SMART LEARNING

Session 1: The theory and practice of smart learning

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SMART LEARNING SESSION 1

- **Introduction to smart learning**: *what it is, advantages and drawbacks, what it's good for*

- **Educational theory and smart learning**

- **Approaches to designing smart learning**: *experiences and activities*

- **Issues and considerations**: *security of data, student privacy, copyright, safety online, using social media*

SMART LEARNING
DEFINITIONS

- **Location**

- **Augmentation**

- **Collaboration**

- **Networked**

- **Connected**

- **Interactive**

- **Personalised**

All these terms are relevant. Smart learning can be formal, with set learning outcomes and assessment criteria, or informal ad-hoc personalised learning. It can be part of a smart city infrastructure implementation or simply one person using their smartphone in a location to learn or experience some topic, skill or further understanding.

SMART LEARNING DEFINITIONS

- **Location**
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- **Personalised**

Advantages

- *Places make learning more authentic*
- *Brings things to life*
- *Helps to engage*
- *Speaks to the learner directly*
- *Makes more memorable*
- *Is more social*

Disadvantages

- *Teachers need more imagination for some topics*
- *Learner needs to know how to use technology*
- *Can be a problem to make safe*
- *Perhaps not suitable for children*
- *Need access to smart devices and wifi*
- *May need technical or developer support*

SMART LEARNING THEORY

- Collaboration

- Networked

- Connected

- Interactive

- Personalised

Connectivism

(Social) Constructivism

Technology Acceptance Model

Pedagogy-Andragogy-Heutagogy

SMART LEARNING THEORY

- **Collaboration**

- **Networked**

- **Connected**

- **Interactive**

- **Personalised**

"Constructivist and connectivist models of learning are student-centred in nature and imply a level of self-directedness and self-regulation in order to navigate through the teaching material to determine the most suitable learning pathway" (Mirriahi & Vigentini, 2017, p. 252)

"Sharples et al. (2014) used the concept of seamless learning to describe when a person experiences a continuity of learning across a combination of locations, times, technologies and social settings" (Gros, 2016a, p. 2)

"… in a connectivist networked environment (Jones, Dirckinck-Holmfeld, & Lindström, 2006), communication and dialogue between participants in the learning endeavor have been at the heart of a quality learning experience." (Kop et al, 2017, p. 322)

"(the) ability of networks to easily allow learners to share and collaborate, force(s) institutions and teachers to radically rethink traditional attitudes toward assessment and accreditation" (Dron & Anderson, 2014, p. 150)

SMART LEARNING THEORY

"New learning modes will raise new pedagogic issues, and smart learning is a brand new concept of learning; therefore, researchers or educators may propose new thoughts about its pedagogy based on those existing theories, such as constructivism, motivational theory, the technology acceptance model, cognitive load theory and multimedia design theory (Brown et al., 1989; Mayer 2001; Mayer and Moreno 2003)." (Hwang, 2014, p. 11)

"Smart Learning Environment(s) [..] facilitate learning across different learning contexts…based on a layered framework that can link formal, non-formal and informal learning experiences and can serve as a bridge between existing learning models in a cumulative continuum from Pedagogy through Andragogy to Heutagogy" (Karoudis & Magoulas, 2017)

SMART LEARNING THEORY

What is the technology acceptance model?

The technology acceptance model (TAM) is an information systems theory that models how users come to accept and use a technology. The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it, notably:

- **Perceived usefulness (PU)** – This was defined by Fred Davis as "the degree to which a person believes that using a particular system would enhance his or her job performance".
- **Perceived ease-of-use (PEOU)** – Davis defined this as "the degree to which a person believes that using a particular system would be free from effort" (Davis 1989) (Wikipedia)
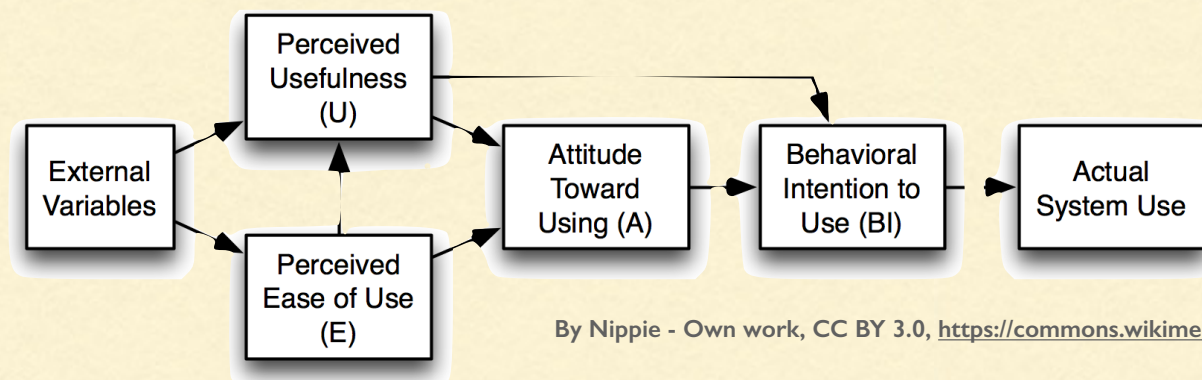
By Nippie - Own work, CC BY 3.0, https://commons.wikimedia.org/w/index.php?curid=14457270

