's innovation uses Virtual Reality to recreate practical assessments and vocational tasks which learners may have missed. Work carried out in VR can also be documented by employers and trainers and used for assessments. By using VR, employers can get a more comprehensive understanding of the learners thought processes as the recordings of VR training and assessment are from the learners point of view. https://www.youtube.com/watch?v=IRwPSfH-9SU Article: **Virtual Reality helps students build skills for the modern workplace** **Career Mindset Development** is a 15-minute interactive learning simulation designed as part of a Ufi VocTech Trust initiative in collaboration with teachers and careers counsellors from Harlow College, Writtle University College, South Essex College, Bridgend College, and Sandwell College to give young people guidance and feedback on: • Building self-awareness • Taking the initiative when talking to people you don't know • Making a positive impact at work • Communicating ideas clearly and with confidence.

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	Educators in VR: network / website https://educatorsinvr.com/ *Educators in VR* is an open, global, cross-platform community of educators, researchers, and trainers exploring and collaborating with and in virtual and augmented reality.

Activity	Branching video for Care workers
Timing	The time taken to prepare Branching videos varies greatly depending on the length of the video and the complexity of the storyboard and the editing software being deployed. As with the use of any oswaftware for edicting multimedia the time taken will also depend on the experience and expertise of the production team. A simple branching video make using a phone and H5P software could be made in hald a day. However more complex branching videos might take 5 days to produce.
Methods	The major task is planning, filming, and processing the video. The production cycle includes planning and preparation of storyboard, scripting the video, filming the video sequences, editing and post production. Some projects have outsourced some or all this work to media specialists, in other cases educational staff have undertaken the development work and in yet other cases students have been involved as part of their learning.
What the tutor is doing	If the learners have not previously used branching video, the tutor will explain how to use it. However, the main activity for the tutor is in facilitating feedback and reflection on the

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	online activity and drawing out the learning which has taken place.
What the learners are doing	Learners will access the branching video on a computer or mobile device. They will follow prompts and activities on screen. Their answers / activities at different points will determine the scenario the video follows. After interacting with the video, they will take part in a feedback and reflection session with the teacher / trainer.
Equipment and Support	- Storyboard for planning - Camera - this could be a 360 degree / 3D camera but can also use an ordinary video camera or a mobile phone - Postproduction software for editing the video - Branching video software – while there are commercial applications available, the free Open Source H5P has an excellent branching video module included 3D headset, computer or mobile device for playing the video
Reference to DigCompEdu	**4.1 Assessment Strategies**: Employing and modifying existing digital assessment tools and formats. Strategically using a range of digital assessment formats. **4.2 Analysing evidence:** Strategically employing digital tools for data generation 4.3 **Feedback and Planning**: Using digital technologies to provide feedback. Using digital data to enhance the effectiveness of feedback and support. Using digital technologies to personalise feedback and

	support.
Assessment of/for learning	This scenario is designed for assessment for learning. The formative assessment will be based on feedback and reflection session with the teacher / trainer.
Resources/links/relevant content/Examples	Examples: Branching Scenario eLearning: 5 Killer Examples. https://elearningindustry.com/branching-scenario-elearning-5-killer-examples

Video: Introduction to H5P Branching Scenarios. https://www.youtube.com/watch?v=LI2oFJfgom4 This video will give an introduction to H5P Branching Scenarios. We will also discuss how to add this type of content to the Moodle content bank, and then add the content as a Moodle assignment.

H5P Branching Scenario. https://h5p.org/branching-scenario A free HTML5 based branching scenario content type allowing users to create dilemmas, self paced learning scenarios and other types of adaptive learning. The content may be video based or based on a large selection of other H5P content types. |

Our notes from practice

There is great interest in the potential of VR, especially in vocational education and training. However, it should be noted that the cost of developing VR applications can be considerable, especially if there is no internal expertise in institutions. The cost of headsets is also a barrier, as

is the lack of standards. Probably the most important consideration is whether VR offers sufficient added value in any given context and scenario.

There is also an ongoing debate over how to record the outcomes of practice as part of both formative and summative assessment. This is especially so as most students are carrying powerful mobile phones and mobile devices are often used in occupational practice. One German vocational training school in the construction industry has been training apprentices in how to use mobile phones to record construction work undertaken: increasingly this is required as part of the insurance sign off process. Despite this, a proposal that phones could be used as part of the assessment process provoked a twitter storm in early 2022, with concerns being cited over staff privacy.