

Learning, Doing, and the Golden Ratio

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Kapuskasing, Ontario



Our objective for today

We will create a 6-sentence essay on the future of learning



<https://www.theguardian.com/uk-news/2016/jan/03/like-a-beautiful-painting-image-of-new-years-mayhem-in-manchester-goes-viral>

Questions and Topics

- The new roles of professor...
- learning is doing...
- personalized vs personal learning...
- evaluation in the new era...
- the main challenges in education in the 21st century...



https://twitter.com/hughesroland/status/682921993331720196/photo/1?ref_src=twsrc%5Etfw



Today's Imperatives

- critical thinking
- innovation & creativity
- learning to learn
- collaboration
- communication
- global citizenship

From this morning's presentation

Design

vs

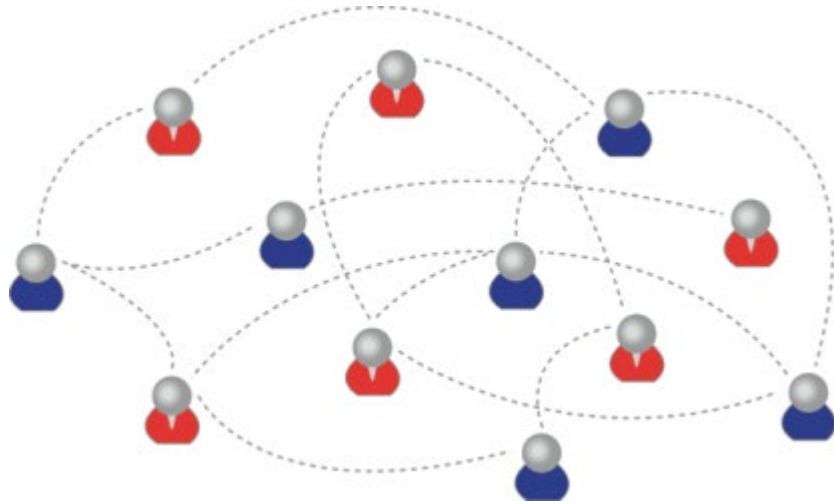
Environment

Path	Field
Course	Curriculum (as in 'mapping')
Sequence / Prerequisite	Core / periphery / foundation
Movement / covered	Inquiry / Discovery / Gaps
Threshold / Levels	Coverage / Construction
Positioning – first / last	Grouping / Clustering
Objective / target	Serendipity / emergence
Leading / Led	Centred

Carrie Paechter, Metaphors of Space in Educational Theory and Practice

<http://www.tandfonline.com/doi/pdf/10.1080/14681360400200202>

Learning Outcomes



We are using one of these

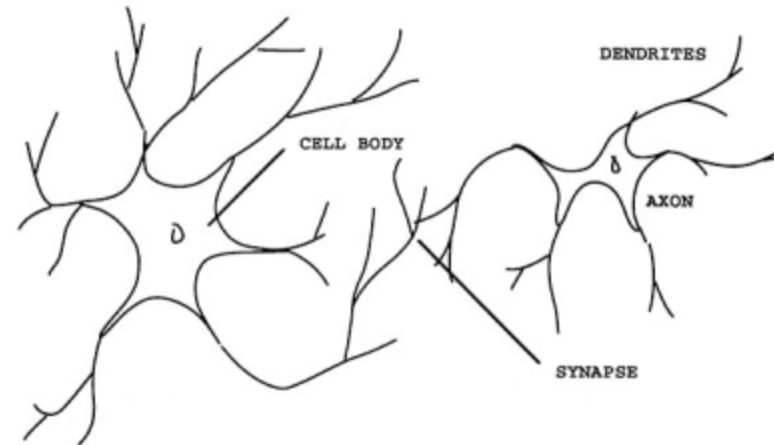


Figure 1. Biological Neuron

To create one of these

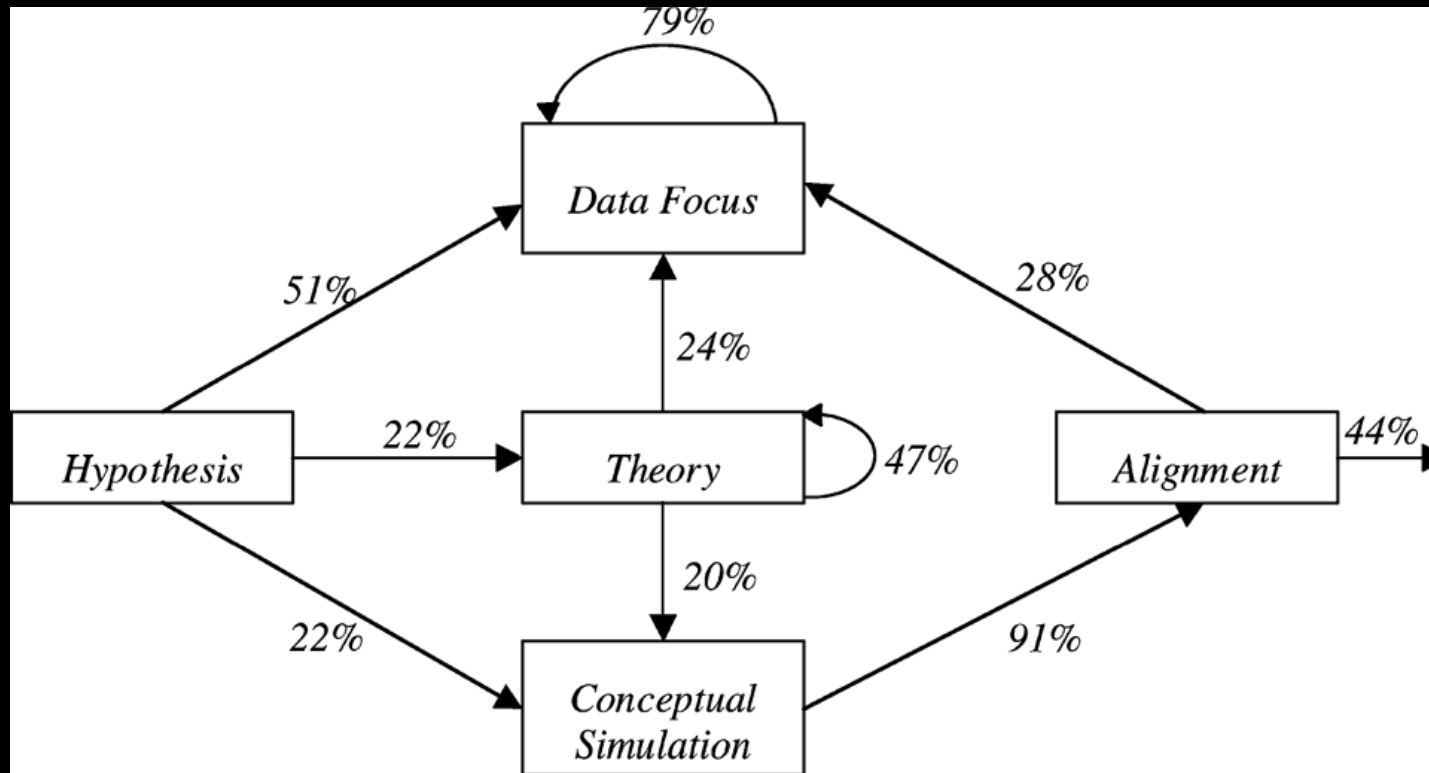
Personal knowledge consists of *neural* connections,
not facts and data

Inference and belief



We understand the future in the same way we understand the past, by studying the signs - S. Downes <http://www.downes.ca/post/20>

Science as language, learning as conversation, knowledge as inference




“What if...”: The Use of Conceptual Simulations in Scientific Reasoning

<http://www.informaworld.com/smpp/1925728116-26233474/ftinterface~db=all~content=a788101161~fulltext=713240928>

The Second Thesis, Part B

This means getting beyond narrow text-based conceptions we have of media

LEAVE BRITNEY ALONE!



