

Developments in Digitalisation and Innovation in Vocational Education & Training

Dr Andrew McCoshan

***Plexus Research & Consulting, and
Senior Research Associate, Educational Disadvantage Centre
& Associate Faculty, Further Education & Training Research Centre,
Dublin City University***



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

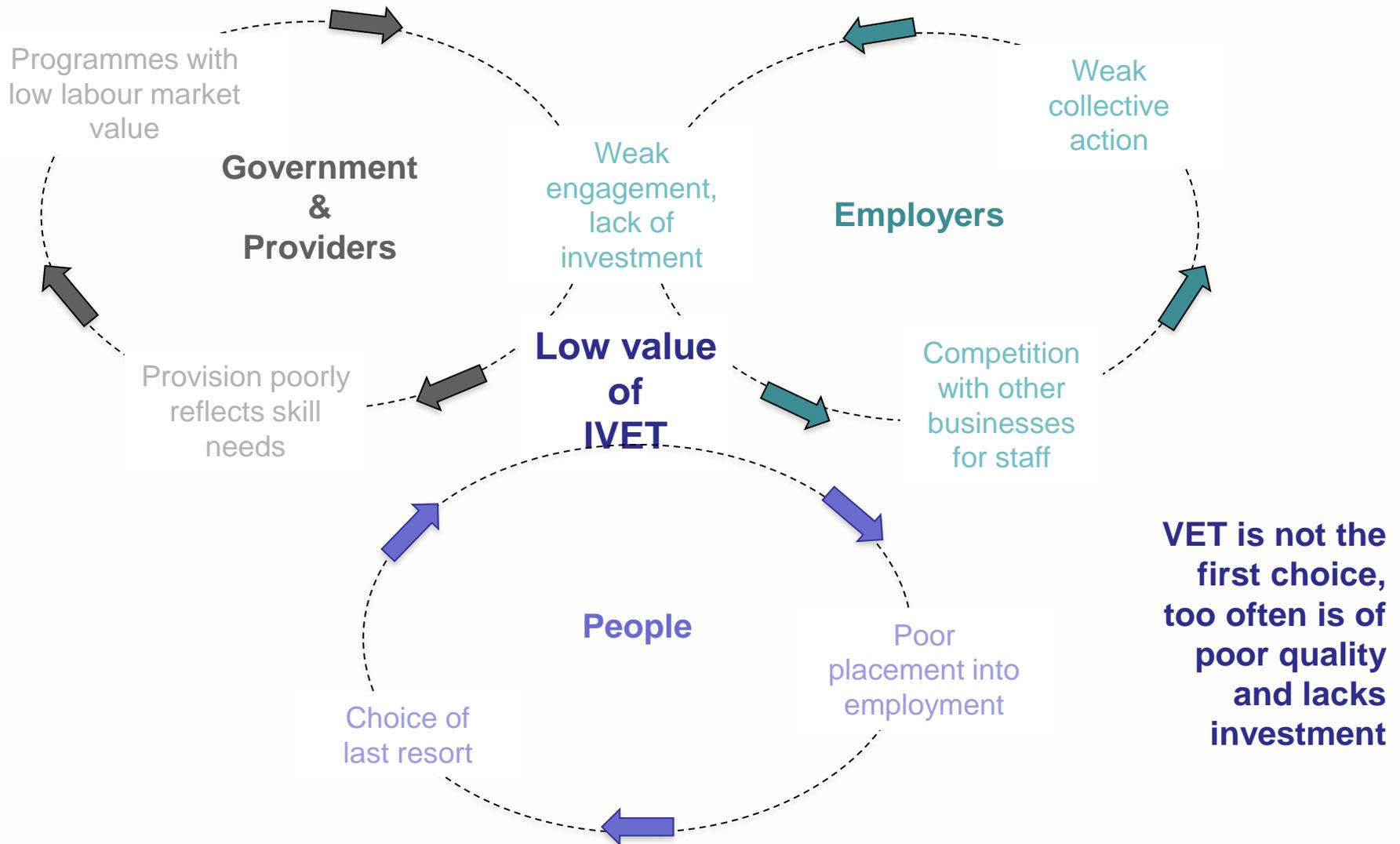
- Automation and digitalisation in the workplace
- Digital skills gaps
- Not all digitalisation involves innovation

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 to deal with the challenges?



