Faculty of Health Disciplines Professional Development Workshop

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For Athabasca University, Edmonton, Alberta, September 25, 2019

Agenda

The Learning Context
- Beginning to a.m. break - "wider trends in pedagogy and curriculum, including new critical literacies" - this will situate us firmly in a learning context, and also allow me to introduce a 'critical literacies' tool they can use for reflection through the day

Data and Cloud
- Content: developing an understanding of dynamic and fluid data networks, how to access open data, and how to work with data in cloud-based resources.
- Hands-on activities: access to and use of open data; exploration of a cloud environment.

Graph and Resources
- Content: new types of graph-based resources, including distributed knowledge networks.
- Hands-on activities: experience developing graphs, use of distributed resources such as Jupyter Notebooks.

Identity and Recognition
- Content: how we know who someone is, how we project ourselves on the internet, and how we can be safe and secure; how we know what someone has learned.
- Hands-on activities: creation of 'identity graphs', creation of public and private keys, and creation of digital credentials

Experience, Community and Agency
- Content: how to enable learning experiences based on hands-on practice and knowledge creation sufficient to support a rapidly evolving sense of community based on information exchange and consensus.

Actionable Practices
- Community network development and management, and
- Personal learning management and support

The Learning Context

Knowledge as Recognition
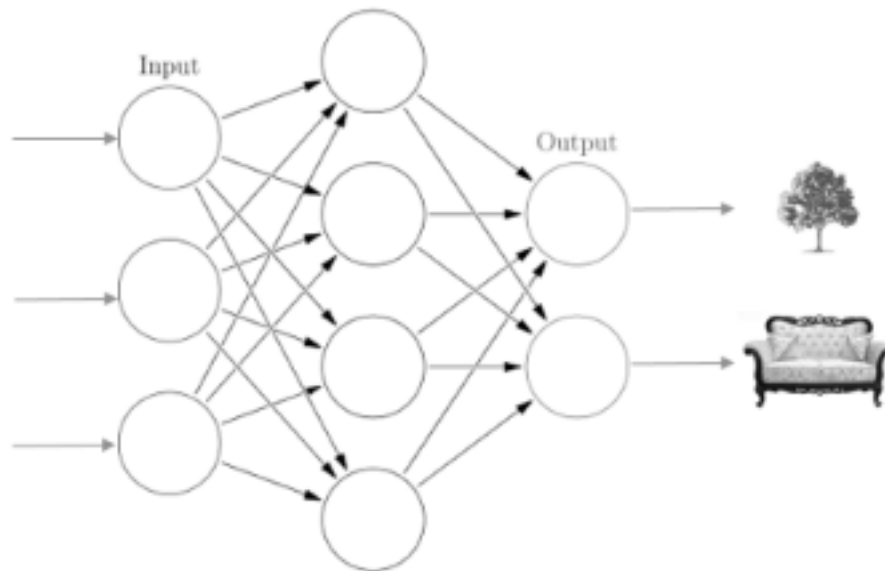
From a connectivist perspective, knowledge is the organization of connections between a set of entities, where the result of that organization is the capacity to *recognize* objects or states of affairs in the world. For all practical purposes, we can recognize anything: friends, pets, past events, future events, types, consequences, whatever. Moreover, there are different ways of recognizing: we can have a memory, imagine an object, exercise a certain skill, have some emotion or another.

Designing Learning Experiences

There are many ways to design learning. They may be viewed from the perspective of creating the right sorts of experiences and feedback to create in ourselves the ability to recognize and respond to what we perceive in the right sort of way.

http://discovery.ucl.ac.uk/1475754/4/Luckin_SoTL_Luckin_Final.pdf

1. Learning from Experts
2. Learning with Others
3. Learning through Making
4. Learning through Exploring
5. Learning through Inquiry
6. Learning through Practising
7. Learning from Assessment
8. Learning in and across Settings

Open Online Learning

The Massive Open Online Course (MOOC) was originally developed with the objective of creating an open and distributed learning environment. The objective was not to pass on a certain both of content, but rather, to create a network in which new connections could develop and grow and new knowledge could be created. The *experience* of participating in this network would lead to individual learning with each person defining success in their own way.

Zawacki-Richter, Bozkurt, Alturki,and Aldraiweesh. 2018. What Research Says About MOOCs –An Explorative Content Analysis. InternationalReview of Research in Open andDistributed LearningVolume 19, Number 1. https://files.eric.ed.gov/fulltext/EJ1174059.pdf

Open Pedagogy

Participatory	Interacting via social networks and mobile apps
People and trust	Develop trust, confidence and openness working with others
Innovation & creativity	Encourage spontaneous innovation and creativity
Sharing ideas and resources	Share freely to disseminate ideas and thoughts
Connected community	Participate in a community of practice
Learner-generated	Facilitate learner contributions to OER
Reflective practice	Create opportunities for dialogue and reflection
Peer review	Contribute to an open critique of scholarship

Gráinne Conole. 2015. MOOCs as disruptive technologies: strategies for enhancing the learner experience and quality of MOOCs. Revista de Educación a Distancia. Número 39. http://www.um.es/ead/red/39

Bronwyn Hegarty. 2015. Attributes of Open Pedagogy: A Model for Using Open Educational Resources. Educational Technology, July/August, 2015.

The Critical Literacies

❖	Syntax	⌘	Cognition
♍	Semantics	⊠	Context
✋	Pragmatics	♒	Change

We have always (well, since the 1600s) thought of knowledge and learning as accumulations of facts, data.. Think of things like libraries, encyclopedias. Learning was therefore a matter of accumulating those facts. But things are changing – gradually.

When we think of knowledge as recognition, we think of knowledge knowledge is gradually shifting from knowledge of a domain to being able to *see the world* like an expert in that domain. For example: you don't study geology, you study how to be a geologist.

Syntax: Not just rules and grammar

❖
- ➢ Forms: archetypes? Platonic ideals?
- ➢ Rules: grammar = logical syntax
- ➢ Operations: procedures, motor skills
- ➢ Patterns: regularities, substitutivity (eggcorns, tropes)
- ➢ Similarities: Tversky - properties, etc

Semantics: Theories of truth, meaning, purpose and goal

♍
- ➢ Sense and reference (connotation and denotation)
- ➢ Interpretation (Eg. In probability, Carnap - logical space; Reichenbach - frequency; Ramsey - wagering / strength of belief)
- ➢ Forms of association: Hebbian, contiguity, back-prop, Boltzmann
- ➢ Decisions and decision theory: voting / consensus / emergence

Pragmatics: Use, actions, impact

✋
- ➢ Speech acts (J.L. Austin, Searle) assertives, directives, commissives, expressives, declarations (but also - harmful acts, harassment, etc)
- ➢ Interrogation (Heidegger) and presupposition

➢ Meaning (Wittgenstein - meaning is use)

Cognition: Reasoning, inference and explanation

⌘
➢ Description - X (definite description, allegory, metaphor)
➢ Definition - X is Y (ostensive, lexical, logical (necessary & sufficient conditions), family resemblance - but also, identity, personal identity, etc
➢ Argument - X therefore Y - inductive, deductive, abductive (but also: modal, probability (Bayesian), deontic (obligations), doxastic (belief), etc.)
➢ Explanation - X because of Y (causal, statistical, chaotic/emergent)

Context: Placement, environment, alternatives

☒
➢ Explanation (Hanson, van Fraassen, Heidegger)
➢ Meaning (Quine); tense - range of possibilities
➢ Vocabulary (Derrida); ontologies, logical space
➢ Frames (Lakoff) and worldviews

Change: Trends, cycles, beginnings and endings

〰
➢ Relation and connection: I Ching, logical relation
➢ Flow: Hegel - historicity, directionality; McLuhan - 4 things
➢ Progression / logic -- games, for example: quiz&points, branch-and-tree, database
➢ Scheduling - timetabling - events; activity theory / LaaN
➢ Creation and destruction, birth and death

The critical literacies are the *ways of knowing* - what are the rules, what's important, what counts as evidence, what counts as reasons, what changes, what doesn't.