0:53 / 2:12

★ ★ ★ ☆ ☆ 202,225 ratings 25,558,086 views

♥ Favorite → Share + Playlists ▾ Flag

MySpace Facebook Send Video [\(more share options\)](#)

Conceptions Like:

- messages have a sender and a receiver
- words get meaning from what they represent
- truth is based on the real world
- events have a cause, and causes can be known
- science is based on forming and testing hypotheses

These, taken together, constitute, a static, linear, coherent picture of the world

The world, as though it were a book, or a library

Not everyone sees it that way

A frame for understanding new media

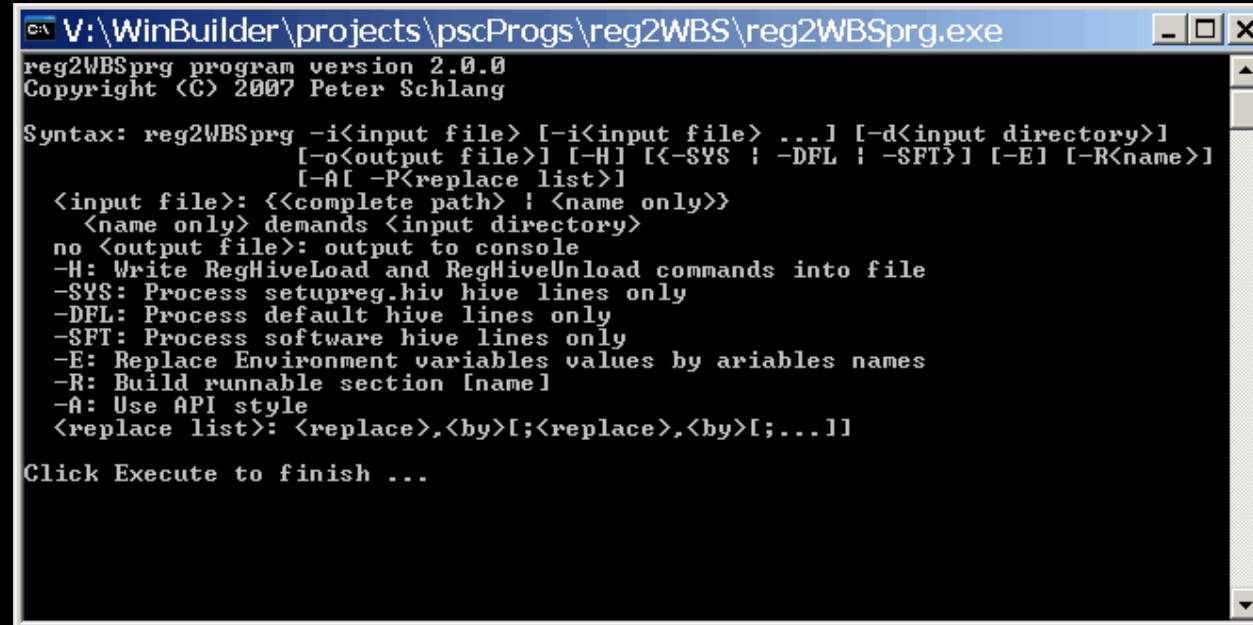
Morris, Derrida and a little Lao Tzu

Syntax	Cognition
Semantics	Context
Pragmatics	Change

We need this frame because (as Jukes said) if we aren't looking for these things, we just won't see them.

Syntax

Not just rules and grammar



```
C:\V:\WinBuilder\projects\pscProgs\reg2WBS\reg2WBSprg.exe
reg2WBSprg program version 2.0.0
Copyright (C) 2007 Peter Schlang

Syntax: reg2WBSprg -i<input file> [-i<input file> ...] [-d<input directory>]
        [-o<output file>] [-H] [[-SYS | -DFL | -SFT]] [-E] [-R<name>]
        [-A] [-P<replace list>]
<input file>: <<complete path> | <name only>>
<name only> demands <input directory>
no <output file>: output to console
-H: Write RegHiveLoad and RegHiveUnload commands into file
-SYS: Process setupreg.hiv hive lines only
-DFL: Process default hive lines only
-SFT: Process software hive lines only
-E: Replace Environment variables values by ariables names
-R: Build runnable section [name]
-A: Use API style
<replace list>: <replace>,<by>[;<replace>,<by>[;...]]

Click Execute to finish ...
```

Forms: archetypes? Platonic ideals?

Rules: grammar = logical syntax

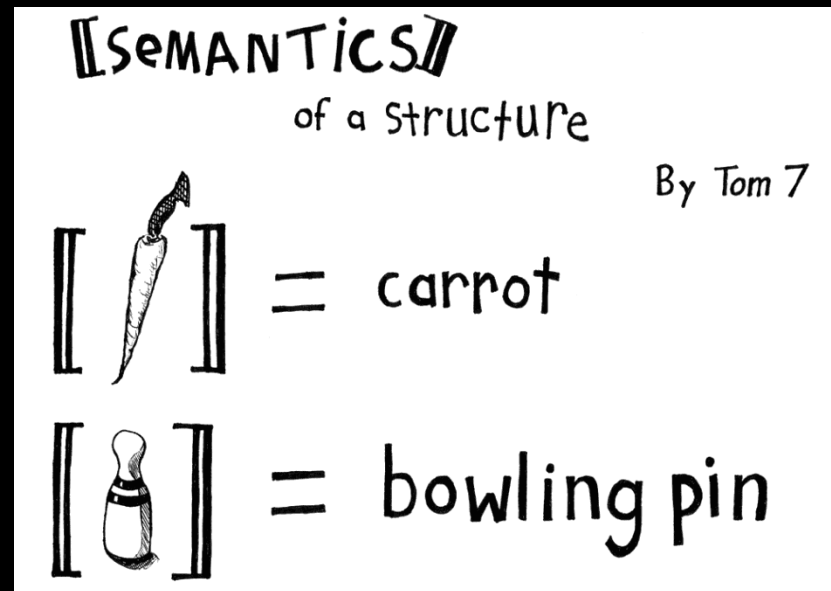
Operations: procedures, motor skills

Patterns: regularities, substitutivity (eggcorns, tropes)

