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"Digital Natives, Digital Immigrants and Digital Dinosaurs"

(with acknowledgement and apologies to Marc Prensky, 2001)

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Welcome to ICELET2018, Tehran

"In the age of constant connectedness and social media, it is time for the monolithic, millennium-old, ivy-covered walls to undergo a phase change into something much lighter, more permeable, and fluid." Anya Kamenetz, 2010.

- The purpose of this address:

    1. Are the spaces / resources / organisational structures within our teaching institutions engineered in ways that **enable** or **disable** our students' (supposed) new ways of learning?

    2. Are we, as teachers, effective in enabling modern students to learn how to learn – or are we defending (and perpetuating) traditional methods despite the (supposed) 'paradigm shift' in how students learn using digital technologies?

    3. Is the management and administration of our teaching institutions set up in ways that accommodate the needs of modern students?

    4. Are the technologies we deploy to supplement and enhance our students' learning (perhaps: to bridge the gap between our and our students' expectations) actually working? Which technologies for the future should we invest in to close this (supposed) gap ? (and what will education look like then?).

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How many technologies?

This picture could be of a particularly wealthy student's room.

How many digital technologies can you identify? (It does depend on how you count).

I can count at least the following:
- 11 pieces of hardware.
- Indefinitely many (invisible) software systems.
- 5 or 6 network services.
- 6 integrating services (connecting services together)

Estimated answer: at least 45 digital technologies (not counting cables and connectors).

This student is a **"Digital Native"**.

© 2017, Tony Bates, *Teaching in a Digital Age* (Curwen Press)

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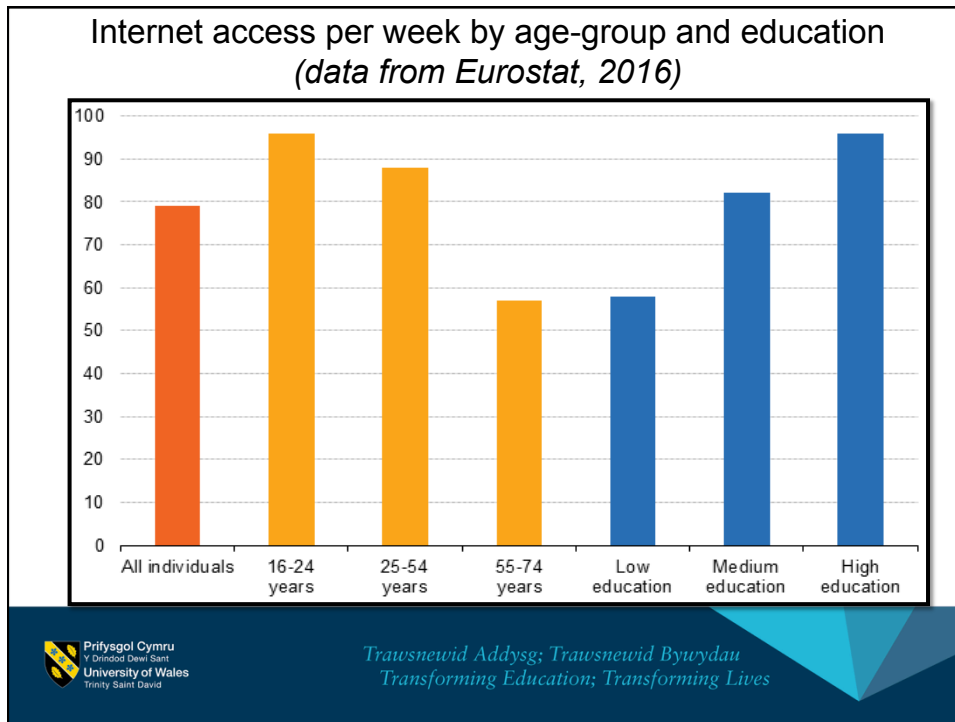## What is a "digital native"?

Categorise Internet Users by Age and Education

The key characteristic of a '**digital native**' is "immersion in digital technology" – but what does that mean? It does **not** mean that digital natives spend hours and hours online.
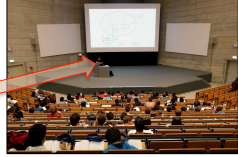
It is evident in three key characteristics:

1. Digital sources are the preferred 'currency' in acquisition and verification of information;

2. Information obtained from online sources is 'trusted' – often without serious effort to test or challenge it;

3. Digital media are shared – usually with their peer group – in ways that create a group re-enforcement cycle, despite contrary claims from authorities.

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Internet access per week by age-group and education
(data from Eurostat, 2016)

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What is a "digital immigrant"?

- Simple answer: "We are!" (or at least "I am").