Where are we with digital learning?

1980s

Computer-aided Instruction

First programs exclusively for educational use

TV

Videotapes, cassettes

1990s

Multi-media PCs

Laptops

CD-ROMs, including simulations

Interactive whiteboards

Early internet access

2000s

DVDs

CD-ROM/DVD drives integrated into devices, capacity increases

Smartphones, apps

MIT, OpenCourseWare initiative

Internet access

3G to 4G

2010s

iPads, tablets

VR headsets

Educational apps

MOOCs

First 5G networks

Growing Open Educational Resources/Courses

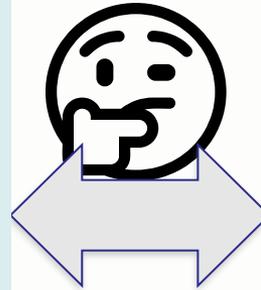


In the last 10-15 years there has been a major increase in the potential to decouple teaching and learning from time and place and a massive increase in the ability to offer learners new and different experiences, and provide faster, more tailored feedback.

How does tech relate to teaching and learning?

Digital technologies

- Online resources, tools and programmes, MOOCs etc
- Commercial platforms, LinkedIn, YouTube
- Mobile learning
- Simulations - virtual reality, augmented reality
- Artificial intelligence/learning analytics
- Assessment tools, credentials, open badges



Teaching and learning

- Embodied
- Experiential
- Social/collaborative
- Blended
- Game-based
- Others ...

Not all digitalisation leads to innovation, and not all innovation relies on digitalisation but **digitalisation can be a key tool for change**

