VET and work-based learning: Can e-learning meet its needs?

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We live in an age of innovation and digitalisation

Innovation

- Innovation is key to economic and social progress, critical to address the environmental crisis
- In early stages of a 'learning revolution'
- Innovation required at all stages and levels of education and training systems

Digitalisation

- Automation and digitalisation in the workplace
- Digital skills gaps
- Not all digitalisation involves innovation

We are starting to experience disruptive and radical forms of innovation linked to
(a)   new technologies and
(b) the emergence of demand for new skills driven by digitalization in the labour market.

How is VET positioned?

Knowledge + experiential, practical learning

School and work-based

Provision

In-company trainers

Employers and skills

Learners

Can be from challenging socio-economic backgrounds

Product and service innovation -> digital and transversal/soft skills

Adults – upskilling, reskilling

VET is well positioned to respond to the challenges of innovation and digitalisation in the wider economy ...

and digitalisation *within* VET has potential to strengthen its response

State of the art

E-learning and e-assessment

•Open educational resources, digital repositories
•Open courseware
•MOOCs, NOOCs, SPOOCs ... etc ☺
•Commercial platforms, e.g. LinkedIn Learning
•Mobile learning
•Simulations ... AR, VR, AI, Learning analytics
•Digital assessment and credentials, open badges ...

How did we get here?

| 1980s	1990s	2000s	2010s
Computer-aided Instruction	Multi-media PCs	DVDs	iPads, tablets
First programs exclusively for educational use	Laptops	CD-ROM/DVD drives integrated into devices, capacity increases	VR headsets
TV	CD-ROMs, including simulations	Smartphones, apps	Educational apps
Videotapes, cassettes	Interactive whiteboards	MIT, OpenCourseWare initiative	MOOCs
	Early internet access	Internet access	First 5G networks
		3G to 4G	Growing Open Educational Resources/Courses

?

What is innovation in VET?
Here's one definition ...

Innovation is the use of new or significantly re-designed teaching and learning tools, methods or environments (such as digital learning tools, MOOCs or virtual reality) or new organisational methods (for example using a new app or software to interact with employers) aimed at improving the quality of VET and/or supporting innovation for environmental sustainability and social and economic goals.

**Not all digitalisation leads to innovation,
and not all innovation relies on digitalisation
but ...**

Digital technologies

- Online resources, tools and programmes
- Mobile learning
- Virtual reality, augmented reality
- Artificial intelligence/learning analytics
- Assessment
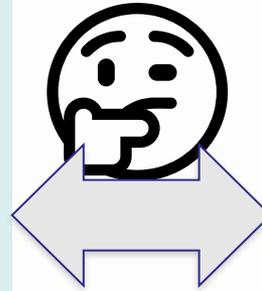
Teaching and learning

- Embodied
- Experiential
- Blended
- Game-based
- Others …

Tech meets teaching ...

- **Experiential learning** – enormous potential for digital technologies to enhance the type and scale of experiential learning in VET, e.g. video making

- **Blended** - how might blended learning be applied to situations where two learning environments are involved – the classroom and the workplace?

- **Game-based** - good fit with important aspects of VET and expansion has the potential to bring a number of benefits; not just about whole games, but gaming elements e.g. VRhoogte

- **Social and collaborative learning** – numerous possibilities to capitalise on one of the internet's key strengths through numerous platforms, also linked to e.g. gaming

- **Assessment** – widens evidence for assessment, e.g. ePortfolios; speeds up feedback to learners, e.g. Simspray; improves links between assessors and learners, e.g. TRIALOG app

- **Linking schools and workplaces** – improve coordination of knowledge acquisition and practical learning, e.g. REALTO platform

COVID-19 reveals the extent to which VET lacks digital tools in its practical, work-based part despite their huge benefits for experiential learning

Effects of digitalisation

Individual learners

•**Widening access** – but also unintended consequence of increasing inequality?

•**Changing how learners learn:**
Range & Reach
Application
Collaboration
Individualisation

•**Outcomes: -** motivation, cognition but where's the evidence?

VET provision

•**Efficiency and effectiveness** – what are costs and benefits?

•**Growth of private edtech market** – what is the public sector response?