SMART LEARNING THEORY

"**Hybridization** is composed of several technologies that have the interconnection and integration of the physical and digital worlds in common: augmented reality (..), the Internet of things (..), wearable-technology devices (..), and the quantified self (..)."

(Gros, 2016b, pp 5-6)

Table 1.1 Trends in the implementation of emerging technologies in relation to their impact on higher education between 2010 and 2014

		Emergent Technologies			
	2010	*2011*	*2012*	*2013*	*2014*
Short tem	Mobile computing	Mobile devices	Mobile Applications	MOOCs	Flipped Classroom
	Open content	e-books	Tablets	Tablets	*Learning analytics*
Medium term	e-books	*Game based learning*	*Game based learning*	Gamification	Gamification
	Augmented reality	Augmented reality	*Learning analytics*	*Learning analytics*	3D-Printing
Long term	Visual data analysis	*Learning analytics*	Internet of things	Wearable technology	Quantified self
	Gesture-based computing	Gesture-based computing	Gesture-based computing	3D-Printing	Virtual assistants

Source Mas (2014)

SMART LEARNING
THEORY

- Location
- Augmentation
- Collaboration
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- Connected
- Interactive
- Personalised

technology acceptance model

gamification, flipped classroom, MOOC

(social) constructivism

connectivism

pedagogy-andragogy-heutagogy

seamless, immersive, situated, authentic, location-based, mobile...

motivational theory

personal, social, distributed, ubiquitous, flexible, dynamic and complex

cognitive load theory

SMART LEARNING THEORY

"*The basic output of smart learning includes **learning to learn**, **learning to do** and **learning to self-realization**"*
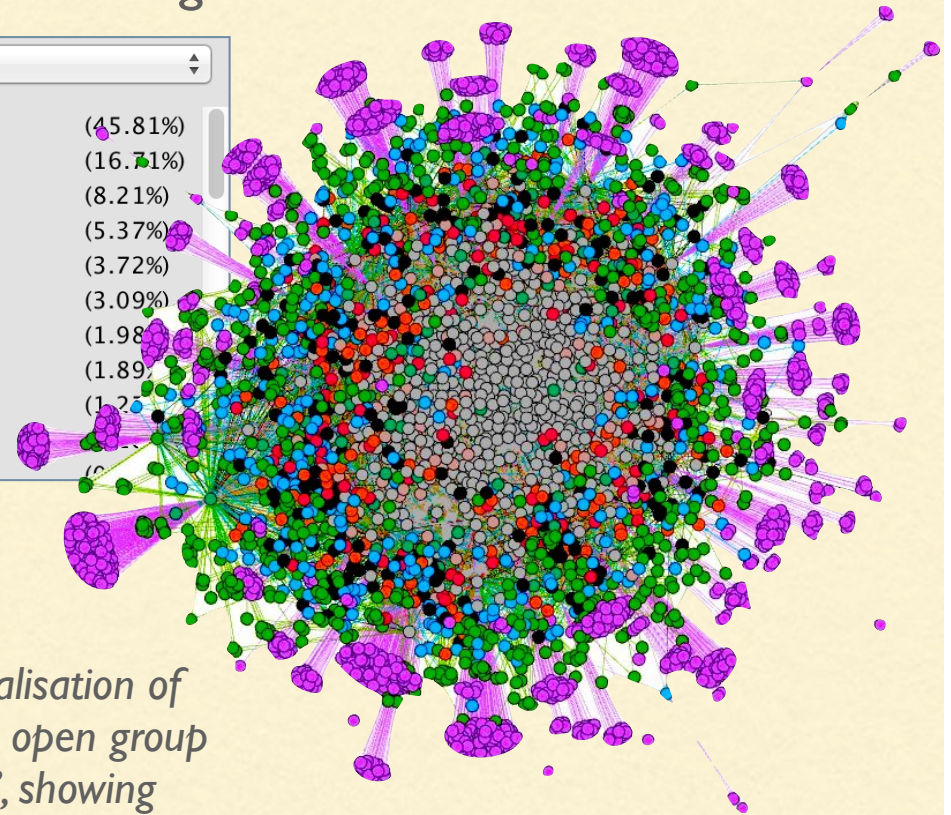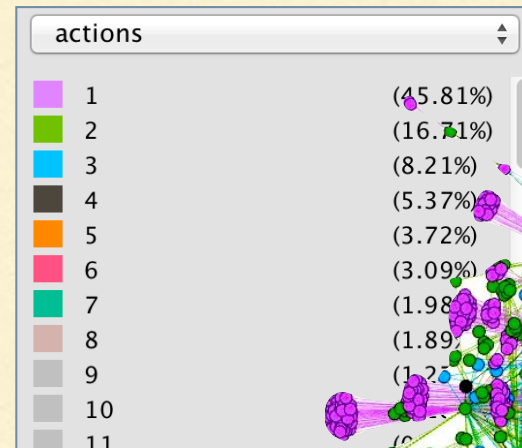
(Lui et al, 2017, p. 209)