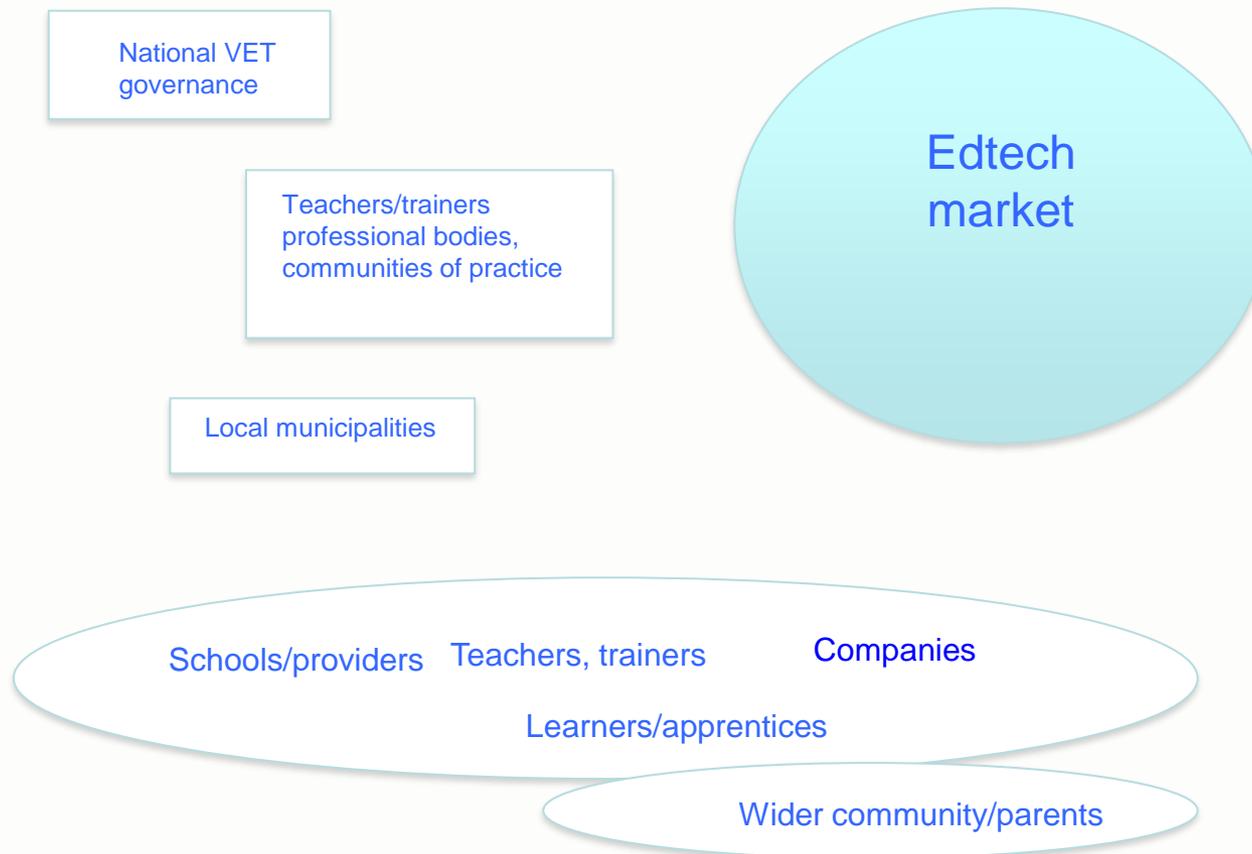


Tech meets teaching ...

- **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; e.g. **AquaFarm simulator in Ireland**
- **Social and collaborative learning** – a key strength of modern tech; many possibilities through numerous platforms, e.g. **Romania's virtual companies**
- **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**

Social/collaborative learning, project-based learning, learning-by-doing, learning related to real-world issues and learner-centred teaching all help to develop skills needed in the modern workplace and all are associated with digital learning.

Who is doing what?



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

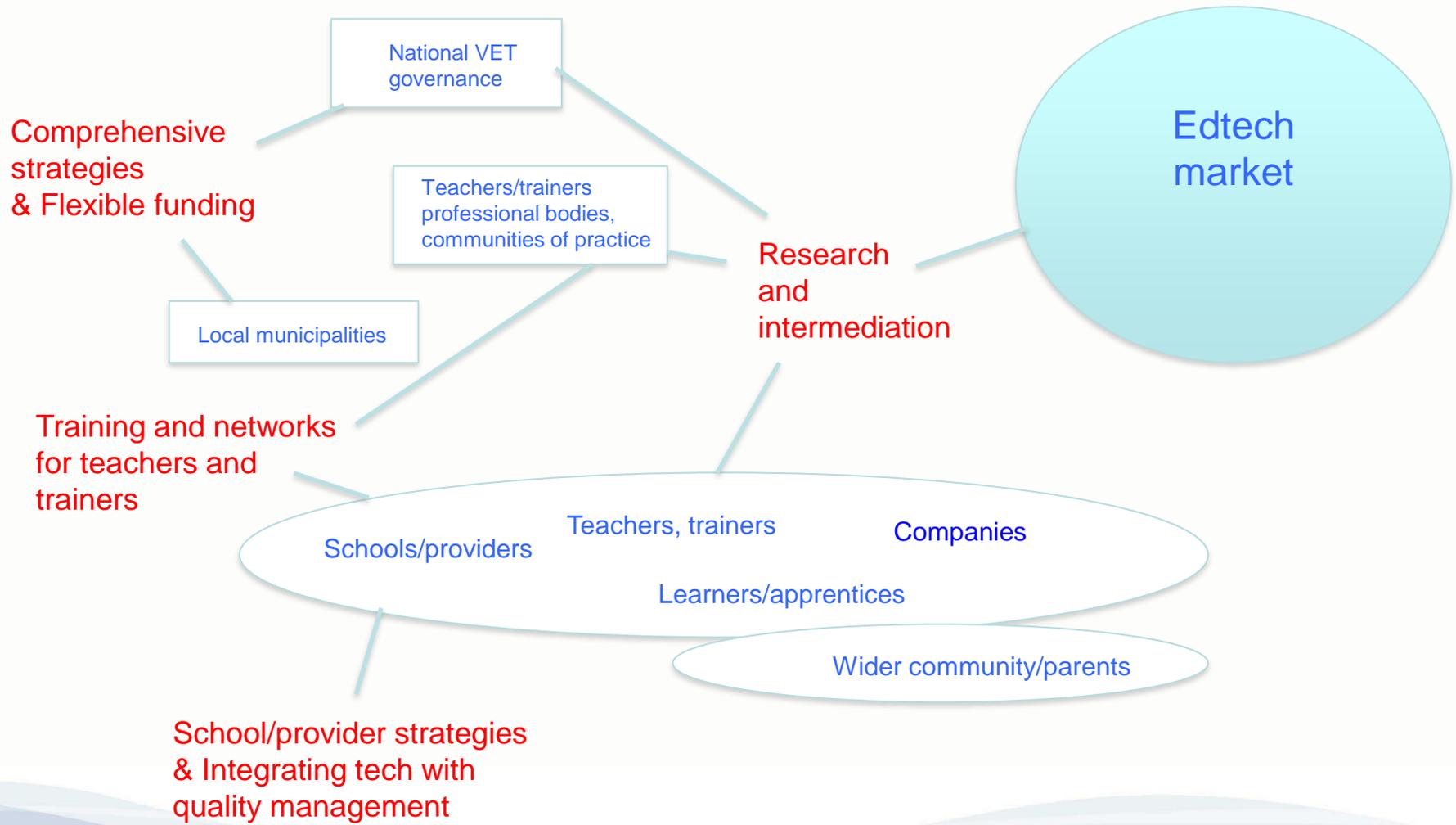
Depends on:

- Inherent features of the tech
- How teachers want to use it

Challenges

- Teachers and trainers need to be able to see when benefits outweigh the **risks**
- **Information, knowledge and skills** are key:
 - to navigate the world of tech
 - to know how tech and pedagogy relate
- What is tech's role in **work-based learning**?
- More advanced tech needs more **time, resources**
- **Learners** live in a digital world of individual choice and instant engagement which affects the relationships they want with teachers and trainers

Solutions



Examples

Platforms

Romania's Ministry of Education has provided **online platforms for free** use during COVID-19. Distance education has further been made possible by using various applications including Google Classroom, Google Meet, Google Hangouts, Zoom, Microsoft Teams, Livresq, Webex Meetings, Windows 10 and Office 365 applications, Skype, WhatsApp. The Ministry of Education also initiated a series of **educational TV programmes** with the national TV provider.

INTEF, Spain – Innovative teacher training accessible for teachers to improve their skills offered by the National Institute for New Technologies and Teacher Training (INTEF) range from **Massive Open Online Courses (MOOCs)**, each with its own Facebook group and Twitter hashtag for teachers to connect and help each other to **EduPills**, a micro-learning app to acquire and/or develop digital abilities, skills and competences in a fast and simple way (3-8 minutes). **Insignias INTEF Open Badge Backpack**, stores, imports, downloads and shares digital badges on social media related to training.

Training and networks
for teachers and
trainers

Research and intermediation

Tknika, the Basque Centre for Research and Applied Innovation in VET in Spain was set up by the regional government to support local VET providers, universities and companies on a variety of projects in six fields including applied **Innovation** in the field of Vocational Education and Training and **Research** on Learning Methods and Processes. Through **networking** and direct involvement by the Basque Vocational Training teaching staff, the Centre develops innovative projects in the areas of technology, education and management. (**Regional Centre of Vocational Excellence**)



Thank you!



Dr Andrew McCoshan

Twitter and LinkedIn @andrewmccoshan

Blogs on Europe's adult learning platform - EPALE

Are we doing enough with (advanced) tech?

Uptake of technologies

Evidence is very scarce but ...