Languages / Elements	Performance	Simulation	Appropriation
Syntax			
Semantics			
Pragmatics			
Cognition			
Context			
Change			

Henry Jenkins, http://spotlight.macfound.org/btr/entry/new_media_literacies/

Data

This part of the workshop addresses two conceptual challenges: first, the shift in our understanding of content from documents to data; and second, the shift in our understanding of data from centralized to decentralized.

| Ψ From Document to Data	🔔 Learning with Data
Storing our content as data makes it more flexible and more useful. One piece of data could be inserted into another piece of data, such as a template. Our perspective shifts from a *linear* organization to something more complex.	Learning with data isn't the same as learning with books. It's interactive, immersive and engaging, a process of learning how to perceive and comprehend rather than to decode and store.
💻 Application Interfaces	Ξ Linked Data
The central role played by platforms is diminished in favour of direct interactions between peers, that is, a distributed web, which communicate with each other by means of application programming interfaces (API).	Today we are seeing a trend toward decentralized linked data. This is the idea that each person can manage his or her own data, storing it wherever they want, and using it whenever they like.

Resources

➢ **Introduction to Linked Data**. This slide show introduces linked data principles.
https://www.europeandataportal.eu/sites/default/files/d2.1.2_training_module_1.2_introduction_to_linked_data_en_edp.pdf
➢ **The Linked Open Data Cloud.** John P. McCrae. This web page is the home of the *LOD cloud diagram*. https://lod-cloud.net/
➢ **Open Government Portal**: Enables access to open data on the government of Canada website. https://open.canada.ca/data/en/dataset?res_format=JSON
➢ **Solid.** Tim Berners-Lee. Solid (derived from "social linked data") is a proposed set of conventions and tools for building decentralized social applications. https://solid.mit.edu/
➢ **IndieWeb**. The IndieWeb is a people-focused alternative to the "corporate web". https://indieweb.org/
➢ **An Increasingly Less-Brief Guide to Mastodon**. Noëlle Anthony. GitHub. https://github.com/joyeusenoelle/GuideToMastodon/

Feature Article: **Data.** https://el30.mooc.ca/post/68416

Featured Video: Conversation with Shelly Blake-Plock https://el30.mooc.ca/event/80

The BIG Idea - Course(?) as Open Data
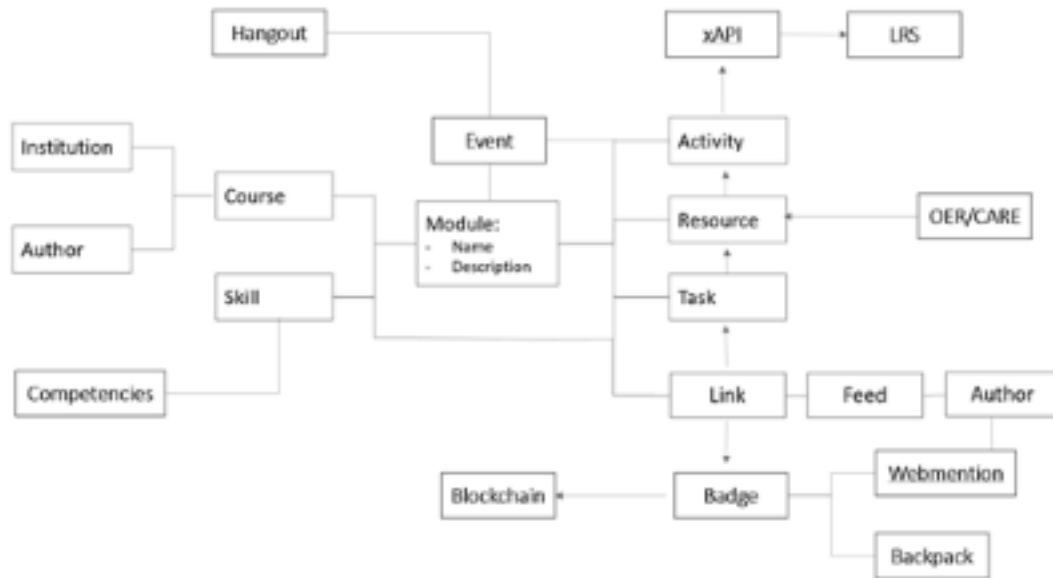
"Open Data is the idea that some data should be publicly available and usable, and this idea has engendered a growing movement that attempts to remove technical and legal barriers to the use of public data."

https://www.worldbank.org/en/news/feature/2018/10/04/open-data-online-learning-for-producers-users-and-policymakers

The course as *decentralised*: "Decentralized means that there is no single point where the decision is made. Every node makes a decision for its own behaviour and the resulting system behaviour is the aggregate response."

https://medium.com/distributed-economy/what-is-the-difference-between-decentralized-and-distributed-systems-f4190a5c6462

The course as *distributed:* There is no one place where the course is. Resources and activities related to the course are on multiple servers, hosted by multiple individuals or institutions, and use multiple applications or systems.

Working With Open Data: IFFFT

'If This Then That (IFTTT) is a service that allows you to link data from different information sources. Thus, for example, you could have IFTTT send you an email each time the fridge is opened. Or compile a spreadsheet of all your Twitter posts.
http://www.ifttt.com

Activity - My Open Data Feed

Use this space to design a data flow for your course, thinking of different sources of data and how they might be applied.

There are three parts to this task:

- create a blog of some sort (you can use Blogger, WordPress, Edublogs, Reclaim Hosting, or any other service you like
- find the RSS feed for your blog - you can use the [OERu Feed Finder](#) to do this. Don't worry - you don't even need to log in.
- Subscribe to the RSS Feed in an RSS reader like Feedly. http://www.feedly.com

Data: Worksheet

Data from your perspectives:

Critical Reflections

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Cloud

Cloud computing involves using servers and infrastructure hosted by internet-based providers. You can then access these from any computer, and also link them together for advanced applications.:

Resources

➢ **What is Cloud Computing in Simple Terms? Definition & Examples.** Bojana Dobran**.** https://phoenixnap.com/blog/what-is-cloud-computing
➢ **Cloud Adoption Strategy: 2018 update.** Government of Canada**.** https://www.canada.ca/en/treasury-board-secretariat/services/information-technology/cloud-computing/government-canada-cloud-adoption-strategy.html
➢ **Forget the File System: The Future of Scalable Cloud Storage Will Be Objects.** Joab Jackson. https://thenewstack.io/forget-file-system-future-scalable-cloud-storage-will-objects/
➢ **What is Docker? Docker containers explained.** Serdar Yegulalp, InfoWorld. https://www.infoworld.com/article/3204171/docker/what-is-docker-docker-containers-explained.html

Feature Article: **Cloud.** https://el30.mooc.ca/post/68440

 Featured Video: Conversation with Tony Hirst https://el30.mooc.ca/event/81

The BIG Idea - Courses in Containers

How did the early MOOCs host hundreds of thousands of students? They used cloud technologies. As the demand for their course grew, they were able to scale up their databases and web servers in order to meet the demand.

Google Cloud - https://cloud.google.com/
IBM Cloud https://cloud.ibm.com
Microsoft Azure - https://azure.microsoft.com/en-us/solutions/
Amazon S3 - https://aws.amazon.com/s3/
Digital Ocean Spaces - https://www.digitalocean.com/products/spaces/
Dropbox - https://www.dropbox.com/
Alibaba Cloud - https://www.alibabacloud.com/product/oss
Oracle - https://www.oracle.com/cloud/storage/object-storage.html

Fuga - https://fuga.cloud/academy/ (Open Stack)
Rackspace - https://www.rackspace.com/cloud (Open Stack)
OwnCloud - https://owncloud.com/overview/
Heroku - https://www.heroku.com/ - cloud application platform
Min.io - https://min.io/ (for S3)

Today, we can automate the creation and deployment of cloud containers. This means that a course can be created 'in a box' and then deployed when and were needed.