Similarities: Tversky - properties, etc

Semantics

theories of truth / meaning / purpose / goal



<http://www.cs.cmu.edu/~tom7/csnotes/fall02/semantics.gif>

- 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

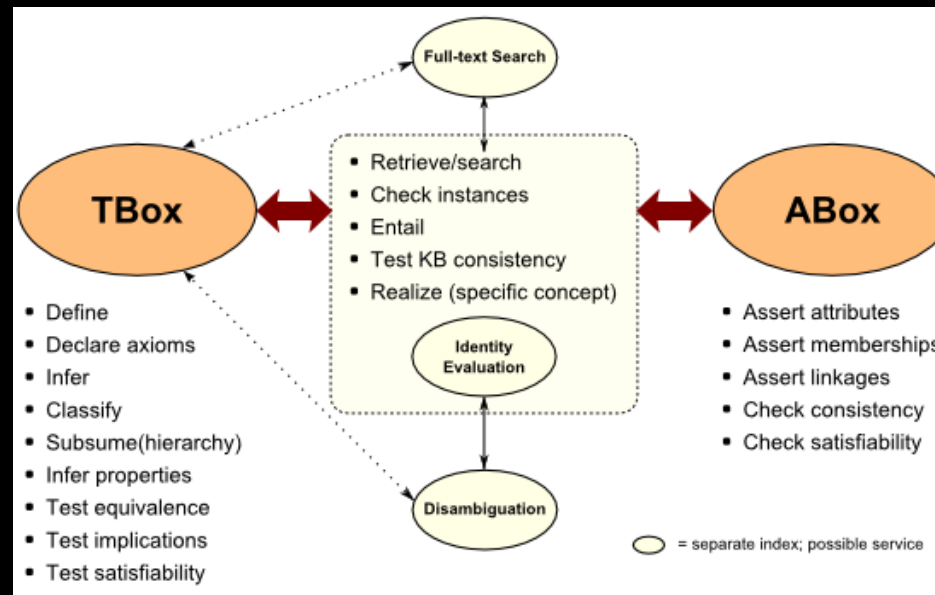
use, actions, impact



- 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



<http://www.mkbergman.com/category/description-logics/>

- description - X (definite description, allegory, metaphor)
- definition - X is Y (ostensive, lexical, logical (necess. & suff conds), 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)

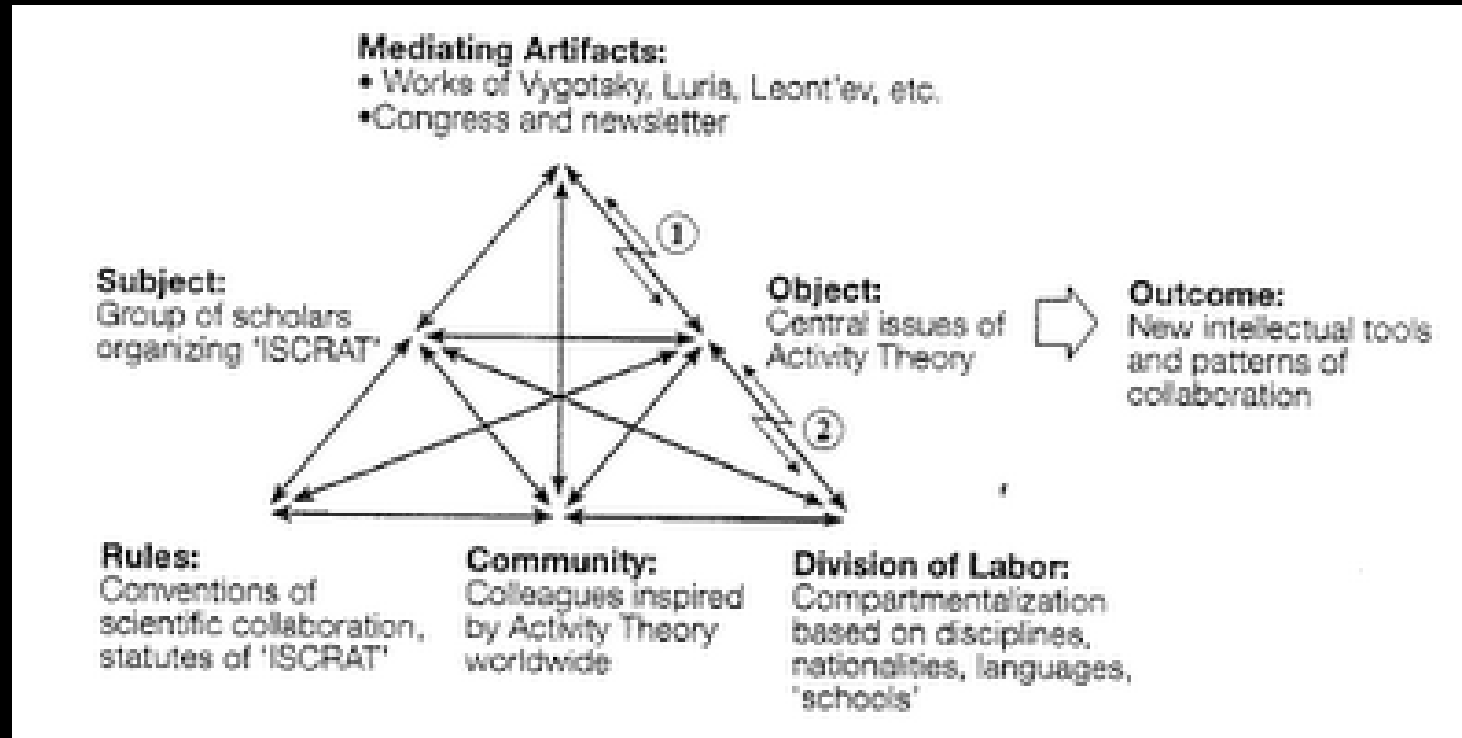
Context placement, environment



<http://www.occasionbasedmarketing.com/what-it-is>

- explanation (Hanson, van Fraassen, Heidegger)
- meaning (Quine); tense - range of possibilities
- vocabulary (Derrida); ontologies, logical space
- Frames (Lakoff) and worldviews

Change



- 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

21st Century ~~Skills~~ Languages



http://spotlight.macfound.org/btr/entry/new_media_literacies/

The 'skills' described by Jenkins –
performance, simulation, appropriation, etc -
are actually *languages* and should be
understood in terms of these six dimensions

21st Century Languages

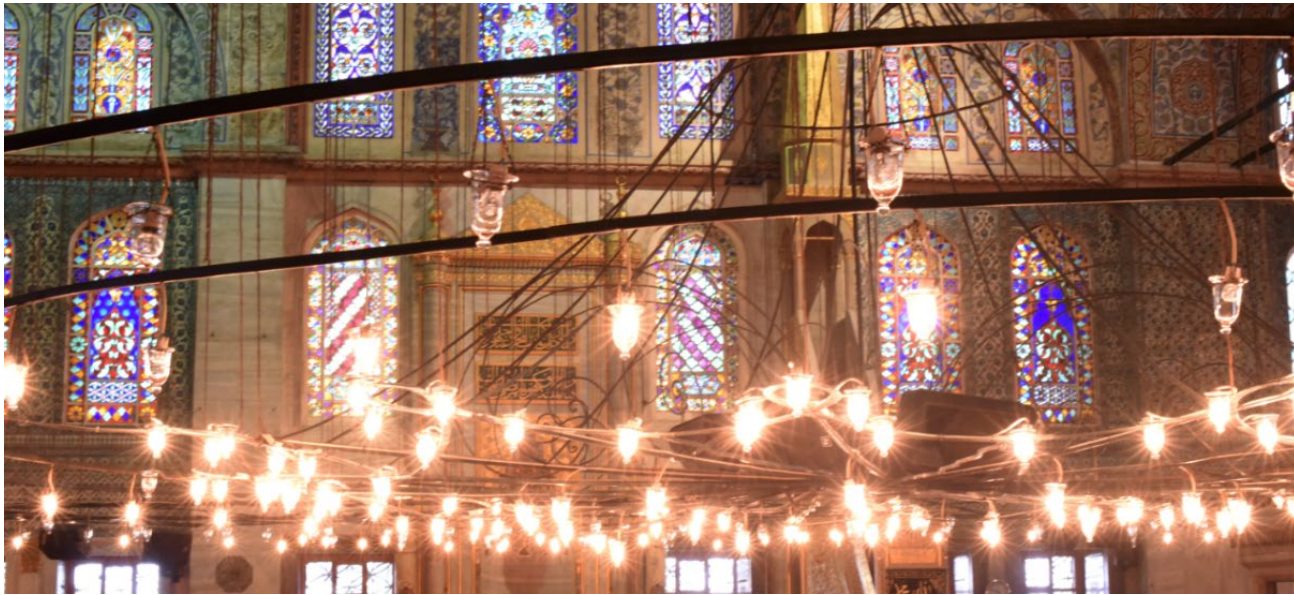
Languages Elements	Performance	Simulation	Appropriation
Syntax			
Semantics			
Pragmatics			
Cognition			
Context			
Change			