•**Validation** – new forms of validation and validators

Digital technologies can enhance learner's experiences, offer new and different experiences, offer the same quality of experience at reduced cost

Pros and cons of digitalisation in VET

Positives

- Supports pedagogical innovation
- Offers learners new, different experiences (multi-media); visualises abstract content (especially AR, VR, AI)
- Decouples learning from time, place (especially online/remote/mobile)
- Supports personalisation
- Supports social learning in communities
- Content creation by teachers, learners
- Faster, more tailored feedback to learners
- Enables informal and self-learning (social media, video-sharing)
- Cost of use can be low
- Simulations are cheaper than the real thing (once developed), reduce preparation/clean-up time, enable more practice, safer

Challenges

- Huge range of options: how do we know what is 'good'?
- Access is unequal across learners (digital divide); language (English dominates); across sectors, occupations (some tech is expensive, e.g. AR/VR)
- How much tech is actually changing/improving how people learn in formal VET?
- Simulations are still only simulations; how good for transversal skills?
- What are the wider effects on formal Continuing VET?
- Low overall completion rates in MOOCs, VET is relational!
- For self-learning, who validates?
- Health issues in VR, AR, AI
- Intellectual property rights issues

Are we doing enough with (advanced) tech?

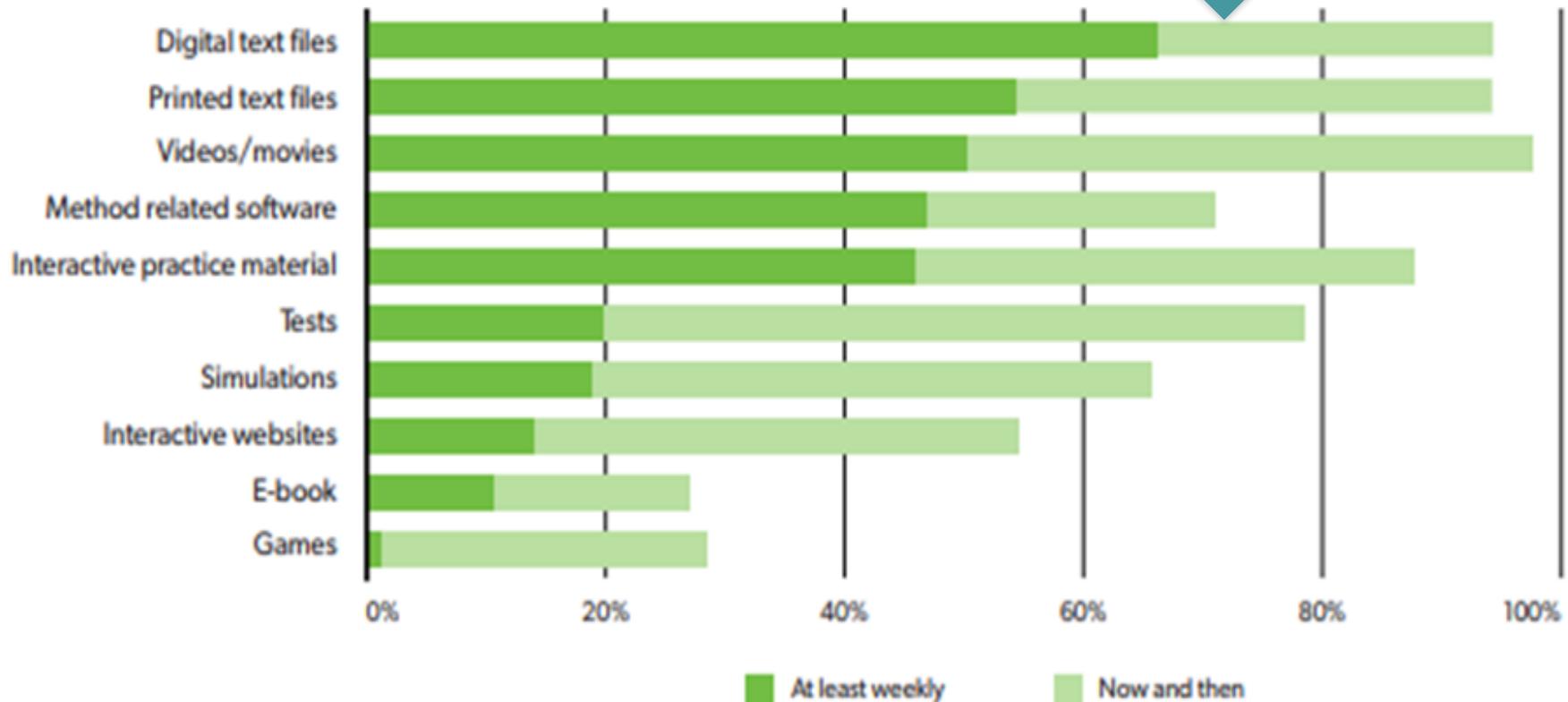**Uptake of technologies**
Evidence is very scarce but …

