APPRENTICESHIP WORKFORCE DEVELOPMENT

DELIVERED BY

FUNDED BY Department for Education

Using digital technology for learning in the workplace

Introduction

Digital technology opens up many possibilities for enhancing learning in the workplace and closing the gap between 'off-job' and 'on-job' learning.

Purpose

This resource is designed to complement the content of the AWD course 'Integration of on-the-job and off-the-job learning/training', 'Planning the integration of on and off-the-job training', 'Improving curriculum design for apprentice success', 'Planning Effective Curriculum Design' and 'Planning and maintaining high quality and effective teaching and training'. It can, however, also be used as a stand-alone resource if you haven't yet attended the courses.

How to use

An important point when using digital technology is to think about what the technology can do to improve teaching and learning – not just to try to replicate existing methods on computers or phones. This resource assists by providing examples that have been used successfully in different occupations and settings.

Definition

Digitally supported learning can provide:

- Convenience, for instance learning at a distance, in multiple locations, on the move, between tasks and during breaks.
- Expediency and efficiency, for instance being able to access information and resources at any time, check things out and question their truth in real time and explore subjects more deeply on demand whether through access to web-type resources or contacting peers and experts.
- Immediacy, for instance being able to make and share pictures, videos, notes and information 'in the moment', or looking up information and getting support at the point of task performance.
- Connectivity and collaboration, in lots of ways:
    - Between learners in different workplaces working on similar tasks
    - Between learners working remotely on collaborative projects or tasks
    - Between learners and supervisors, tutors and assessors

  - Between learners and external experts.
- Innovation, for instance using augmented reality to see instructions, diagrams or processes in real time, or allowing tutors and assessors to see through the 'eyes' of the learner.
- Fun!

Video sharing

A mobile Android/iOS application, AchSo!, is used in construction and healthcare to allow learners to make short annotated videos about work tasks and share them with other learners, supervisors and tutors. Learners have found this approach quicker and more effective than using text, photos and physical interaction. They have used it to demonstrate skills for assessment, demonstrate tasks and techniques to other learners, and for getting feedback and ideas on problems by sharing videos with other learners, tutors and supervisors. Learners also found that the video-based approach overcame their reluctance to seek help and guidance.

Resource: http://results.learning-layers.eu/tools/ach-so/

A mobile learning tool

This approach was developed for mechanical engineers and metalworkers and can be used in the workplace and in training sites. It takes areas that are suitable for learning in the working environment, such as being able to interpret drawings or specifications and produce the relevant item from them. Each area has a series of short media-supported learning sequences that can be accessed using a QR code on a mobile device. These provide the learner with the relevant knowledge as well as guiding them through the process.

Academic paper: https://inria.hal.science/hal-01762901/file/463502_1_En_13_Chapter.pdf

Remote training using augmented reality

Augmented reality (AR), where a digital overlay of some kind is superimposed on a real situation, has many uses to support training, either controlled by the learner (e.g. to call up relevant information and guidance that can be seen while performing a task) or involving a trainer or assessor via a remote link. AR can be used on a phone or tablet, or more convenient for manual tasks through AR glasses. One use is in the chemical industry, where the learner is equipped with AR glasses and performs a task such as operating a processing machine while a remote trainer watches on computer and provides instructions. The same approach can be used to enable a tutor or trainer to assess the learner remotely.

Academic paper: https://dl.gi.de/server/api/core/bitstreams/42b8e264-4376-46d1-b923-f2edfad86709/content

Just-in-time information using QR codes

This application was trialled in a hospital ward to provide trainee nurses with content relevant to individual patients, but it could be used in any setting where it is important that learners have rapid access to context-relevant knowledge. Each bedside had a QR code, which the consultant links to information about the patient and directly relevant medical knowledge. The links can be changed quickly, for instance as patients' conditions change or when the bed is occupied by a new patient. It is important that the information is in a form that can be quickly digested by a busy nurse. A trial of this system found that the information was much more accessible and apt to be used than paper-based resources or standard internet content.

Academic paper (summary only): https://www.emerald.com/insight/content/doi/10.1108/ITSE-02-2017-0015/full/html

A textbook on a phone

The iDoc project in Wales provides an easily searchable medical textbook app for newly qualified doctors to use in the workplace. It offers a quick way of doing things such as looking up medicines and doses, aiding diagnosis, and providing information on treatments and care. Advantages have been found to include:

- More convenient than a textbook or computer.
- Improves accuracy and efficiency – e.g. improves diagnosis before consulting a senior colleague, narrows down symptoms to enable the correct tests to be ordered.
- Allows the doctor to share information with the patient.

There are several papers on the internet about the project, for instance:
https://bmcmededuc.biomedcentral.com/articles/10.1186/s12909-015-0356-8

Digital tools to support cognitive apprenticeship learning

Cognitive apprenticeship is a specific learning sequence that takes learners from observing demonstrations or live practice through initial practising and reflection to more exploratory learning. This project developed phone-based digital tools to support learning on a short nursing placement, following the cognitive apprenticeship sequence:

- Modelling – a demonstration video and voice recorder
- Coaching – assignments and feedback via the mobile device
- Scaffolding – tools to aid observation, recording and evaluation in the clinical setting; learners become more independent of the tools as their experience grows
- Articulation – use of a discussion forum
- Reflection – a reflective journal app
- Exploration – a clinical concept mapping app, to help learners map relationships between patients' problems.

The mobile apps enhanced learning at all stages, particularly by improving communication. They were most valuable for storing information for sharing and for later reflection, and less effective at enhancing modelling and exploration.

Academic paper:
https://www.researchgate.net/publication/326356044_Using_mobile_devices_to_support_cognitive_apprenticeship_in_clinical_nursing_practice_-_a_case_study