Example: Performance - Syntax

Languages Elements	Performance (the ability to adopt alternative identities for the purpose of improvisation and discovery)(subcategories?)
Syntax: <ul style="list-style-type: none">- Forms- Rules- Operations- Patterns- Similarities	<ul style="list-style-type: none">- Presentation acting, method acting- “Know your lines” etc http://filmtvcareers.about.com/od/gettingthejob/a/GJ_Actor_Tips.htm- Stanislavski’s system (etc...) http://en.wikipedia.org/wiki/Stanslavski%27s_system- Ritual Performance (etc.) http://www.let.rug.nl/koster/papers/JHP.Koster2.Edit.pdf- Comparing Tales (etc.) http://artsedge.kennedy-center.org/content/2343/

The Inflexible Law of Learning

It's when we do stuff that we learn, not when stuff does something for us.



- 6 groups
- One for each critical literacy

The Future in 2016

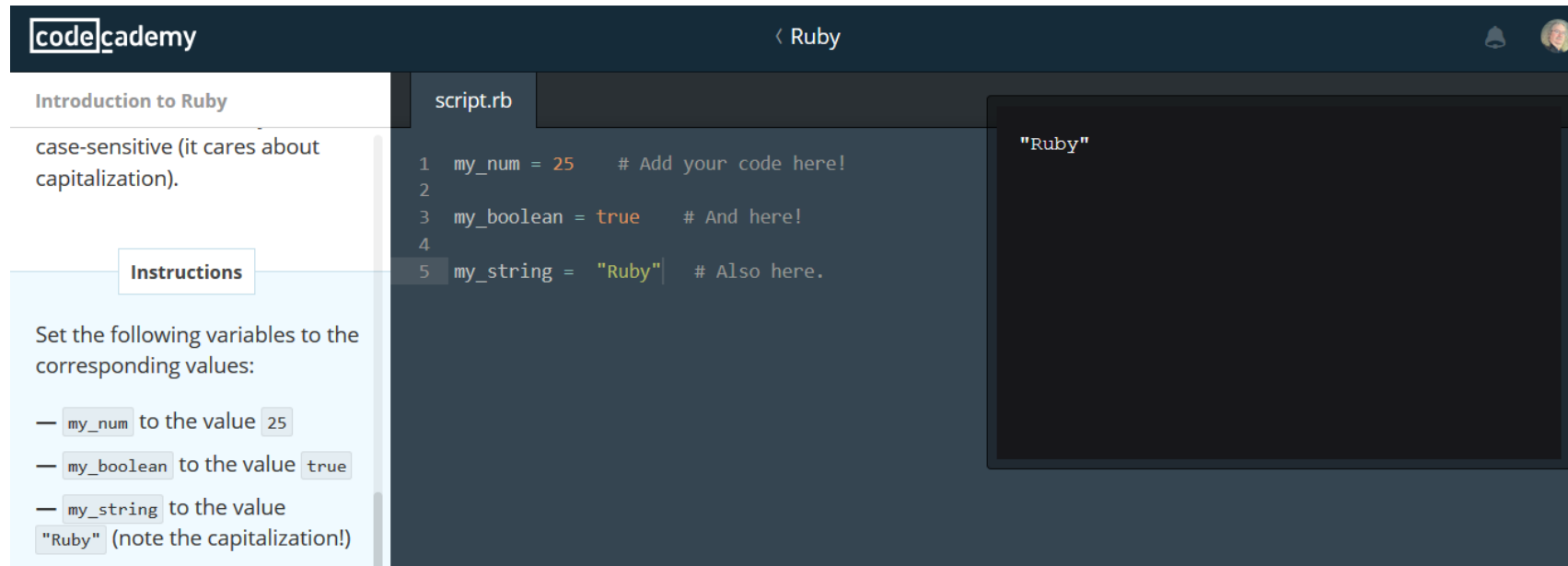
1. Machine learning and artificial intelligence
2. Handheld and Mobile Computing
3. Outcomes and Competencies
4. Internet of Things
5. Games, Sims and Virtual Reality
6. Translation and Collaborative Technology

<http://teachonline.ca/tools-trends/exploring-future-education/2016-look-future-online-learning-part-1>

<http://halfanhour.blogspot.com.tr/2016/03/the-2016-look-at-future-of-online.html>

1. Machine learning and AI

- Not simply for adaptive learning
- The idea is to create an *environment*



The screenshot shows the Codecademy interface for a Ruby tutorial. The top navigation bar includes the Codecademy logo, a breadcrumb trail for 'Ruby', and a user profile icon. The left sidebar contains the course title 'Introduction to Ruby' and a section titled 'Instructions' with the text: 'Set the following variables to the corresponding values:'. Below this, three instructions are listed: 'my_num' to the value '25', 'my_boolean' to the value 'true', and 'my_string' to the value 'Ruby' (noting capitalization). The main editor area shows a file named 'script.rb' with five lines of Ruby code: '1 my_num = 25 # Add your code here!', '2', '3 my_boolean = true # And here!', '4', and '5 my_string = "Ruby" # Also here.'. The output window on the right displays the string 'Ruby'.

<https://www.codecademy.com/>

Three Types of AI

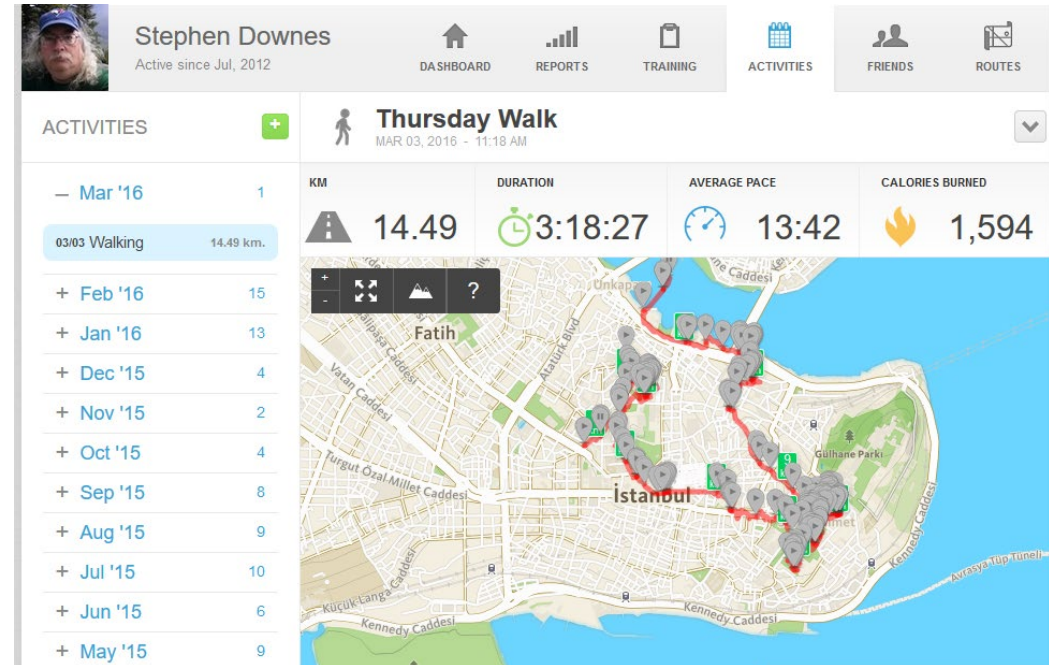
- **decision engines** - these are expert systems that are based on rule-driven strategies
- **pattern recognition** - perceptual systems that identify patterns from partial or disorganized data
- **cluster detection** - detecting nearest neighbours and categories of things