SMART LEARNING THEORY +

*What about technology - the *smart* in smart learning?*

In **connectivism**, we consider that learning takes place 'in the non-human networks'.

"The learning is the network"
(Siemens, 2006a, p. 15)

actions	
1	(45.81%)
2	(16.71%)
3	(8.21%)
4	(5.37%)
5	(3.72%)
6	(3.09%)
7	(1.98
8	(1.89
9	(1.2
10	
11	

A 'Gephi' visualisation of the Facebook open group 'Malta RUBS', showing amount of interactions and connections.
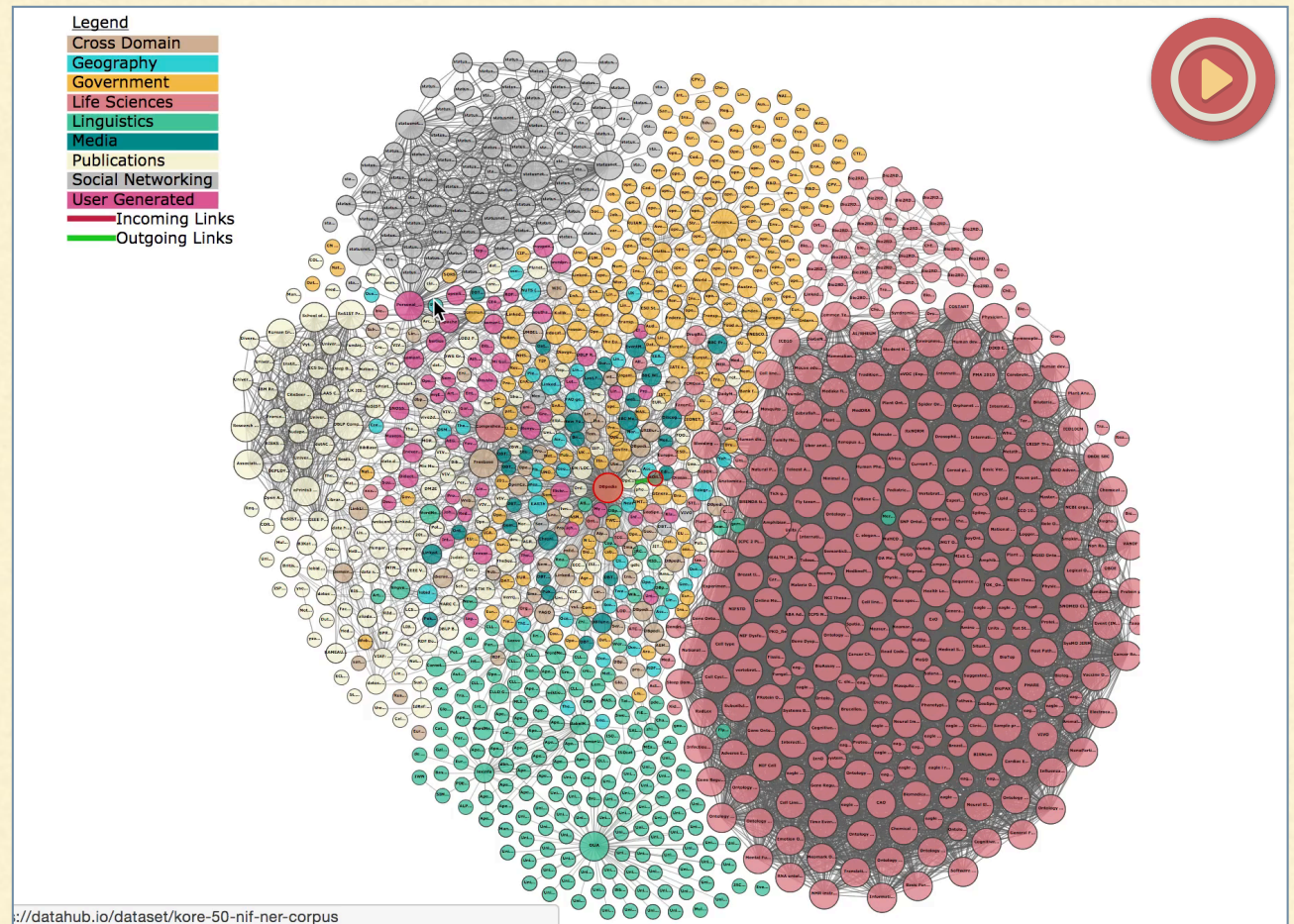
SMART LEARNING THEORY +