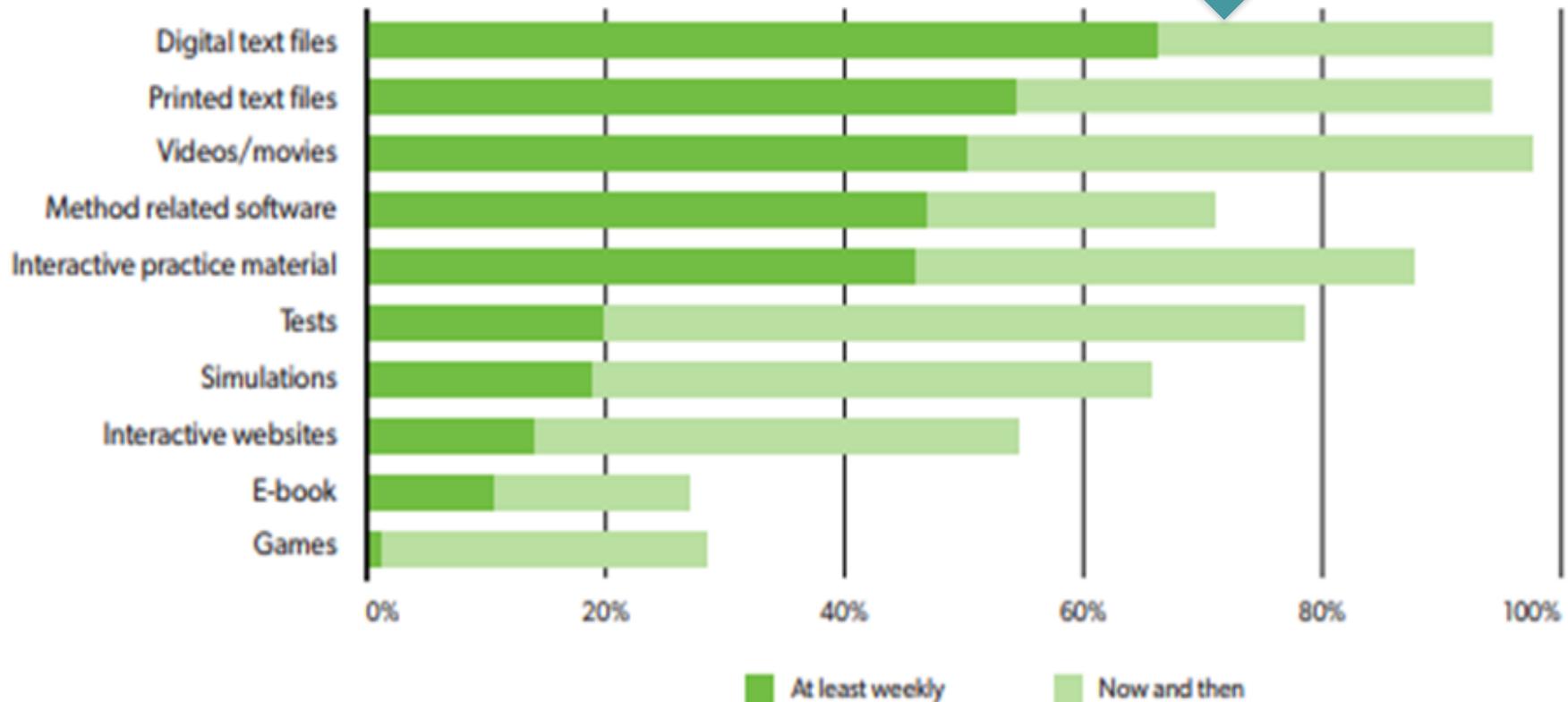


... European participation in online learning

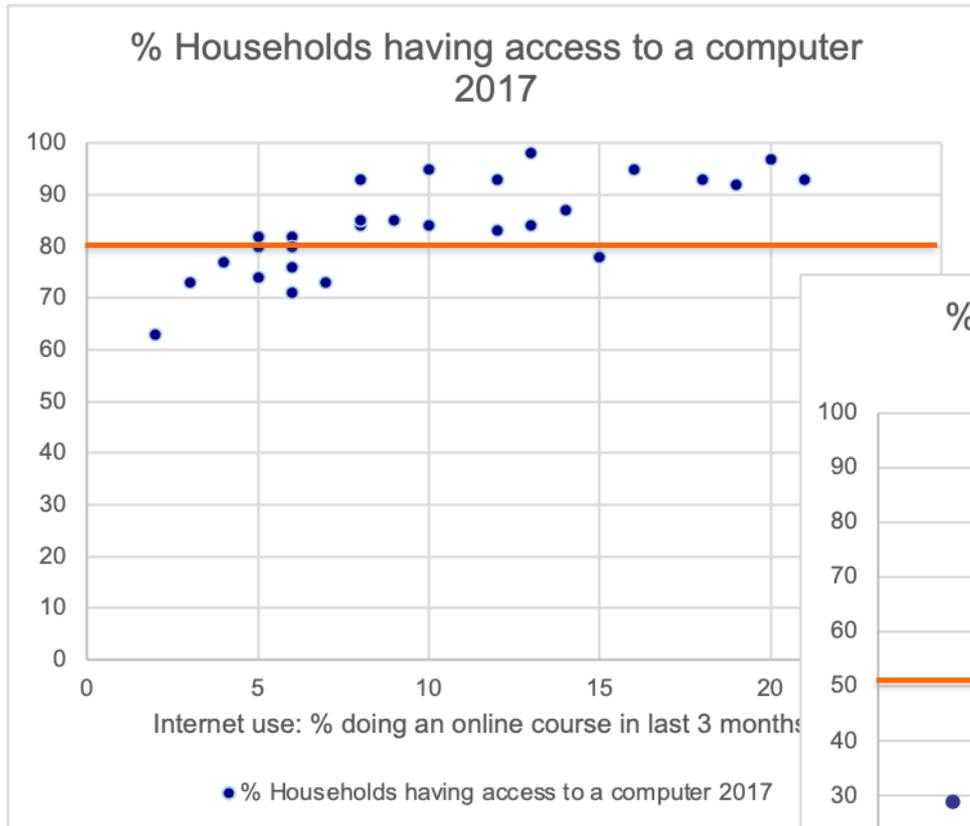
> doubled from 2007 to 2015, and ranged from 3% in Poland and Slovakia to 13% in Finland