http://www.wtec.org/loyola/kb/c1_s1.htm

<http://research.microsoft.com/en-us/um/people/cmbishop/prml/>

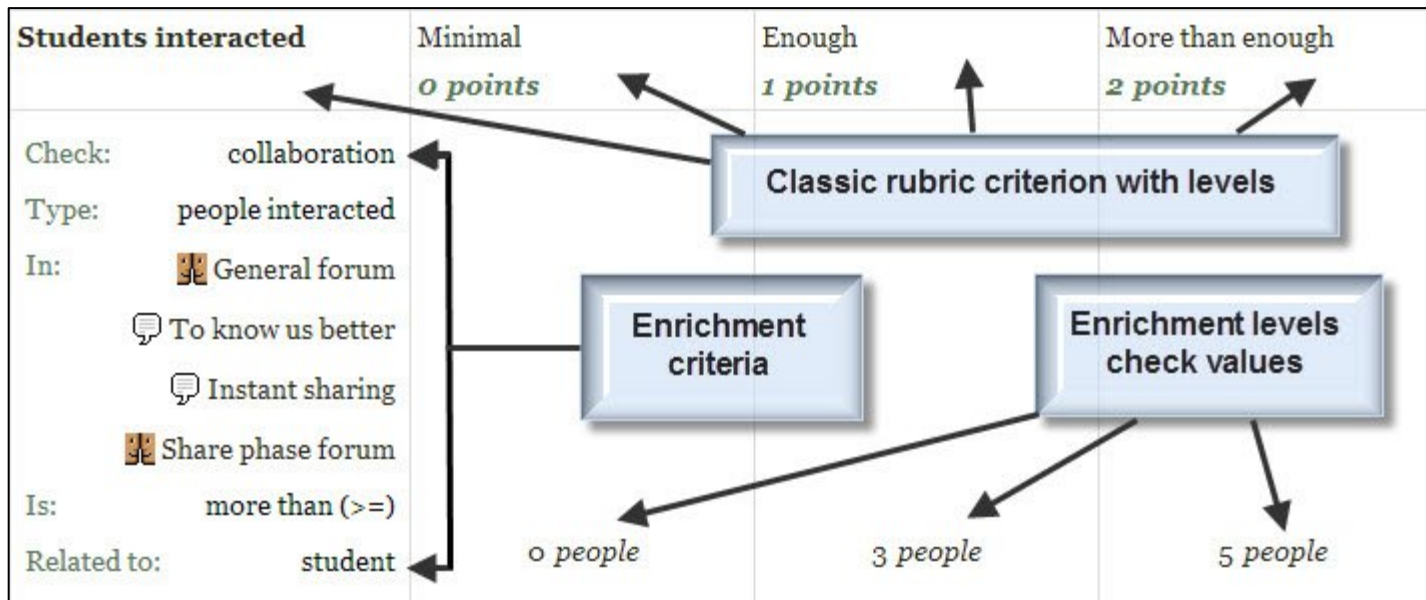
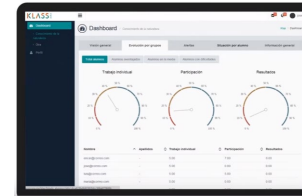
Learning Analytics

- We talk about predictive analytics as though finishing a course is the problem
- The real future is in the quantified self



<http://quantifiedself.com/>

- Predictive Analytics
- Recognition Tasks



Personalized Learning

- Rules-Based Events (like notifications)
- User Models
- Adaptive Learning

Recognition Networks
The "what" of learning



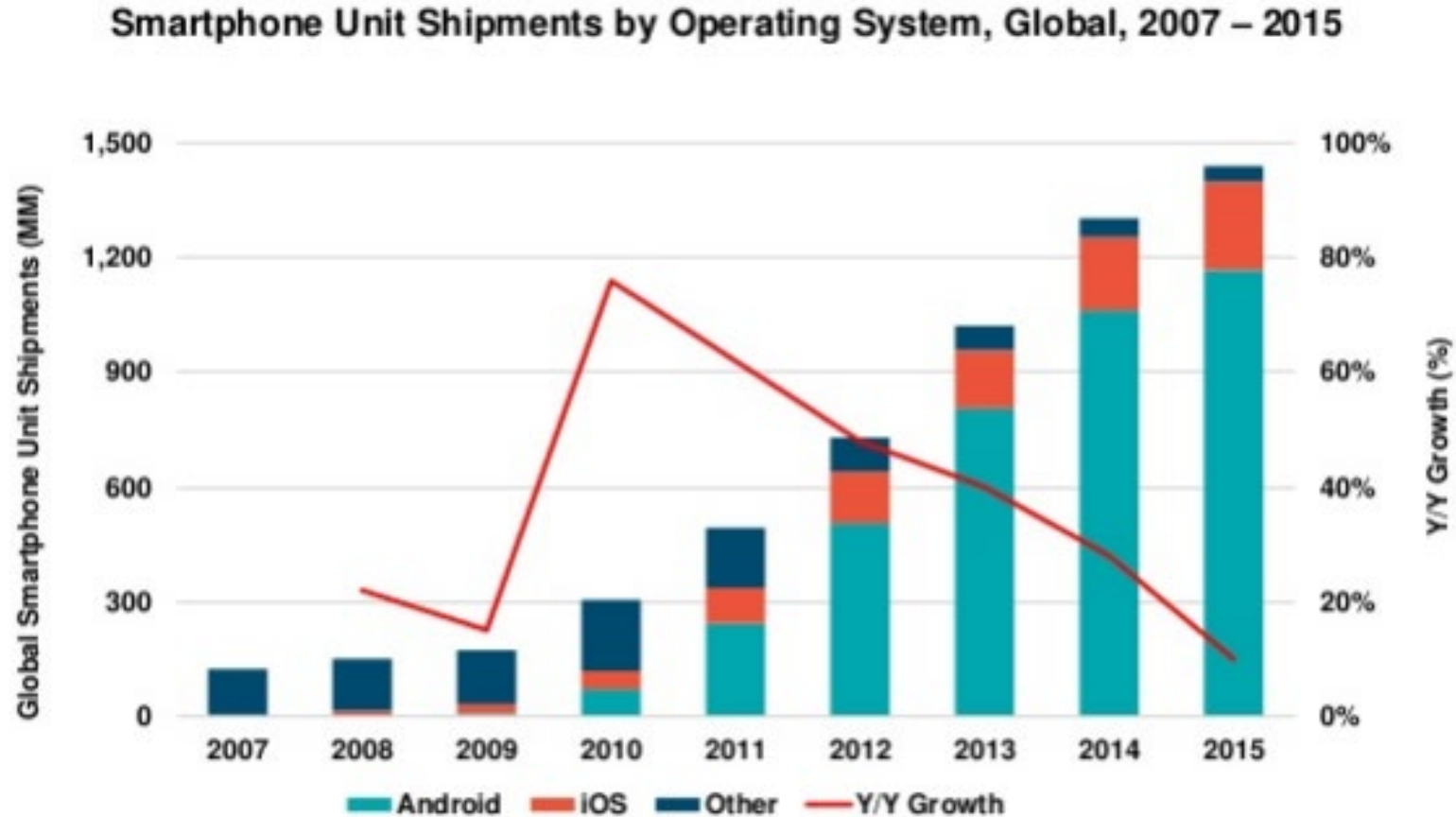
Strategic Networks
The "how" of learning