*What about technology - the
smart in smart learning?*

*Linked Open Data (LOD) is <u>Linked
Data</u> which is released under an
open licence, which does not
impede its reuse for free.*

— Tim Berners-Lee, Linked Data

*Image: The <u>Linked Open Data Cloud</u>
diagram, showing subject area and
connections.*

http://lod-cloud.net/versions/2017-02-20/lod.svg

SMART LEARNING
LEARNING DESIGN

- The learning experience

- Topic or subject

- Content and interactions

- Authentic space enhancement

- Connectivity - networks, wi-fi

- Technologies (apps, websites)

- Data and privacy

"... Perhaps even our notion of design is worth rethinking - do we design learning? Or do we design environments in which motivated learners can acquire what they need?", (Siemens, 2006 p. 119).

SMART LEARNING
LEARNING DESIGN

- Learning journey or single activities

- Group work or individual

- Who are your learners

- Topic level & detail

- How much content

- What sort of interactions

SMART LEARNING
LEARNING DESIGN

What kind of learning activity? What kind of tasks?

- Developing new ideas - inventing, creating, producing

- Collecting sources to remix and remake - creating blog posts, short videos, or an image gallery…

- Solving a problem - a challenge or a quest

- Developing a technique or skill - improving, upskilling, advancing

  (from Beetham, 2012)
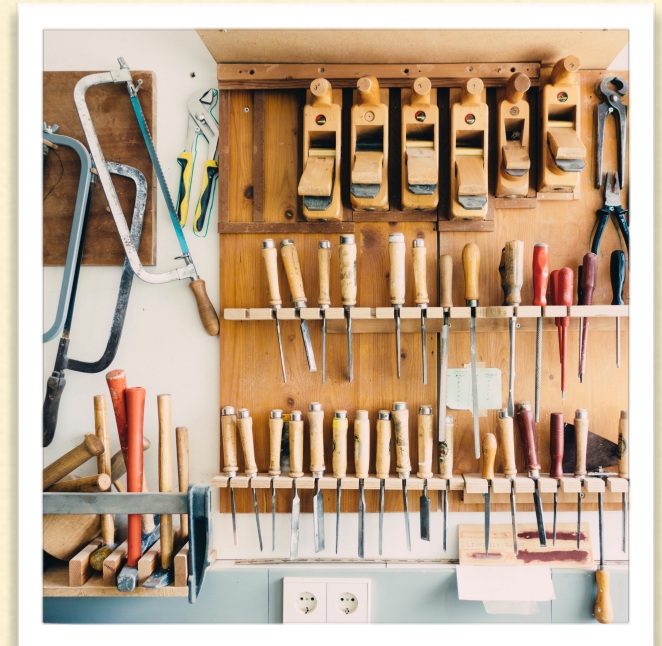
SMART LEARNING
LEARNING DESIGN