Activity - Create a Cloud-Based Service

If you are working offline, use this space to design the architecture of a cloud-based online course. What services would you need? How would you provide them?

Instructions

Create a demo account at a cloud service like https://cloud.digitalocean.com
Use the demo account to create an instance of WordPress
Log in to your Word Press account and create a new post
Optional - subscribe to your new blog

Cloud: Worksheet

Cloud from your perspectives:

Critical Reflections

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Graph

When we connect things together we have created a graph. A graph has two types of component: the entities being connected (sometimes called nodes), and the connections between those entities (sometimes called edges).

Ψ **Philosophy**
In connectivism we have explored the idea of thinking of knowledge as a graph. Yet, what *makes* it knowledge? In the Semantic Web, we are faced with a similar question. What is the "source of truth" of a distributed representation in the Semantic Web? What grounds ontologies, or assertions of trust in the Web of Trust?

🔔 **Education**
It helps learners understand that each idea connects to another, and it's not the individual idea that's important, but rather how the entire graph grows and develops. It protects us from categorization errors and helps prevent things like confirmation bias.

💻 **Computing**
The data structures we can build using these technologies have created a new type of content. One example is BitCoin, based on the recording of transactions in a blockchain, which is essentially a has chain. Another example is the collection of updated versions of software stored in GitHub.

Ξ **Media**
As repositories of knowledge, graphs enable the same data to be viewed from a variety of perspectives. Manipulations of and inferences from these data structures allow us to draw conclusions and make new connections - drawing associations between similar entities, for example
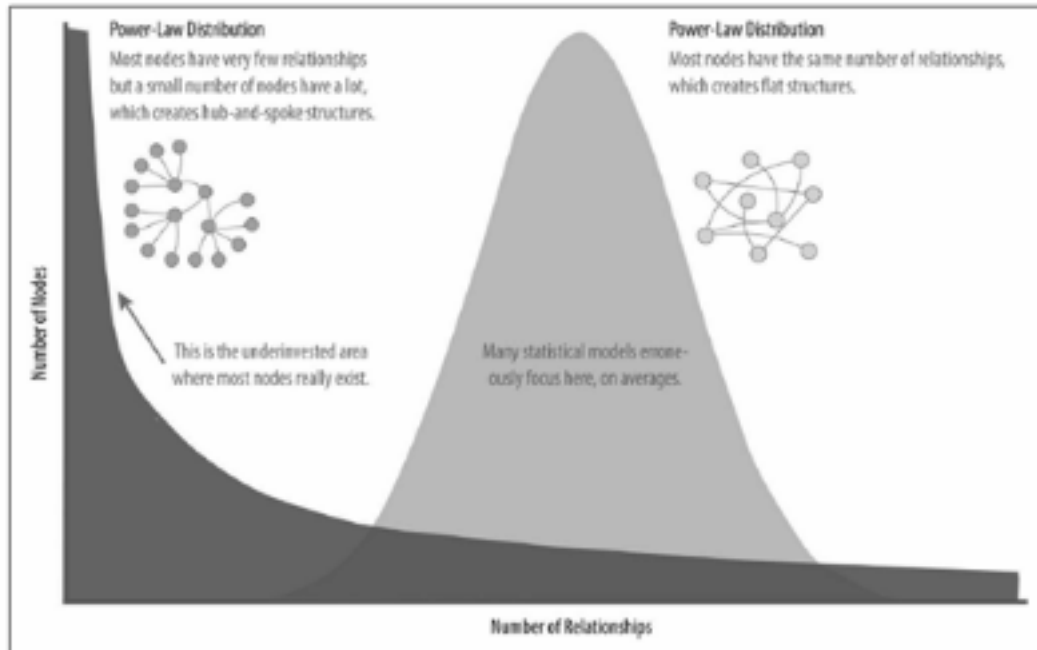
Resources

➢ **A Gentle Introduction To Graph Theory.** Vaidehi Joshi.
   https://medium.com/basecs/a-gentle-introduction-to-graph-theory-77969829ead8
➢ **The Neural Network Zoo.** Fjodor van Veen. Neural Networks are types of graphs.
   http://www.asimovinstitute.org/neural-network-zoo/
➢ **Graph Data Structure And Algorithms.** This page has a very brief description of a graph data structure and then a *long* list of things that can be done with graphs - cycling, sorting, spanning, searching. https://www.geeksforgeeks.org/graph-data-structure-and-algorithms/
➢ **GQL Is Now a Global Standards Project alongside SQL.** https://gql.today/
➢ **Social Network Analysis**. Philip Leifeld.
   http://www.bearnetwork.ca/wp-content/uploads/2018/10/slides-leifeld-bear.pdf

Feature Article: **Graph.** https://el30.mooc.ca/post/68472

Featured Video: Conversation with Ben Werdmuller https://el30.mooc.ca/event/82
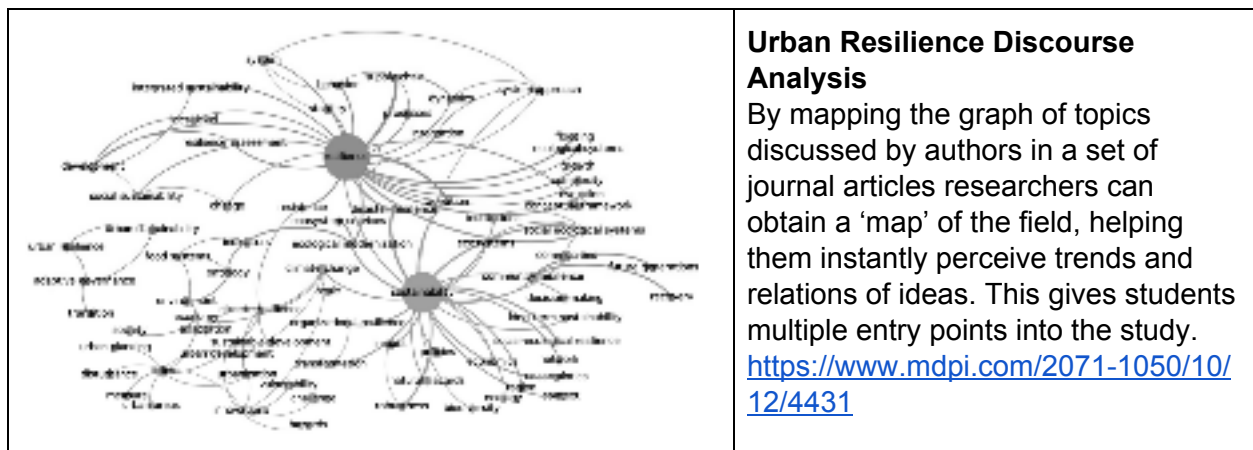
The BIG Idea - Graph, Not Story

All events are complex events and all disciplines are complex disciplines. Yet we have the urge to represent events and disciplines from the perspective of a narrative, or a story. The narrative focuses us toward one thing - a key figure in history, a single rule, a specific case.

We are seeing the flaws of the narrative approach in contemporary journalism. "The ultimate bias in journalism is not political. It's toward controversy, gaffes, and scandal—shiny new things that get ratings and shares and downloads." It trends toward a power-law understanding of the world, with a focus on a small and narrow set of interests and priorities.
https://www.vanityfair.com/news/2019/01/how-the-media-can-prevent-2020-from-becoming-2016

Urban Resilience Discourse Analysis
By mapping the graph of topics discussed by authors in a set of journal articles researchers can obtain a 'map' of the field, helping them instantly perceive trends and relations of ideas. This gives students multiple entry points into the study.
https://www.mdpi.com/2071-1050/10/12/4431

Activity - My Model Graph

Instructions

1. Create a model graph of some aspect of this workshop (it doesn't have to be an actual graph, only a representation of what an actual graph might look like. We've already seen, eg., graphs on the relations between people in the workshop. Could there be other types of graphs?
2. In your model, consider how the states of the entities in that graph might vary. Consider not only how nodes might vary (eg., a person might have a different height over time) but also how the edges might vary (eg., a person might have a different strength of relation (calculated how?) with another person over time).
3. In your model, consider how knowledge about the changes in states in the graph might be used.