Affective Networks
The "why" of learning



2. Handheld and Mobile Computing



Performance Support

- The future of learning isn't the mobile phone
- It's in the *integrated* performance support system



PHOTO COURTESY B

<http://fortune.com/2014/05/27/a-tennis-racquet-that-isnt-just-strung-but-wired/>

3. Outcomes and Competencies

The screenshot shows a web interface for managing Learning Plans. On the left is a navigation sidebar with links for Home, Users, Fox McCloud, and Learning plans. The main content area is titled 'Learning Plans' and includes tabs for Active, Draft, and Completed. Below the tabs is a table with columns for Plan and Actions. The table lists 'First Year Medicine' and 'My Personal Plan', both with an 'Edit v' action. An 'Add learning plan' button is located below the table. A callout box points to the 'Edit v' action, listing options: Edit, Delete, Competencies, Request approval, and Review request. Below the Learning Plans section is the 'Evidence of Prior Learning' section, which contains a table with columns for Name, Summary, Linked competencies, and Actions. The table has one entry for 'RHCE' with a summary of 'Redhat Certified Engineer v3' and a link to a PDF. The 'Linked competencies' column shows '15' with a link. The 'Actions' column has an 'Edit v' action. An 'Add evidence' button is below the table. A callout box points to the 'Edit v' action, listing options: Edit, Delete, and Competencies. At the bottom, there are two buttons: 'Request learning plan approval' and 'Status of review', both with window control icons.

Home
Users
Fox McCloud

Learning plans

Learning Plans

Active Draft Completed

Plan	Actions
First Year Medicine	Edit v
My Personal Plan	Edit v

Add learning plan

Edit
Delete
Competencies
Request approval
Review request

Evidence of Prior Learning

Name	Summary	Linked competencies	Actions
RHCE	Redhat Certified Engineer v3 CERTV4_20150404.pdf www.redhat.com/verify/2324-234-2433-432-42	15	Edit v