Content, community and
digital tools

- Technology for different
  purposes

- Engaging, high quality content
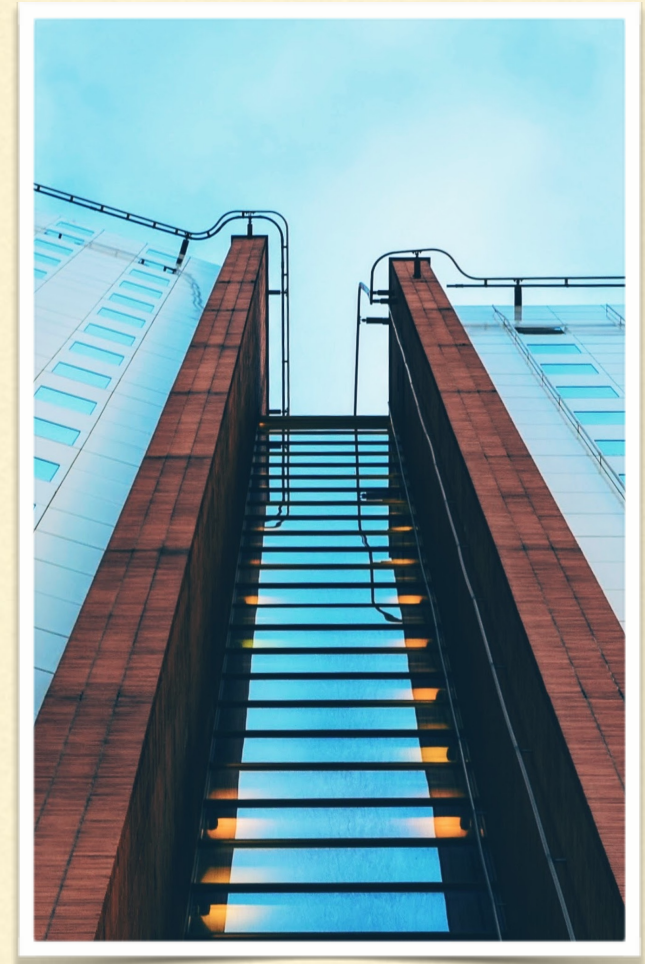
- Asking for interaction and
  collaboration

SMART LEARNING ISSUES

- Personal privacy

- Student privacy

- Safety Online

- Copyright

- Social Media

- Security of data

- Commercial apps

Providing learning that utilises mobile apps, wi-fi, shares other people's content and stores data on servers where you may not have control is all fraught with issues.

Serious consideration needs to be given so as to ensure a professional level of provision for learning.
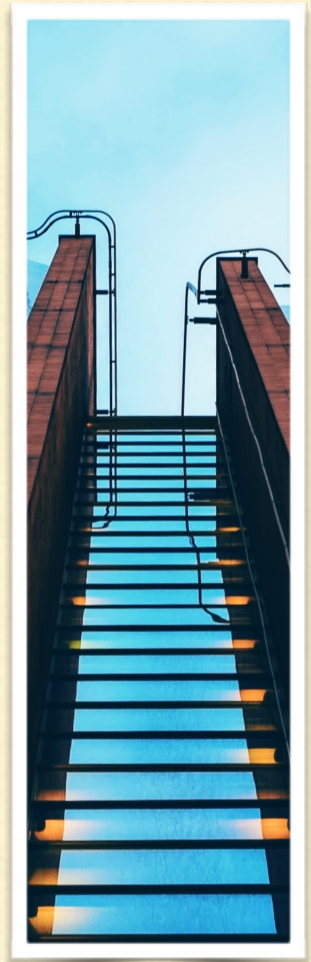
SMART LEARNING ISSUES

- **Personal privacy**

- **Student privacy**

- **Safety Online**

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Privacy and safety of learners