… European participation in online learning
> doubled from 2007 to 2015, and ranged from 3% in Poland and Slovakia to 13% in Finland

.. And in the Netherlands in 2015

Digital text files
Printed text files
Videos/movies
Method related software
Interactive practice material
Tests
Simulations
Interactive websites
E-book
Games

0% 20% 40% 60% 80% 100%

At least weekly   Now and then

https://www.kennisnet.nl/fileadmin/kennisnet/publicatie/vierinbalans/Vier_in_balans_monitor_2015.pdf

Two aspects to improve ...

1 Rate of take-up

Speed of digitisation in education is up to 5x slower than in other sectors

Likely to be because of poorly distributed knowledge and weak connectivity amongst stakeholders
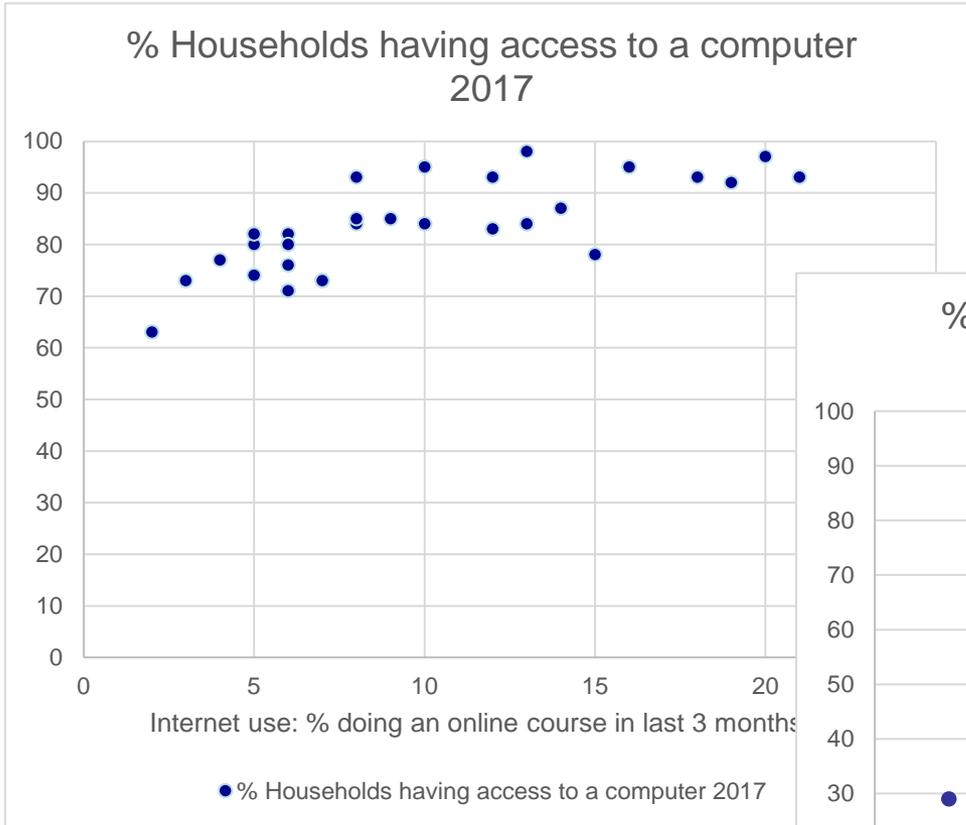
2 Depth of the effect