Create your graph using an online service like https://www.draw.io/ - of if you prefer, use the space below (note that you will need to specify a cloud account to store your graph when you use draw.io)

Graph: Worksheet

Graph from your perspectives:

Critical Reflections

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Resources

Learning resources have traditionally been things like textbooks and media, but now learning resources can be anything from video to virtual reality to application. How we describe these, and access them, is changing.

Ψ **Philosophy** Since the early days the web has been increasingly locked down, and the once-seamless interaction between people and data has been locked more and more behind paywalls and content silos. Web3 is to a large degree a reaction against this	🔔 **Education** Content Addressable Resources for Education create mechanisms for the creation of resource graphs linking data, media, software and people, redefining our idea of an open course (and open pedagogy) .
💻 **Computing** We have already seen more transitional contents, such as books, media and music, being distributed through IPFS. Similar technologies support more complex content, for example, distributed applications (dApps), subscriptions and lists, contract networks, and even distributed organizations.	Ξ **Media** The concept of Content Addressable Resources for Education addresses the question of the sustainability of open educational resources. These resources will be packaged and distributed across a content-addressable network, whereupon they become *permanently* open

Resources

- ➢ **OER World Map**. A couple years or so ago UNESCO launched an OER mapping project. https://oerworldmap.org/
- ➢ **Introducing the Dweb.** Dietrich Ayala. The "d" in "dweb" usually stands for either decentralized or distributed. https://hacks.mozilla.org/2018/07/introducing-the-d-web/
- ➢ **Distributed Hash Table.** Type of decentralized distributed system.
- ➢ https://ipfs.io/ipfs/QmXoypizjW3WknFiJnKLwHCnL72vedxjQkDDP1mXWo6uco/wiki/Distributed_hash_table.html
- ➢ **Beaker.** Beaker brings *peer-to-peer publishing* to the Web. https://beakerbrowser.com/
- ➢ **Inter Planetary File System**. IPFS is the Distributed Web, a peer-to-peer hypermedia protocol. https://ipfs.io/
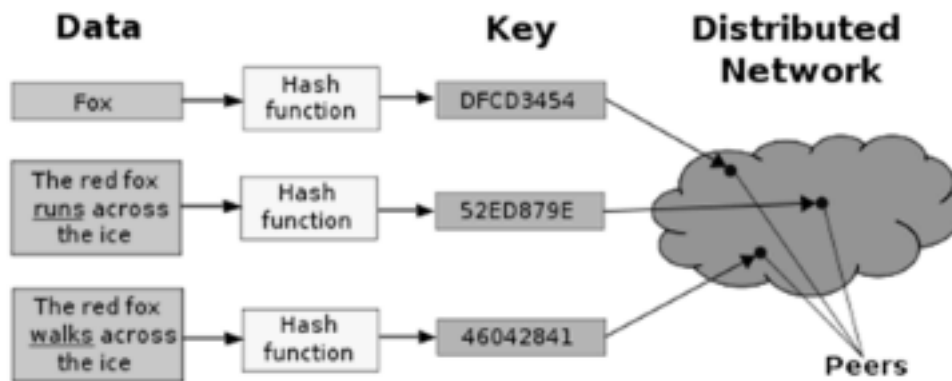- ➢ **A Look at the Future of Open Educational Resources.** https://www.ijoer.org/a-look-at-the-future-of-open-educational-resources/

Feature Article: **Resources.** https://el30.mooc.ca/post/68554
Featured Video: Conversation with Sukaina Walji and Cheryl Hodgkinson-Williams https://el30.mooc.ca/event/84

The BIG Idea - Content Addressable Resources for Education

Distributed Hash Table

Open educational resources in the future:
- ➢ Each piece of content has a unique address, which is a hash of its content, eg. like a GitHub resource
- ➢ new models of open educational resources will be more like tools that students use in order to create their own learning content, which they will then consume or use for some other purpose.
- ➢ the learning happens not through the consumption of the content but through the *use* of the content.
- ➢ licensing fades to the background is that most resources are created and used only once. The resource taps into current data and may be localized or adapted to the content consumer.
- ➢ Technologies such as encryption, hashing and blockchain create a record of ownership and provenance of any resource.

Our understanding of the concept of the 'open educational resource' changes from a definition based on the concepts and metaphors of textbooks and libraries, and toward one based on the concepts of data-processing networks, cloud services and applications, decentralized encryption-based ledgers, and AI-assisted design and information processing.

Activity - My OER

Instructions:

- Offline activity: design a scenario where students could obtain content or data, revise or remix that content or daya, and create a new learning resource for their own use.
- Online activity:
    1. Create an account at GitHub and Create a new repository - https://github.com
    2. Create some content for your repository
    3. Practice sharing your repository with others, and cloning other's repositories
- *Bonus:* try downloading and using the Beaker browser

Resources: Worksheet

Resources from your perspectives:

Critical Reflections

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Identity

In this workshop we look at identity relatively narrowly, asking how we know who someone is, how we project ourselves on the internet, and how we can be safe and secure.

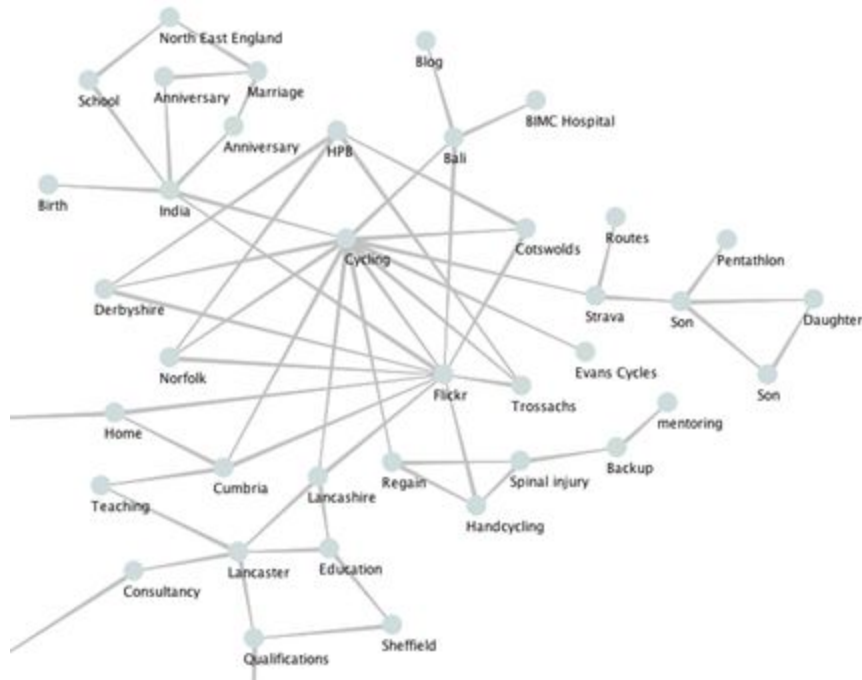| Ψ Philosophy	🔔 Education
Instead of demographics being about quantity we will now have access to a rich tapestry of data and relations. Instead of grades or scores our self-assessments will be based on the quality of the experience. The "quantified self" will give way to the "qualified self".	Should we think of identity from the outside in or from the inside out. Can we teach 'identity'? is 'identity' something that can be done to us or for us? Or is it inherent in our nature, something we *bring* to education as course participants, something that informs how we see and how we learn?.
💻 Computing	Ξ Media
Much of the technological discussion of identity looks at it relatively narrowly, asking how we know who someone is, how we project ourselves on the internet, and how we can be safe and secure. In a wider sense, however, what we are developing is a mechanism for the creation of a *digital identity*.	We were the client, we were the product - are we, at last, the content? *We* are the thread that runs through an otherwise disconnected set of data. Knowledge about ourselves will create an underlying fabric against which the value and relevance of everything else will be measured..