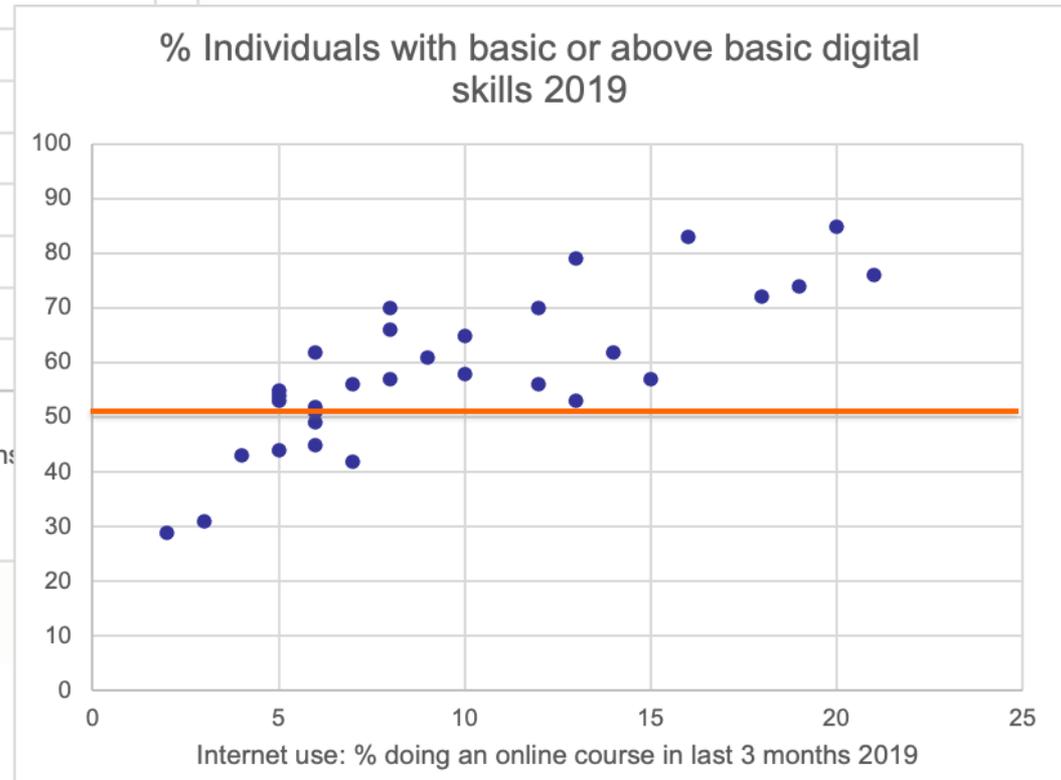
.. And in the Netherlands in 2015



What affects participation in online learning?



Source: Own analysis using Eurostat data – EU Member States



Basic digital skills are an important precursor
But skills and computer access are not the only factors affecting participation in online courses

“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.”