Depends on:
- Inherent features of the tech
- How teachers want to use it
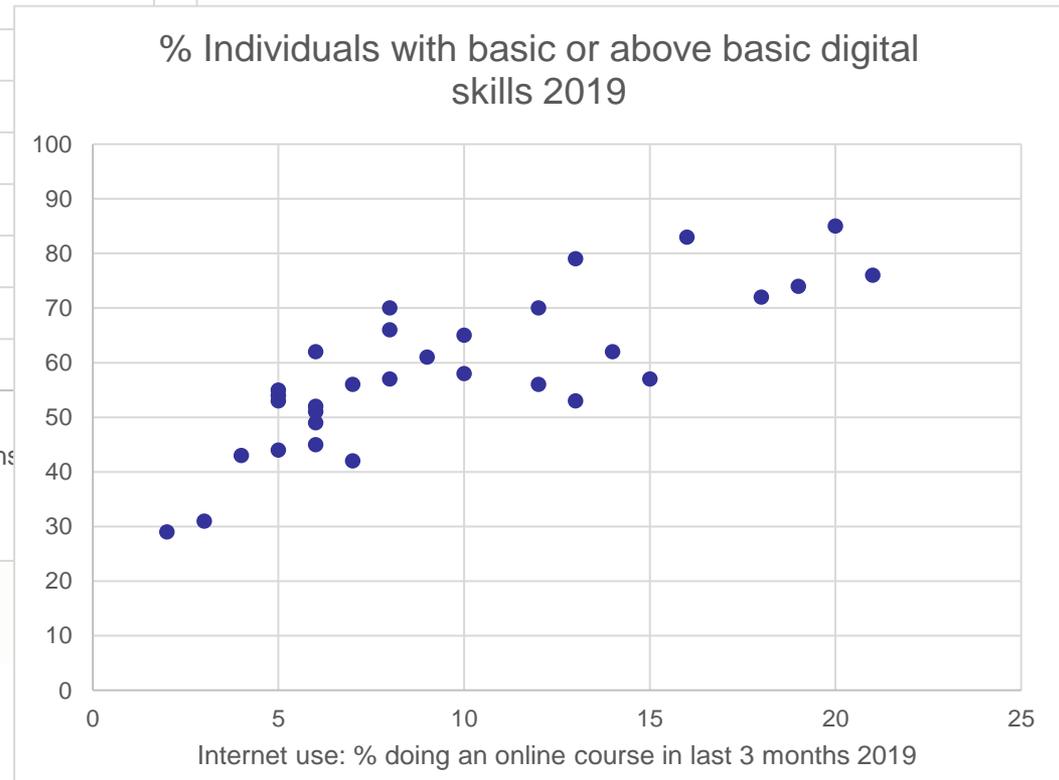- Pedagogical context, e.g. WBL

Challenges

- Teachers and trainers need to be able to see when benefits of adoption outweigh the risks

- The digital – pedagogy links are not always clear

- More advanced tech needs more time, commitment and resources

- Information, knowledge and skills are key:

- to navigate the huge range of products available

   - to know how to use them for full effect

- And critically, we need to include learners, a source of latent demand, especially young learners

Learners need support to engage

% Households having access to a computer 2017

Internet use: % doing an online course in last 3 months

● % Households having access to a computer 2017

Source: Own analysis using Eurostat data

% Individuals with basic or above basic digital skills 2019

Internet use: % doing an online course in last 3 months 2019

COVID-19 has highlighted the inequalities in education and training due to unequal access to digital skills and technology ... and this is key for adults too

What can we do about it?