Resources

- ➤ **Identity Graphs: how online trackers follow you across devices.** Robert Heaton. https://robertheaton.com/2017/11/24/identity-graphs-how-online-trackers-follow-you-across-devices/
- ➤ **What Is Identity?** OpenLearn. Read through the first part of this short course. https://www.open.edu/openlearn/people-politics-law/politics-policy-people/sociology/identity-question/content-section-1.1
- ➤ **Identity as Evolving, Dynamic, Contextual**. Maha Bali. https://blog.mahabali.me/writing/identity-as-evolving-dynamic-contextual-el30/
- ➤ **Keybase.io - Downes.** This is my Keybase page. https://keybase.io/downes
- ➤ **The Basics of Decentralized Identity.** Kames. https://medium.com/uport/the-basics-of-decentralized-identity-d1ff01f15df1
- ➤ **Decentralized Identifiers.** A new World Wide Web Confortium (W3C) specification. https://w3c-ccg.github.io/did-spec/

Feature Article: **Identity.** https://el30.mooc.ca/post/68516

Featured Video: Conversation with Maha Bali https://el30.mooc.ca/event/83

The BIG Idea - *We* Are the Content

One of the key changes with web3 technology will be the way we identify ourselves online. Anonymity and password-based usernames will be more difficult to sustain. We are already in a world of biometrics and two-factor authentication, but there are weaknesses in the system (and an endless stream of successful hacks to underline that problem). Cryptographic keys - either digital or physical - will become the norm, but this gives us a permanent identity that not only secures our data, it *is* our data.

Our new identities have the potential to be an enormous source of strength or a debilitating weakness. Will we be lost in the sea of possibilities, unable to navigate through the complexities of defining for ourselves who we are, or will we be able to forge new connections, creating a community of interwoven communities online and in our homes?

Activity - My Identity Graph

Instructions
- Create an Identity Graph: We are expanding on the marketing definition of an identity graph. It can be anything you like, but with one stipulation: your graph should not contain a self-referential node titled 'me' or 'self' or anything similar
  - Think of this graph as you defining your identity, not what some advertiser, recruiter or other third party might want you to define.
  - Don't worry about creating the whole identity graph - focusing on a single facet will be sufficient. And don't post anything you're not comfortable with sharing. It doesn't have to be a real identity graph, just an identity graph, however you conceive it.
- Optional: consider some of these questions about your identity graph:
  - What is the basis for the links in your graph: are they conceptual, physical, causal, historical, aspirational?
  - Is your graph unique to you? What would make it unique? What would guarantee uniqueness?
  - How (if at all) could your graph be physically instantiated? Is there a way for you to share your graph? To link and/or intermingle your graph with other graphs?
  - What's the 'source of truth' for your graph?

Bonus: create a Keybase account. https://keybase.io/

Identity: Worksheet

Identity from your perspectives:

Critical Reflections

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Recognition

How do we know a course has been successful? How do we know what someone has learned? How can we know whether to trust in the education of our mechanics, doctors, engineers and pilots.

| Ψ Philosophy	⌂ Education
There is not clear agreement on what counts as success. Different outcomes from learning events can be tracked and measured in any number of ways. And there is the danger of bad actors - of those who cheat on tests, fake certificates, or misrepresent their qualifications.	There are numerous competency definition standards, everything from Australia's National Competency Standards to the NIH's Nursing Competency standard. Activity tracking has been formalized by xAPI and records are stored in Learning Record Stores (LRS).
💻 Computing	Ξ Media
Actual AI-based assessment of competent performance will be used to create competency models that can inform AI-based speech-raters, competency systems, and professional evaluation. Actual authentic tasks designed (or contributed) by humans may be needed to balance the possibility of biased algorithms..	The certificate of the future will be a job offer. Software is being developed to map directly from a person's online profile to job and work. These today are unreliable and superficial, but with trustworthy data from distributed networks we will be able to much more accurately determine the skills - and potential - of every individual.

Resources

➢ **China's Social Credit System: A Mark of Progress or a Threat to Privacy?**
https://piie.com/publications/policy-briefs/chinas-social-credit-system-mark-progress-or-threat-privacy
➢ **Open Badges.** General information page about badges. https://openbadges.org/
➢ **Competency & Skills System (CaSS).** Advanced Distributed Learning.
https://adlnet.gov/projects/cass
➢ **An Experience API for learning everywhere (also in virtual worlds).** Roland Legrand.
https://www.mixedrealities.com/2018/10/25/an-experience-api-for-learning-everywhere-also-in-virtual-worlds/
➢ **2018 Technical Report on xAPI.** IEEE LTSC TAGxAPI.
https://www.tagxapi.org/ieee-technical-report/

Feature Article: **Recognition.** https://el30.mooc.ca/post/68595
Featured Video: Conversation with Viplav Baxi https://el30.mooc.ca/event/85

The BIG Idea - AI-Based Learning Recognition
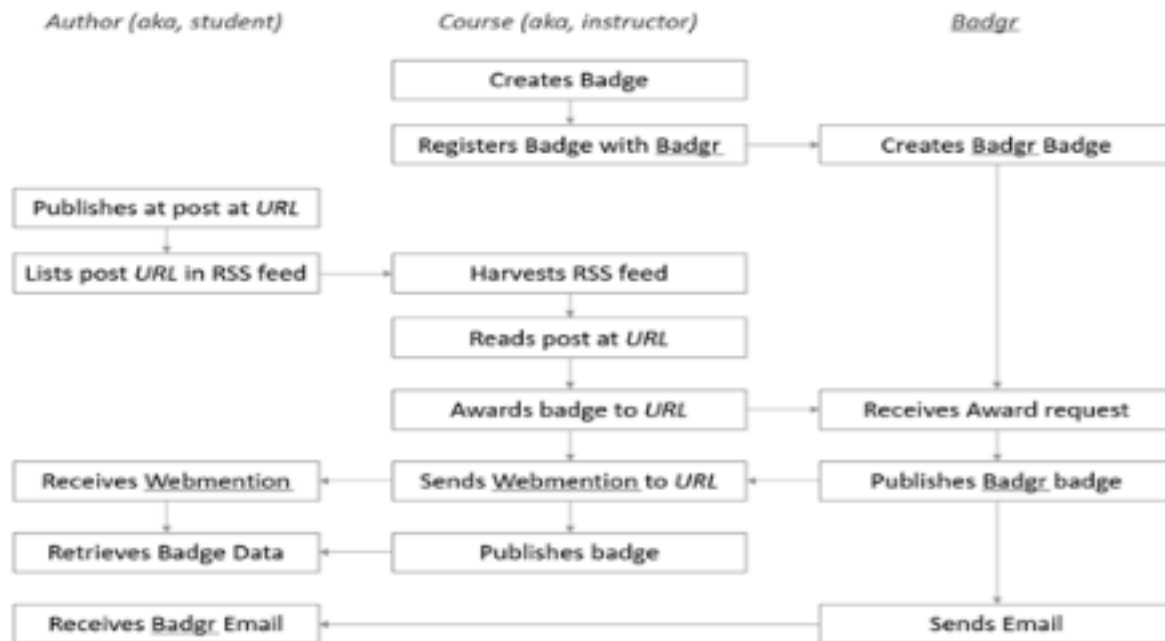
We are gradually moving toward a process where all assessment may be perforced by artificial intelligence (AI). *How* we get to this point, however, will depend on a lot of the decisions we make getting there.