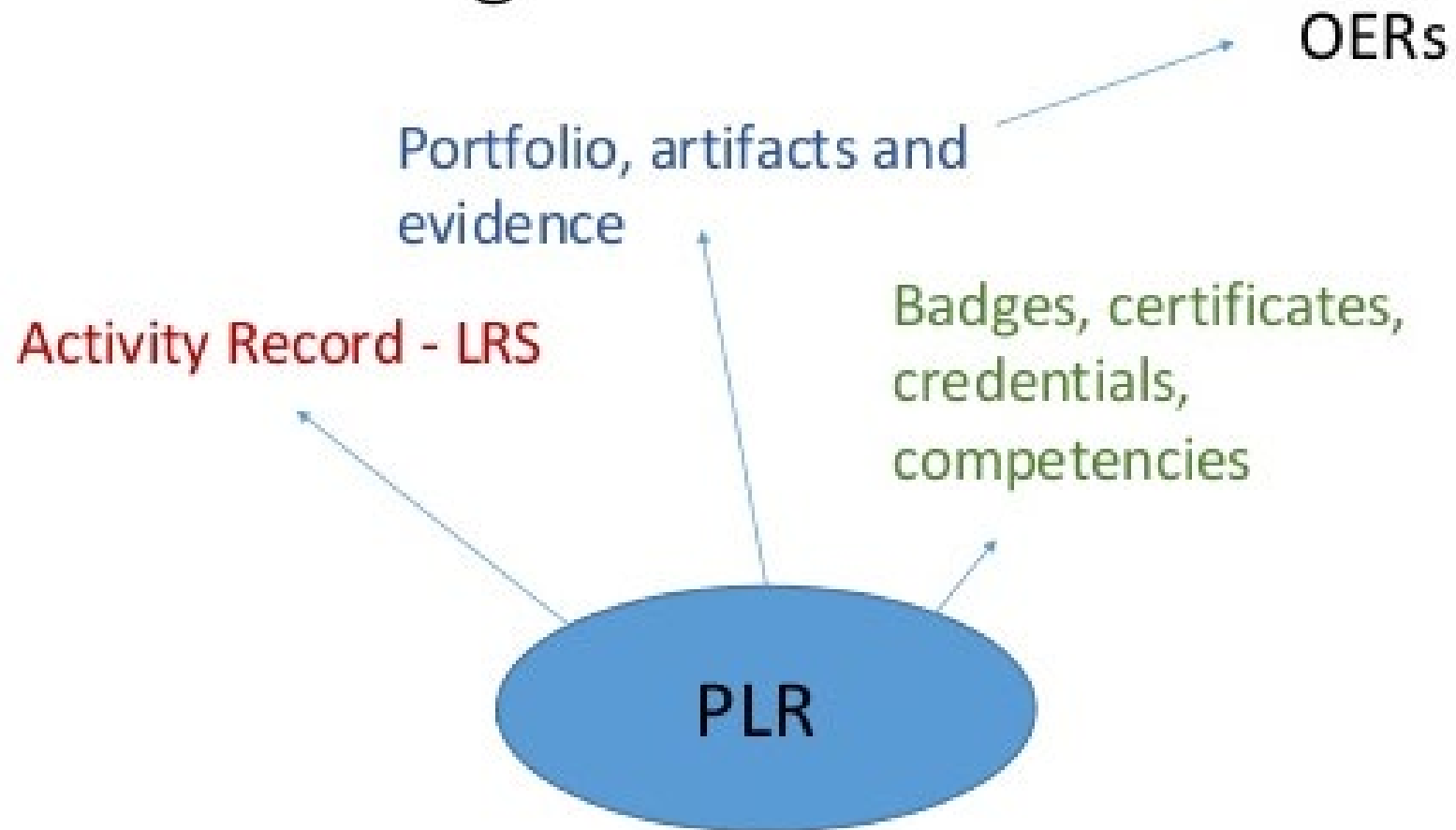
Add evidence

Edit
Delete
Competencies

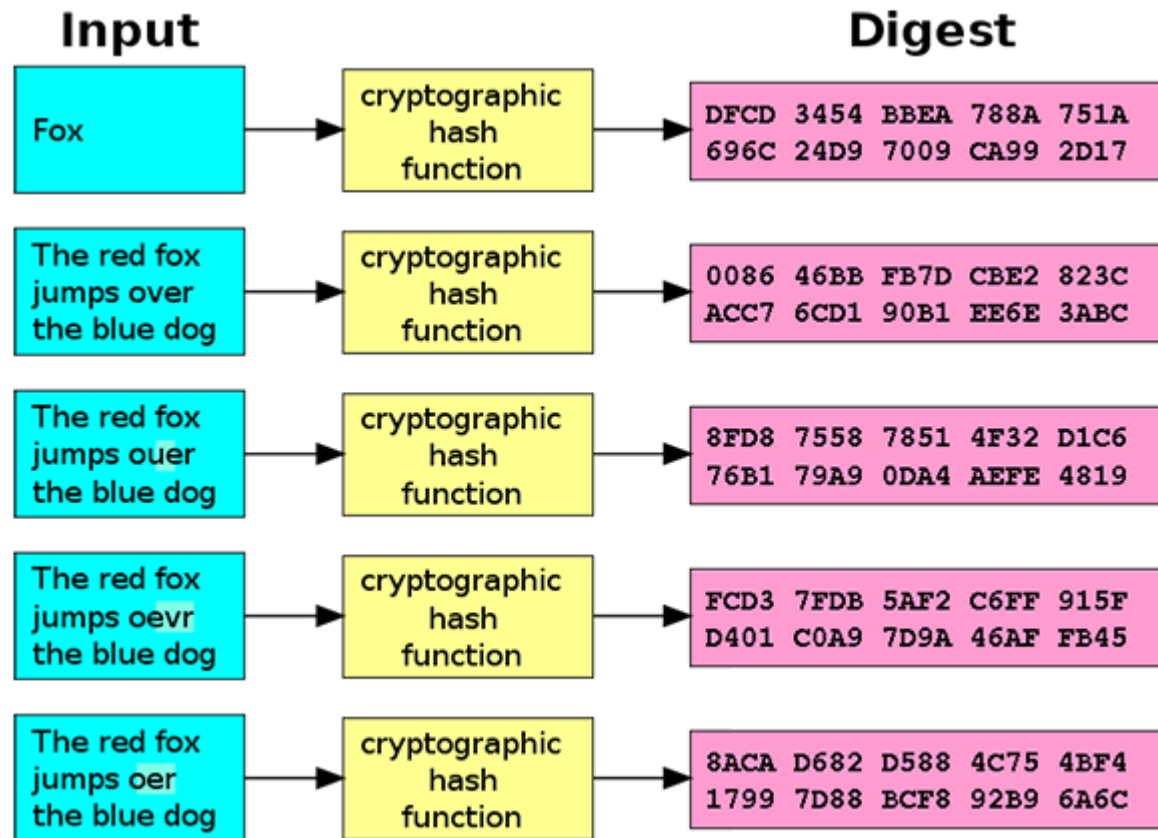
Request learning plan approval

Status of review

Personal Learning Records



Badges and Blockchain



Doug Belshaw:

"If we used the blockchain for Open Badges," he writes, "then we could prove beyond reasonable doubt that the person receiving badge Y is the same person who created evidence X."

<http://dmlcentral.net/blog/doug-belshaw/peering-deep-future-educational-credentialing>

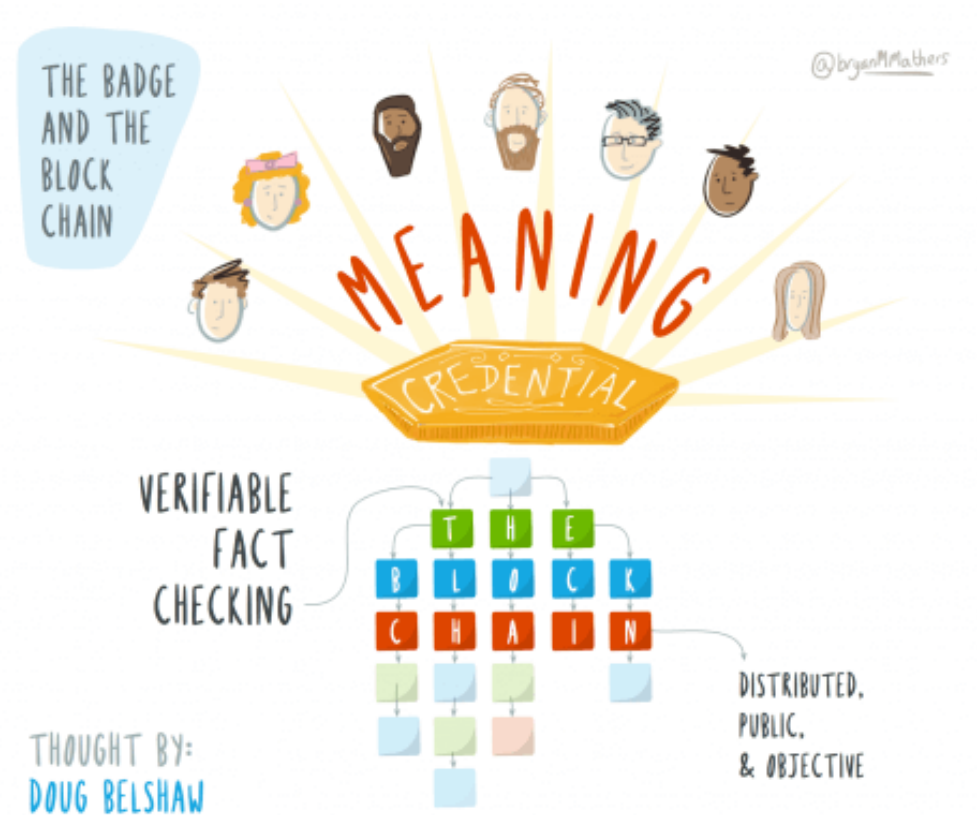
<http://www.downes.ca/search/blockchain>

Credentials

Sony plans to launch a testing platform powered by blockchain and that IBM plans to offer 'blockchain-as-a-service,''''

Audrey Watters

<http://hackeducation.com/2016/02/25/blockchain-edu1>

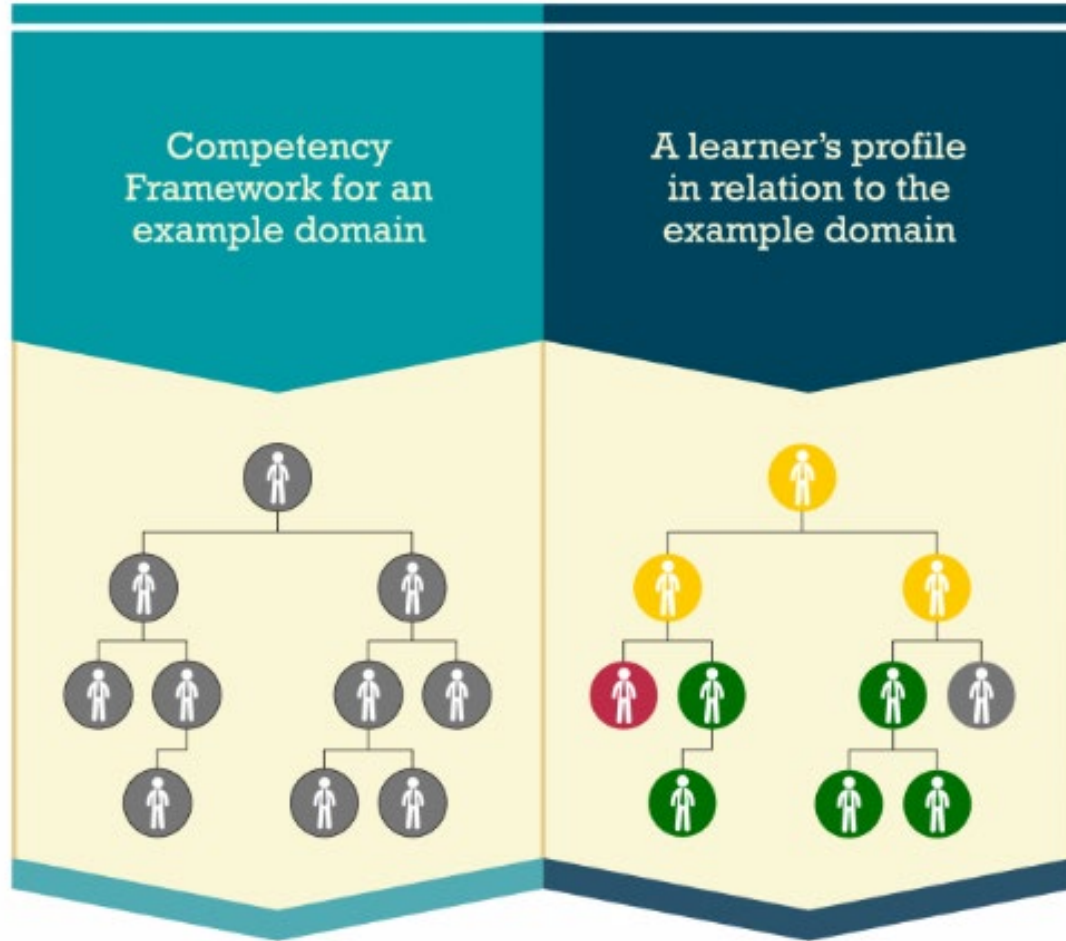


The Dao

- Ethereum is a decentralized platform that runs smart contracts <https://www.ethereum.org/>
- The Dao is a 'distributed corporation' that receives investments, chooses projects, and pays for their development; some of these projects return revenue to Dao and others don't.
<https://magazine.backfeed.cc/dao-alive-now-let-evolution-begin/>



CASS



Competency and Skills System

4. Internet of Things



What happens when companies know the state of all your devices?