"Maybe the most important thing ... is to **train or accompany teachers and trainers** to know **how**, **when** and **what for** to use digital tools to make training more **attractive**, to allow **pedagogical differentiation** and **efficiency**. They will be able to develop material anyway adapted to their needs."
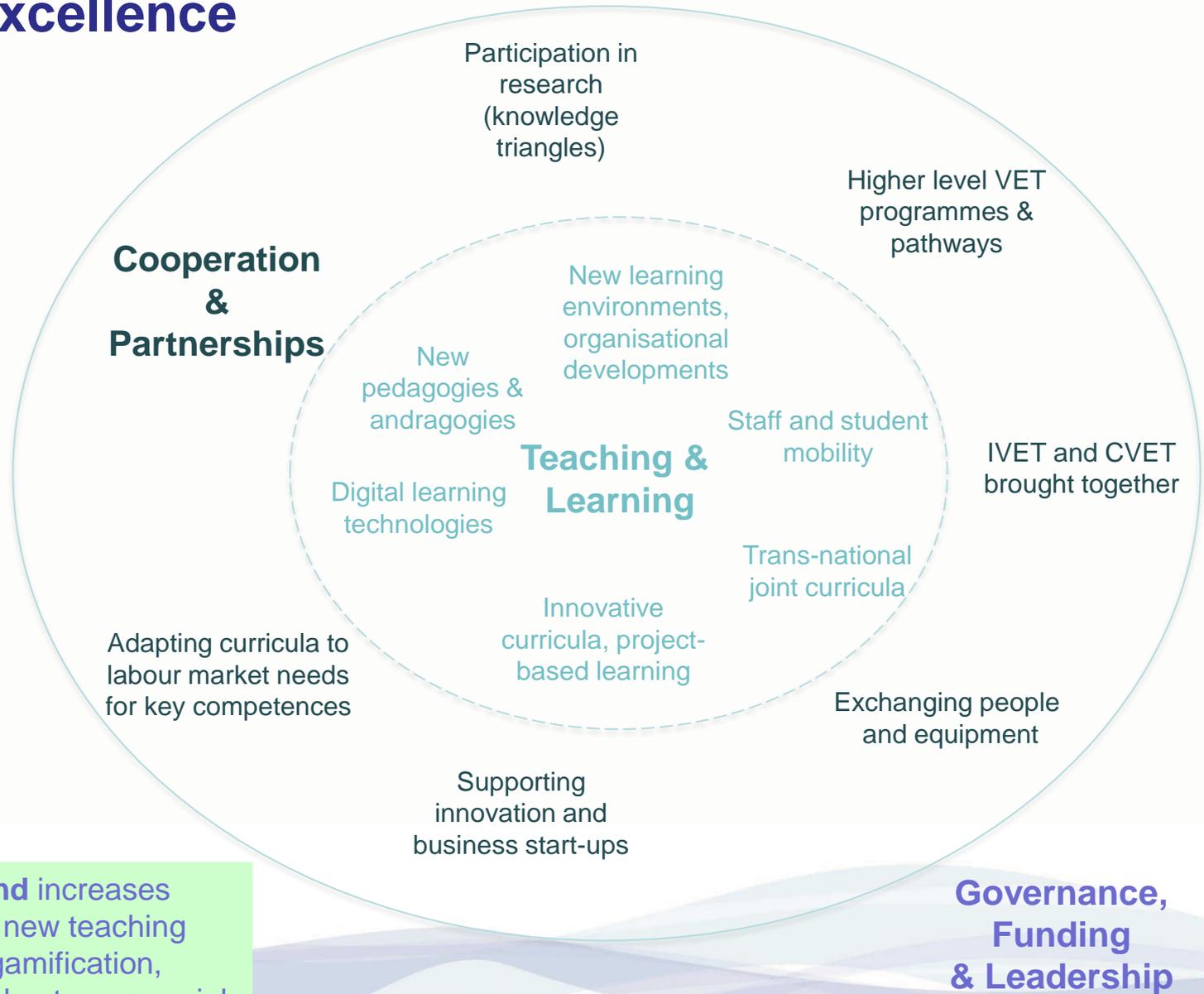
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Solutions

• **Training and networks for teachers and trainers**

• **Digital skills development in the population**

• **Better connectivity**

• **Research & Intermediation**

• **Strategies and Funding**

• **Pursue excellence**

Areas of excellence in VET

Participation in research (knowledge triangles)

Higher level VET programmes & pathways

Cooperation & Partnerships

New learning environments, organisational developments

New pedagogies & andragogies

Staff and student mobility

Teaching & Learning

Digital learning technologies

IVET and CVET brought together

Trans-national joint curricula

Innovative curricula, project-based learning

Adapting curricula to labour market needs for key competences

Exchanging people and equipment

Supporting innovation and business start-ups

InnoOmnia, Finland increases innovation through new teaching and learning, e.g. gamification, mobile learning and entrepreneurial teaching methods.

Governance, Funding & Leadership

To conclude, digitalisation can ...

Improve communication between workplace and school

Support pedagogical innovation

Provision

Provide new and different learning experiences

Re-engage people turned off by traditional education

Meet demand for digital skills and transversal skills

Employers and skills

Learners

Provide solutions for adults to upskill and reskill

If you know of any good examples, let us know!

Thank you!

Dr Andrew McCoshan

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