Already, the assessment infrastructure is being developed. xAPI lets you capture (big) data on human performance, along with associated instructional content or performance context information. We can also gather data outside the school or program, looking at actual results and feedback from the workplace.

What will be assessed? There are ways to assess coursework directly and recognize achievements with badges, creating 'stackable credentials'. Alternatively, we may opt to assess for *competencies* as defined (?) by some standards-based organization. Ultimately, we may be assessed broadly, as a whole person, via our own online presence.

How will we be assessed? Today we use rules and rubrics. But we already know that in high-stakes assessment, we depend on *recognition* by an expert. We know AI systems can already recognize simple forms of expertise, for example, by marking papers.

Blockchain Diplomas Land In Virginia At Ecpi Jacob Demmitt. It was only a matter of time. "Virginia Beach-based ECPI University has joined a group of early adopters that distribute student degrees through the same kind of decentralized computer networks that power Bitcoin... http://www.downes.ca/post/68855/rd

Activity - My Digital Badge

Instructions

- If you have internet access, create a free account on a Badge service (https://badgr.com/ , https://www.openbadges.me/ , https://openbadgefactory.com/). Otherwise, use this space to design your badge, clearly identifying different data elements:
  - create a badge and give it a name, criteria, design
  - award it to yourself or describe how it would be awarded.
  - use a blog post on your blog as the 'evidence' for awarding yourself the badge
 - place the badge on the blog post.

Optional

- Define how your digital badge connect to or ties in to your identity graph

Recognition: Worksheet

Recognition from your perspectives:


Critical Reflections

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Community

The fundamental challenge to community is to make decisions on matters affecting everybody while leaving to individuals, companies and institutions those matters not effectively managed by consensus.

Ψ **Philosophy** The traditional concept of community was built on sameness, on collections of people from the same family, speaking the same language, living in the same place, believing the same things. This was challenged by social and political reforms through the last few centuries.	⌂ **Education** What is required for learning to work is not merely control, but *agreement* on the part of the members of the community. Underlying this is a respect for law, institutions and processes, and when these break down, and when consensus is lost, it is very difficult to restore..
💻 **Computing** Digital currencies such as Bitcoin and Ethereum use a "proof of work". Other types of content create other types of consensus: "proof of stake" relies on guarantees of resources or assets; "proof of authority" depends on certification or validation.	Ξ **Media** The critical literacies include not just being able to *communicate* with each other, but to be able to build and create. Consensus, ultimately, is a question of stigmergy, and we will look not only how it is created, but also how it is undermined (think, for example, of 'dark patterns').

Resources

- ➢ **The Byzantine Generals Problem** - https://lamport.azurewebsites.net/pubs/byz.pdf
- ➢ **Trust, Truth, Consensus and Community on the distributed web** - Jenny Mackness - https://jennymackness.wordpress.com/2018/12/09/trust-truth-consensus-and-community-on-the-distributed-web/
- ➢ **How Does Distributed Consensus Work?** Preethi Kasireddy. Distributed systems and consensus. https://medium.com/s/story/lets-take-a-crack-at-understanding-distributed-consensus-dad23d0dc95
- ➢ **What is Blockchain?** Lucas Mostazo, YouTube. Blockchain explained in plain English. https://www.youtube.com/watch?v=3xGLc-zz9cA
- ➢ **Education Blockchain Market Map**. HolonIQ. https://www.holoniq.com/blockchain
- ➢ **ConsensusPedia: An Encyclopedia of 30 Consensus Algorithms**. Consensus algorithms are the basis of all the blockchains/DAGs. https://hackernoon.com/consensuspedia-an-encyclopedia-of-29-consensus-algorithms-e9c4b4b7d08f

Feature Article: **Community.** https://el30.mooc.ca/post/68638
Featured Video: Conversation with Pete Forsyth
https://www.youtube.com/watch?v=1Urc4EW9hiE

The BIG Idea - Community as Consensus

The capacity to withstand the influence of such bad actors is known technically as Byzantine Fault Tolerance, and there are different approaches to achieving consensus even when there is no certainty, based on the general common sense of the rest. While not defining truth as consensus, the problem of truth, at least from a community perspective, is a consensus problem.

This makes the mechanisms we use to interact and reach consensus particularly important. For example, even if we have a chain of verified and trustworthy facts, validated by previous consensus and guaranteed by encryption technology, how do we choose between competing chains? Digital currencies such as Bitcoin and Ethereum use a "proof of work". This makes it too expensive to create a fake chain from scratch, but at the cost of inefficiency and enormous energy consumption.

Other types of content create other types of consensus: "proof of stake" relies on guarantees of resources or assets; "proof of authority" depends on certification or validation, and "oracles" depend on widely observable and incorruptible sources of data.

What this teaches is that community and consensus are about more than voting and about more than having power. What is required for a community to work is not merely control, but agreement on the part of the members of the community. Underlying this is a respect for law, institutions and processes, and when these break down, and when consensus is lost, it is very difficult to restore.

Activity - My Community

Instructions
- As a community, create an assignment the completion of which denotes being a member of the community. For the purposes of this task, there can only be one community for the entire workshop.
- Use the space above to contain your contribution to the community.
- For each participant, your being a member of the community completes the task.

Note: in the workshop, you will be presented with the 'Byzantine Generals Problem' and left to consider how you, as a community of communities, might solve it.

Community: Worksheet

Community from your perspectives:

Critical Reflections

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Experience

It is a truism that we learn from experience, and yet creating a role for experience in learning has been one of the most difficult problems in education. And so much of education continues to rely on indirect methods depending on knowledge transfer - reading, lectures, videos - rather than hands-on practice and knowledge creation.

Ψ Philosophy	⌂ Education
No experience is inherently meaningful. What a new experience means depends on previous experience. And experience is active. "Observation alone is not enough. We have to understand the significance of what we see, hear, and touch." This is determined by us, as recognition.	Just as multiple authors can edit Wikipedia articles or work on code in GitHub, participatory learning media enables learners to interact creatively without management or direction; the outcome is a consensus determined not by voting but by participation.
💻 Computing	Ξ Media
New technology is beginning to *combine* the ability of teachers and role models to model and demonstrate successful practice and the need for learners to practice and reflect on their learning in that environment. Live streaming events are transforming real-world events into hands-on learning experiences..	The *creation* of the content becomes a part of the content itself. We see this with the recent self-shredding art by Banksy or the inside look at how the single-scene time-lapse sequence was filmed. Some artists have made working openly part of the act - Deadmau5, for example, showing how electronic music is produced. .

Resources

➢ **How to Be an Artist.** Jerry Saltz. Good advice that could be applied not only to art but to anything. https://www.vulture.com/2018/11/jerry-saltz-how-to-be-an-artist.html
➢ **Openness to Experience and Creative Achievement.** Scott Barry Kaufman, Scientific American. https://blogs.scientificamerican.com/beautiful-minds/openness-to-experience-and-creative-achievement/
➢ **Twitch.** A global community of millions who come together each day to create their own entertainment. https://www.twitch.tv/
➢ **Jupyter Notebooks.** https://jupyter.org/
➢ **Binder**. https://mybinder.org/

Feature Article: **Experience.** https://el30.mooc.ca/post/68683

▶ *Featured Video:* Conversation with Amy Burvall https://el30.mooc.ca/event/87

The BIG Idea - Content and Creation Combined

New technology is beginning to combine the ability of teachers and role models to model and demonstrate successful practice and the need for learners to practice and reflect on their learning in that environment. Content distribution networks and live streaming are transforming real-world events into hands-on learning experiences.