- A "**Digital Immigrant**" is (usually) an older person who entered teaching before the widespread adoption of digital technologies.
- Digital Immigrants have devoted years to acquiring the knowledge needed to deliver meaningful and reliable content to students.
- Digital Immigrants **are the experts on content** (that is why they were appointed to their teaching positions). They **are NOT the experts in content delivery**.
- Digital Immigrants **do** adapt and adopt digital technologies to support (sometimes to enhance) traditional methods of teaching – use of digital technology is widespread in their teaching; but it is not **embedded** in their teaching methodology ("tell and test").

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"What is wrong with traditional methods?"

- Recall Anya Kamenetz (2010) – "lighter, more permeable and fluid" institutions.
  – 'Tell and Test' conflicts with digital natives' expectations of how to learn.
- Many modern students (**digital natives**) are no longer 'recipients of instruction'; they are becoming 'partners in learning' *(See, Prensky, 2001, p.3)*.
- Active (interactive) learning improves modern students' performance:

Example: Scott Freeman (and others, 2014), PNAS extensive study of STEM students' performance (over 30,000 students) indicated that average grades increased by about 6% for 'active learning' students whilst **failure** rates (in STEM courses) for those receiving traditional lectures increased by 55% over the rates recorded for students using active learning (in class or online).

["Active Learning" engages students in the process of learning through activities and/or discussion in class and/or online, as opposed to passively listening to an expert.]

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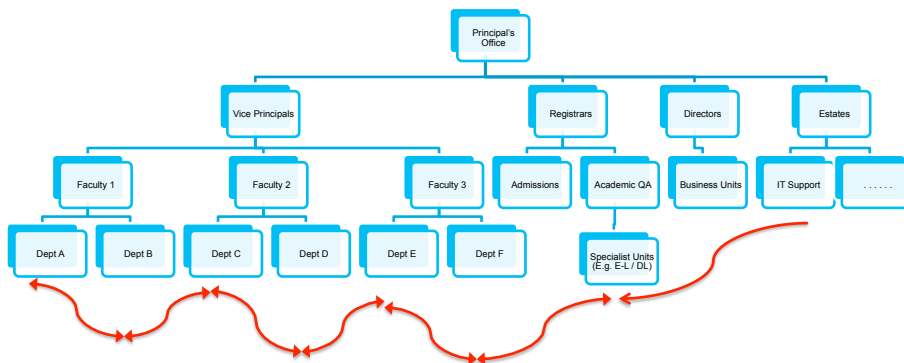
"Who are the Digital Dinosaurs?"

- There aren't any – didn't you know the dinosaurs died out about 65 million years ago?
- What about the '**digital**' dinosaurs?
  – Academics and administrators who print out their e-mails.
  – People who 'phone you after they have sent an e-mail to ask "Did you receive my e-mail?"
  – Teaching staff who use the VLE as an alternative to printing and photocopying teaching materials as hand-outs.
  – Teaching staff who do not permit use of digital devices in the classroom (except the 'teaching computer' at the front)
- Change is not easy for academic and administrative staff – sometimes not well supported. This is often a consequence of structural issues in an institution, rather than 'technophobia' amongst staff.
- Let us play another game – random questions about academic and administrative processes in your institutions . . . A "straw poll".
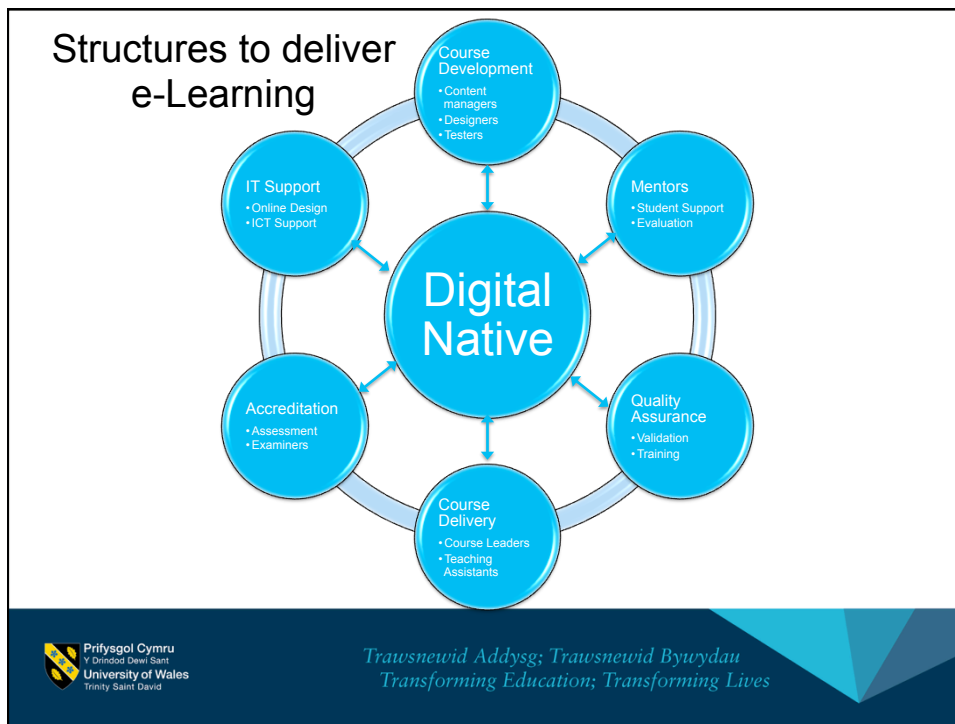
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Management of e-Learning