Personal data

Learning spaces

Netiquette and monitoring behaviour

SMART LEARNING ISSUES

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- **Commercial apps**
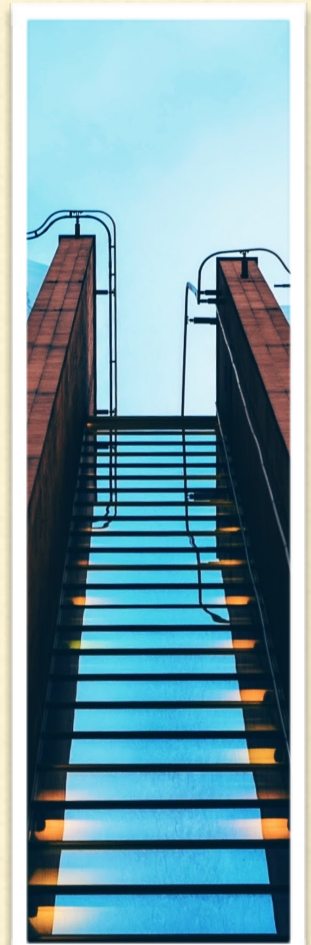
Sharing to social media

   privacy and safety

   sharing of copyrighted material

Permission to use content

   Creative Commons

   Wikimedia

SMART LEARNING ISSUES

- Personal privacy

- Student privacy

- Safety Online

- Social Media

- Copyright

- **Security of data**

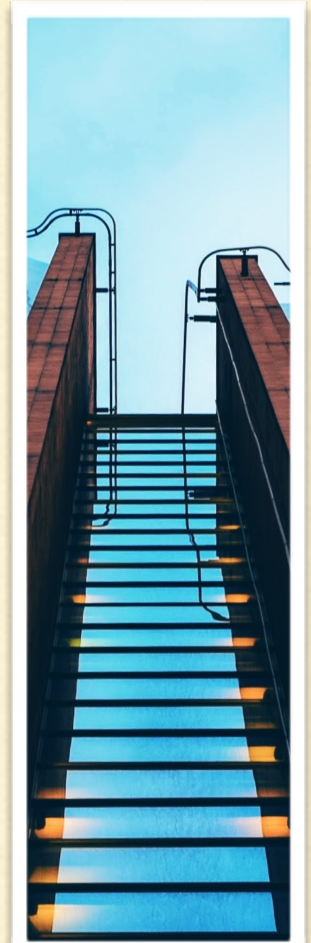- **Commercial apps**

How secure is your learner data?

personal details (accounts)

learning content

Who owns the data?

Check with the institution for policy and best practice

Check commercial app terms and conditions

SMART LEARNING

FURTHER READING

1. **Smart learning**

   - Smart Learning Environments Springer Open Journal https://slejournal.springeropen.com/

   - Smart Learning Environments: Concepts and Issues https://www.researchgate.net/publication/301612985_Smart_Learning_Environments_Concepts_and_Issues

2. **Social Constructivism**

   - Social Constructivism in Education http://www.theedadvocate.org/social-constructivism-in-education/

3. **Connectivism**

   - Connectivism: Its Place in Theory-Informed Research and Innovation in Technology-Enabled Learning http://www.irrodl.org/index.php/irrodl/article/view/902/1664

4. **Networked and situated learning**

   - (Video and text) https://www.sophia.org/tutorials/networked-learning-theory-situated-learning-theory

5. **Mobile, ubiquitous and seamless learning**

   - A Brief History of Mobile Seamless Learning https://www.researchgate.net/publication/278681769_A_Brief_History_of_Mobile_Seamless_Learning

6. **Date Protection**

   - The JISC Guide on Data Protection - https://www.jisc.ac.uk/guides/data-protection

   - Cross-border issues under EU data protection law with regards to personal data protection (PDF) http://www.tandfonline.com/doi/pdf/10.1080/13600834.2017.1330740?needAccess=true

7. **Learning Space Privacy**

   - "Educause Privacy and Learning Spaces" (slides, PDF): https://events.educause.edu/ir/library/pdf/SEC08053.pdf

   - "Enforcing Privacy for Teenagers in Online Inquiry Learning Spaces" (PDF) https://telearn.archives-ouvertes.fr/hal-01205249/document

8. **Copyright and Education**

   - UK Govt Guidance: "Exceptions to Copyright" https://www.gov.uk/guidance/exceptions-to-copyright

   - "Copyright and Education in Europe: 15 everyday cases in 15 countries" https://rightcopyright.eu/wp-content/uploads/2017/04/15casesin15countries_FinalReport.pdf

9. **Visualising Connectivist Networks**

   - Visualising connectivist networks https://gbl55.wordpress.com/2016/03/16/visualising-connectivist-networks/

   - Twitter Vs Blogs In CCK11 Social Network Analysis In Gephi https://nauczanki.wordpress.com/tag/gephi/

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