A good example of this is the live-streaming platform Twitch and especially games like Fortnite, in which players become spectators, and back again, over and over. And using applications like xSplit or Open Broadcaster Software individuals can make their experiences part of the learning experience shared by others.
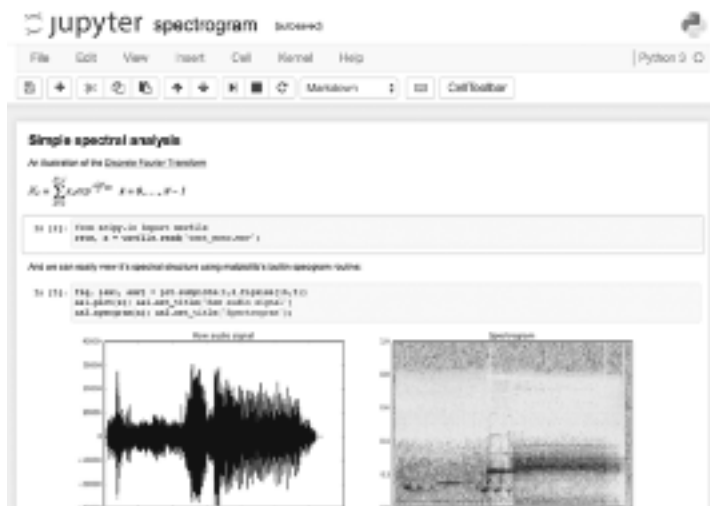
For example, Jupyter Notebook combines data and code in a document. In the JupyterLab Environment - work with code, data, and the Jupyter notebook format.

A Gallery of interesting Jupyter Notebooks:
https://github.com/jupyter/jupyter/wiki/A-gallery-of-interesting-Jupyter-Notebooks

Binder - https://mybinder.org - runs Jupyter Notebooks in a web browser

Eg. Jupyter for kids -
https://mybinder.org/v2/gh/mikkokotila/jupyter4kids/master

Tools for Creating

➢ Twitch - https://www.twitch.tv/ - live-streaming site for game playing, game-watching, and chat
➢ Filmora and Filmore Go- https://filmora.wondershare.com - video creation, editing, upload
➢ Tiktok - http://www.tiktok.com - social video meme and sharing
➢ Turtle - http://turtle.audio/ - make music - see also https://www.youtube.com/watch?v=lg_LKkMx2FE
➢ Glitch - https://glitch.com/ - make apps, remix others
➢ Livecaster - make webcasts - https://intrsection.com/2017/04/8396/
➢ Open Broadcaster - https://obsproject.com/ - stream desktop
➢ Workbench - https://www.dataquest.io/blog/jupyter-notebook-tips-tricks-shortcuts/ - free and open source data journalism

Activity - My Workshop Experience

Instructions

- Be creative! Using the medium of your choice, create a representation of your experience of E-Learning 3.0. Then post your creation (or post a link to your creation) on your blog.
- Here's a good example of the sort of thing you could create, by Kevin Hodgeson: http://dogtrax.edublogs.org/2018/12/12/el30-a-visual-sense-of-community-connected/
- If you need inspiration, visit the DS106 Assignment Bank and select one of the assignments, and then interpret it in the light this workshop. http://assignments.ds106.us/

Experience: Worksheet

Experience from your perspectives:

Critical Reflections

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Agency

This part of the workshop addresses two conceptual challenges: first, the shift in our understanding of content from documents to data; and second, the shift in our understanding of data from centralized to decentralized.

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Ψ Philosophy	**🔔 Education**
McLuhan said that technology is a projection of ourselves into the world. Our senses are amplified by virtual and augmented reality, our cognitive capacities extended by machine vision and AI, and our economic and social agency is represented by our bots and agents.	Learning therefore demands more than just the transmission or creation of knowledge. Our learning will need to emphasize and promote individual agency as much as they need to develop the tools and capacities needed to support social, political and economic development.
💻 Computing	**Ξ Media**
What we learn, and what makes learning successful, depends on *why* we learn. Four key elements of the new technological framework: security, identity, voice and opportunity. These elements are in turn what consensus-based decentralized communities are designed to augment.	How do we ensure that what we project to the world is what we want to project, both as teachers and learners? As content and media become more sophisticated and more autonomous, how do we bind these to our personal cultural and ethical frameworks?

Resources

- ➢ **The Three Dimensions of Inclusive Design.** GitHub. https://handbook.floeproject.org/TheThreeDimensionsPartOne.html
- ➢ **Social Justice Repair Kit.** Inclusive Design Research Centre. https://sojustrepairit.org/
- ➢ **Self-efficacy beliefs of medical students: a critical review** - Klassen & Klassen - https://link.springer.com/article/10.1007/s40037-018-0411-3
- ➢ **Agency and responsibility in adolescent students: A challenge for the societies of tomorrow** - https://onlinelibrary.wiley.com/doi/full/10.1111/bjep.12215
- ➢ **APA Good Practices Guide** - http://dailynous.com/2019/09/19/apa-publishes-good-practices-guide/

▶ *Featured Video:* Conversation with Silvia Baldiris and Jutta Treviranus
https://el30.mooc.ca/event/88

The BIG Idea - Redefining Success
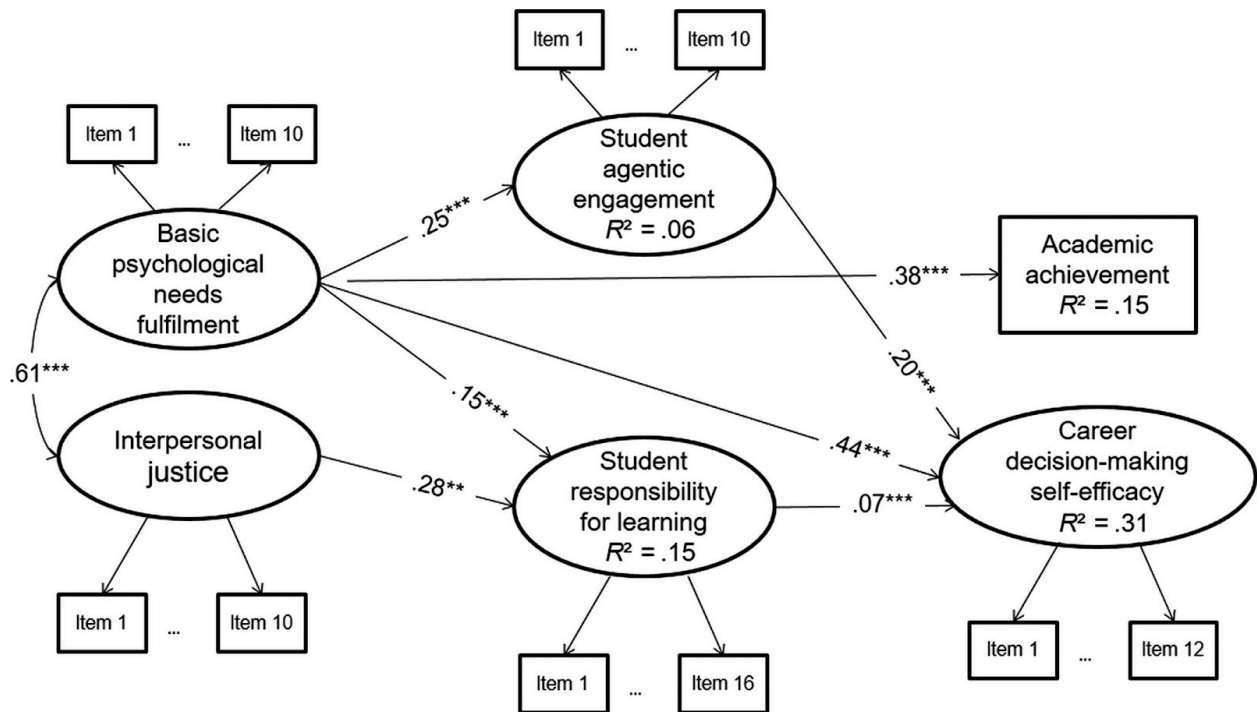
Each of the major developments in the internet - from the client-server model to platform-based interoperability to web3-based consensus networks - has been accompanied by a shift in agency. The relative standing of the individual with respect to community, institutions, and governments was shifted, for better or worse.