- [Are you a Digital Immigrant or a Dinosaur?](#)

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Structures to deliver e-Learning
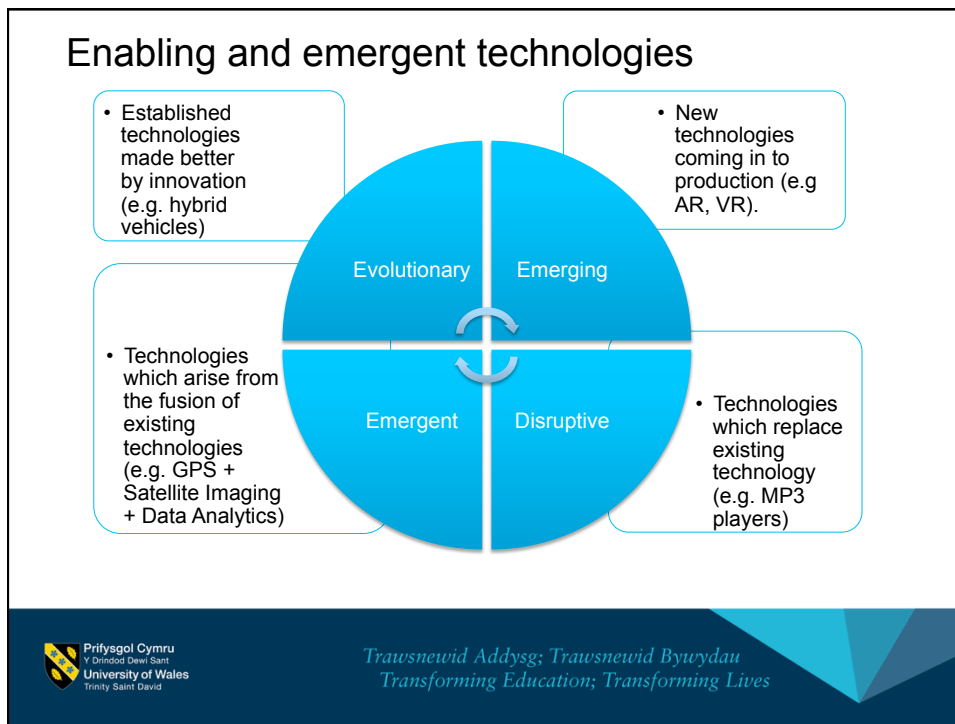

My concern over structure lies in the difficulty with which interaction and innovation can be created and maintained along the red lines.

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Challenges for the E-Teacher

- Which strategies work best when teaching in a technology-rich environment?

- Which methods of teaching are most effective for blended and online classes?

- How do I maintain quality in my teaching in a rapidly changing learning environment whilst balancing my workload of research and teaching commitments?

- How do I make choices among all the available media, whether text, audio, video, computer, or social media, in order to benefit my students and my subject?

- How do I decide how to prepare courses that may be face-to-face, blended and/or fully online?

- What are the possibilities for teaching and learning using material from MOOCs, OERS (open educational resources - public domain), open textbooks?

- What is the reliable research that can best guide me in designing my courses?

See: T. Bates, 2017, Teaching in the Digital Age, Curwen Press

Enabling and emergent technologies

- Established technologies made better by innovation (e.g. hybrid vehicles)

- New technologies coming in to production (e.g AR, VR).

Evolutionary | Emerging

Emergent | Disruptive

- Technologies which arise from the fusion of existing technologies (e.g. GPS + Satellite Imaging + Data Analytics)

- Technologies which replace existing technology (e.g. MP3 players)

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Conclusions – "digital wisdom"

- Many learners (perhaps most) are NOT (yet) "digital natives" – our teaching methods should cater for diverse skill levels.

- Listening to students – online and in the classroom – has convinced me that there are significant problems in **how** we teach – which (in many institutions) is still primarily in a 'Tell and Test' style.

- Education managers (and IT enthusiasts) push to bring teaching spaces and technologies up-to-date – too often adding technologies before teachers know (pedagogically) what to do with them.

- Educational technology only improves education when digital natives and digital immigrants, alike, are properly supported in how they use it.

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