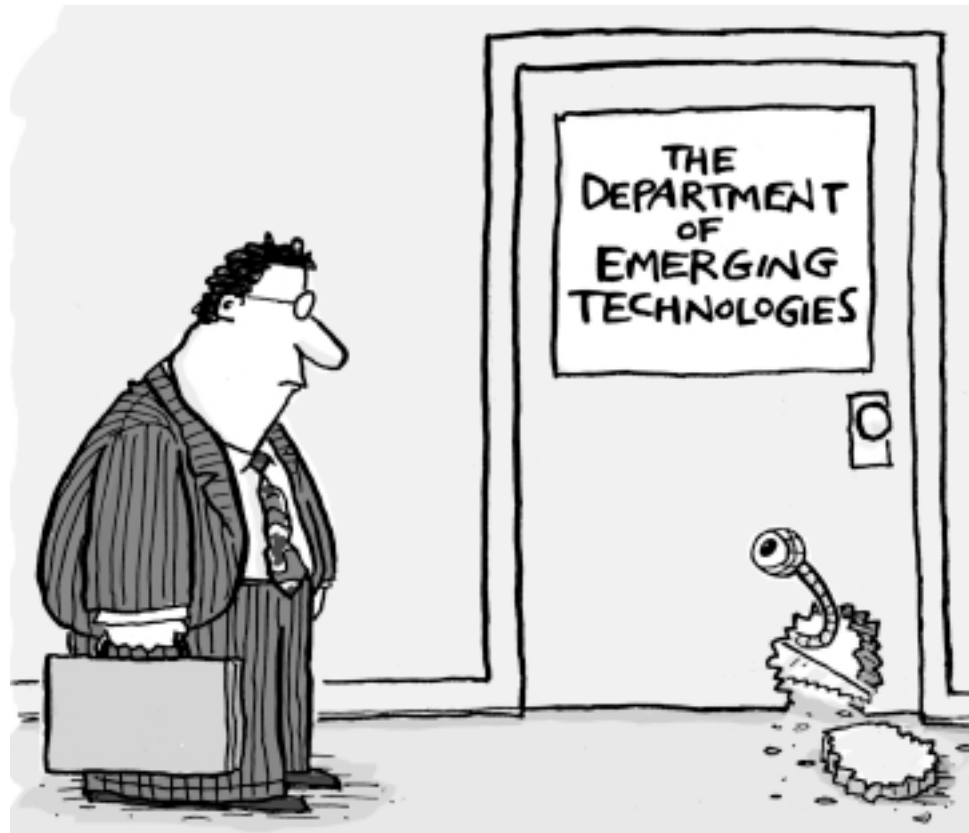


‘Emerging Technologies’ from an educational point of view

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Emerging technologies

3D printing, Makerspace, BYOD (Bring Your Own Device),
Internet of Things, Virtual Reality, Virtual labs.

Refers to:

New teaching and learning concepts, resources, artifacts, tools,
innovations associated with digital

Expected to influence educational practices

An explorative research

- Into the use of 'emerging technologies' for teaching and learning
- These are poised to better prepare students for the labour market
- Important stimulus for this research is the skills gap
- EE must explore the relevance to grasp the role of these technologies for making education more innovative and productive

Method

- what is already being used?
- added value for teaching and learning
- what strategy needed to make it work?

- Using:
 - Desk- /online research
 - Interviews with education & industry
 - Small experiments in 4-TU universities & National Technical University of Athens

Research focus

Potential relevance for education

and

Develop a way of working that allow students and teachers to investigate, test, and assess the usability of a technology in their micro-environment of teaching and learning.

Virtual reality

The promises for education:

- the learner in control of the immersive environment
- physical motion in a simulated world & emotions
- move around, explore, try things out
- explore different solutions

Affordances

- Spatial knowledge representation
- Experiential learning
- Contextual learning



VR summarized findings

Virtual reality Is about computer-generated environments that simulate the physical presence of people and objects to generate realistic sensory experiences			
Relevance for education	Student	Teachers	Organisation
<ul style="list-style-type: none"> • Virtual reality can mimic our sensory experience of the world • It helps to construct an authentic learning environment • Learning with strong spatial, physical and interactive focus • An asset for inquiry-based learning • Potential for the training of practical skills • Contextual settings that mirror real world situations 	<ul style="list-style-type: none"> • The VR world can be experienced with others • Provide a contextual learning experience • Enables students to construct broader understanding based on interactions and virtual objects • Deeper levels of cognition and new perspectives • Exposure to real world companies and technologies 	<ul style="list-style-type: none"> • Enables students to have life like experiences • Positive impacts on the classroom, including enhanced group dynamics and peer-to-peer learning • Placing the course in a rich contextual setting • Mirror the real world in which new knowledge can be applied. • Avoid tricky laboratory settings and offer 24/7 opportunities to test, analyse and report 	<ul style="list-style-type: none"> • Incorporating VR learning environments into education programs • Serve the geographically diverse students with on-campus experiences • Facilitate group projects, discussions, networking • Renewal of staff development aiming to equip teachers with the skills and means to select, test and decide about technology use.

Conclusions

- Skills to handle these technologies are in high demand
- Need to develop a better understanding about the value for education
- Analysis is hampered by complexity, diversity, life cycle, number of technologies, multitude of educational settings, research time needed
- Staff development crucial to properly deal with the challenges and opportunities
- Pro-active approach needed

CANVAS design Emerging Technologies for teaching and learning

<p>1. Problem</p> <ul style="list-style-type: none"> • Top 3 • How are these solved today? 	<p>2. Solution</p> <ul style="list-style-type: none"> • Top 3 features 	<p>3. Your VR proposition</p> <ul style="list-style-type: none"> • Compelling message • What is different? • What value?
<p>4. Educational advantages</p> <ul style="list-style-type: none"> • Learning gains • Cannot get it elsewhere 	<p>5. The learners</p> <ul style="list-style-type: none"> • Target audience • The end user • New, advanced, experienced • Local, online, open 	<p>6. Key activities</p>
<p>7. Technology</p> <ul style="list-style-type: none"> • How to offer? 	<p>8. Cost structure</p> <ul style="list-style-type: none"> • Design • Production • Implementation • Maintenance • Software • Hardware 	<p>9. Revenue</p> <ul style="list-style-type: none"> • Student • Teacher • Institution • Short term • Long term

Want to know more?

‘Tipping your toe in the ‘Emerging Technologies’ pond from an educational point of view’

Klaassen, de Vries, Ioannides, Papazis (2017) SEFI proceedings

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