Each stage in technological development is inspired by social, political and economic aspirations, and understanding the next generation of learning and technology requires understanding the forces that shaped them. So we close our enquiry with a consideration of issues related to power and control, to peace and prosperity, to hopes and dreams.

McLuhan said that technology is a projection of ourselves into the community, so we need to consider how human capacities are advanced and amplified in a distributed and interconnected learning environment. Our senses are amplified by virtual and augmented reality, our cognitive capacities extended by machine vision and artificial intelligence, and our economic and social agency is represented by our bots and agents.

'Success' in the future will not be defined by employment opportunities, by competencies, by skills and expertise, but by agency - can the learner learn, think and do for themselves in a rapidly changing and complex environment?

# Activity - My Definition of Success

Instructions

- Using the space below or one of the many online tools at your disposal, consider what success - in this workshop, in your career, in life - looks like to you.
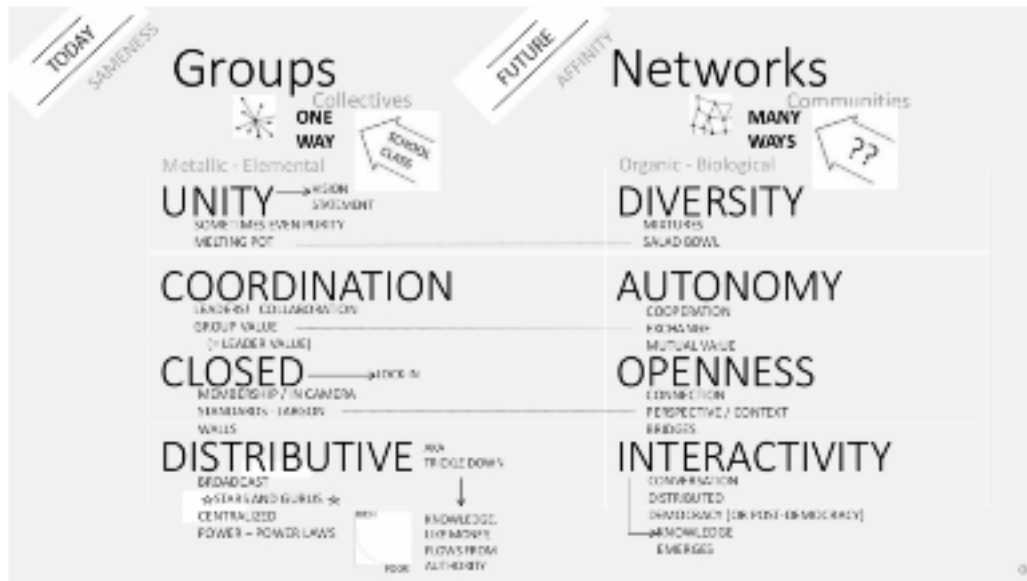
Agency: Worksheet

Data from your perspectives:

Critical Reflections

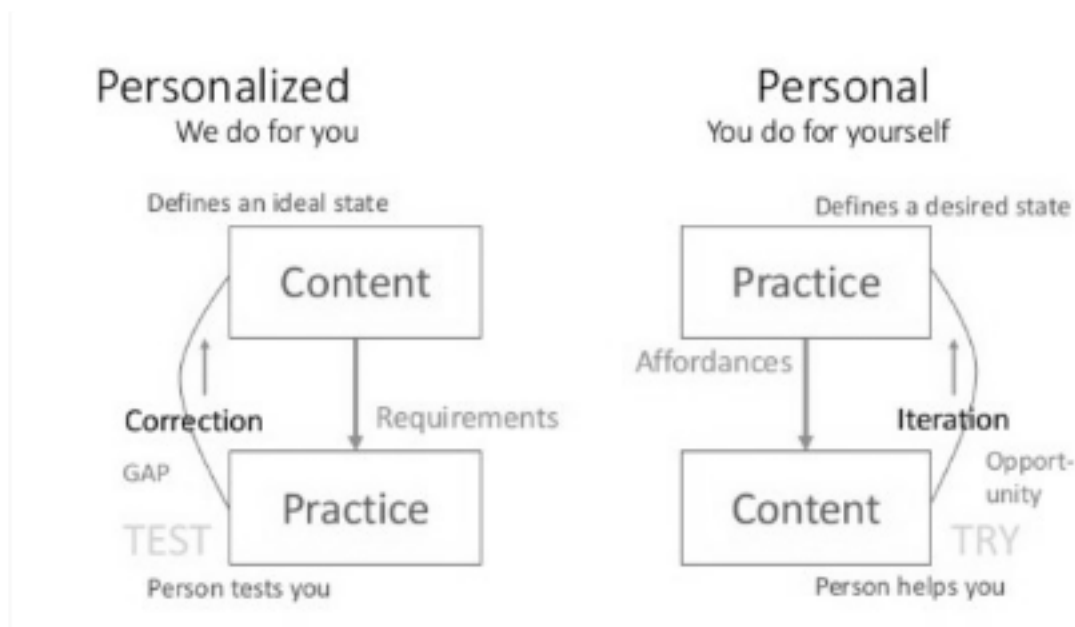|	
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Actionable Practices

Groups vs. Networks

Personal Learning

Articles / Presentations by Stephen Downes

A Look at the Future of Open Educational Resources. 2019. *International Journal of Open Educational Resources*, Volume 1, Issue 2, Spring/Summer, American Public University System. https://www.ijoer.org/a-look-at-the-future-of-open-educational-resources/

The Third Wave: the Next Generation of Distributed Learning Technology. 2019. *Canadan Network for Innovation in Education*, Vancouver. http://www.downes.ca/presentation/505

Future Learning in an Advanced Decentralized Learning Ecosystem. 2019. *Individual Training and Education (IT&E) Symposium*, Canadian Forces Base Borden. https://www.downes.ca/cgi-bin/presentation/504

Vision 2030: Redesigning Education for the Future. 2018. *The 3rd Asbar World Forum 2018, Riyadh.* https://www.downes.ca/files/2018%2010%2028%20-%20Vision%202030.pdf

Online Learning and MOOCs: Visions and Pathways. 2018. China International Distance Education Conference, Beijing. https://www.downes.ca/files/Visions%20and%20Pathways.pdf

Modernised learning delivery strategies: The Canada School of Public Service technology integration project. 2018. *Journal of Applied Learning & Teaching*, Vol.1 No.2 15-25, Kaplan Singapore. http://journals.sfu.ca/jalt/index.php/jalt/article/view/17/17

Quantum Leaps We Can Expect in Teaching and Learning in the Digital Age: a Roadmap Research Report. 2017. Contact North, *World Conference on Online Learning,* Toronto. http://onlinelearning2017.ca/en/special-series-of-contact-north-i-contact-nord-insight-reports/

Open Learning, Open Networks - 开放学习、开放网络. 2017. Distance Education in China, 2017 - 10 36-4. http://kns.cnki.net/kcms/detail/11.4089.G4.20171019.1052.008.html

New Models of Open and Distance Learning. 2016. *Open Education: from OERs to MOOCs*, Editors: Mohamed Jemni, Kinshuk, Mohamed Koutheair Khribi., 1-22, Springer. http://link.springer.com/book/10.1007/978-3-662-52925-6

Applications, Algorithms and Data: Open Educational Resources and the Next Generation of Virtual Learning. *Education Ouverte: Ressources Educatives Libres et Ingenierie de Formation*, Hammamet. http://www.downes.ca/presentation/481

All: https://www.downes.ca/publications.htm   https://www.downes.ca/presentations.htm