<http://www.cbc.ca/news/canada/car-tracking-devices-spark-privacy-concerns-1.1366687>

5. Games, Sims and Virtual Reality

‘Gamification’ – adds game elements to learning

‘Serious Games’ – employs a game to facilitate learning



Oculus Rift

1. Freezers
2. Smilers
3. Grippers
4. Swayers
5. Screamers
6. Freak-outs

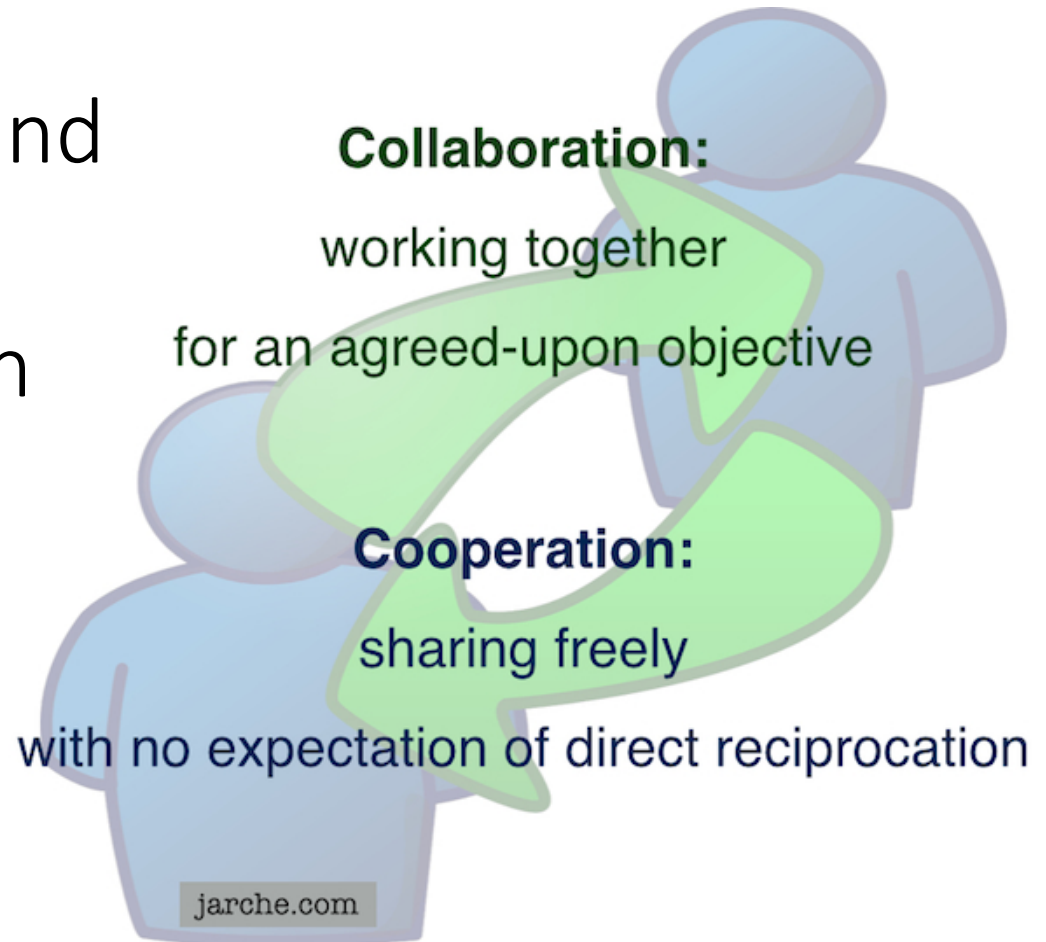


<http://donaldclarkplanb.blogspot.ca/2014/11/oculus-rift-freezers-smilers-grippers.html>

<http://www.downes.ca/search/oculus>

6. Translation and Collaborative Technology

- Communication is and will be everywhere
- But the future lies in cooperation, not collaboration

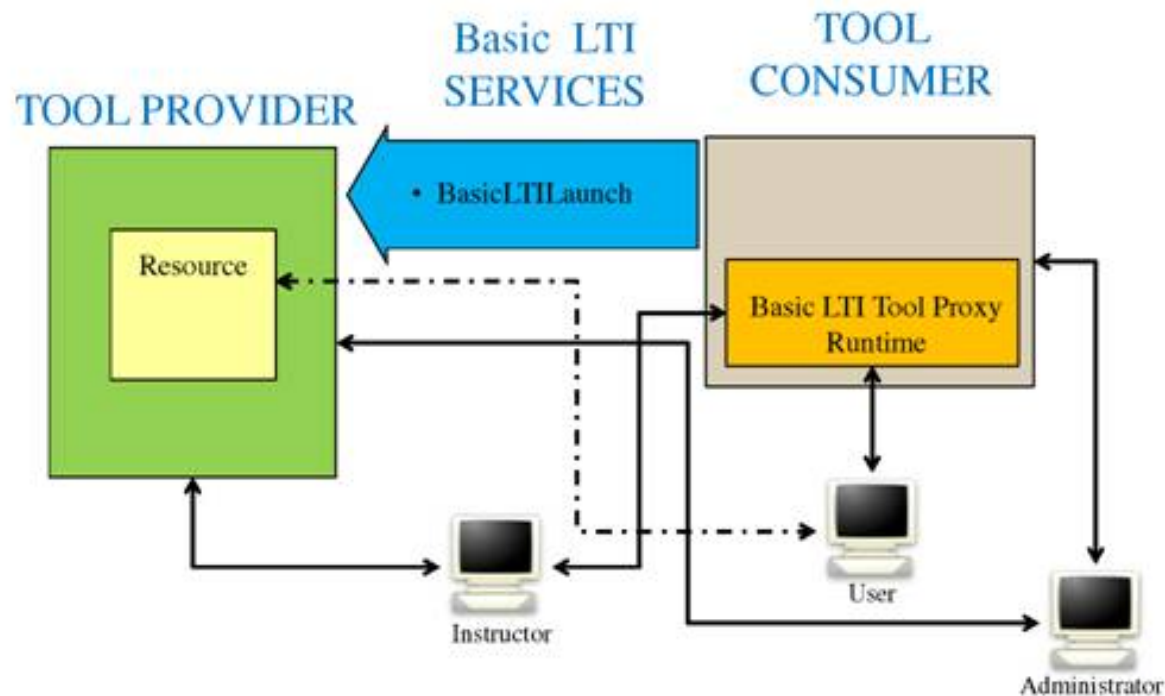


<https://cyber.law.harvard.edu/research/cooperation>

Image: <http://Jarche.com>

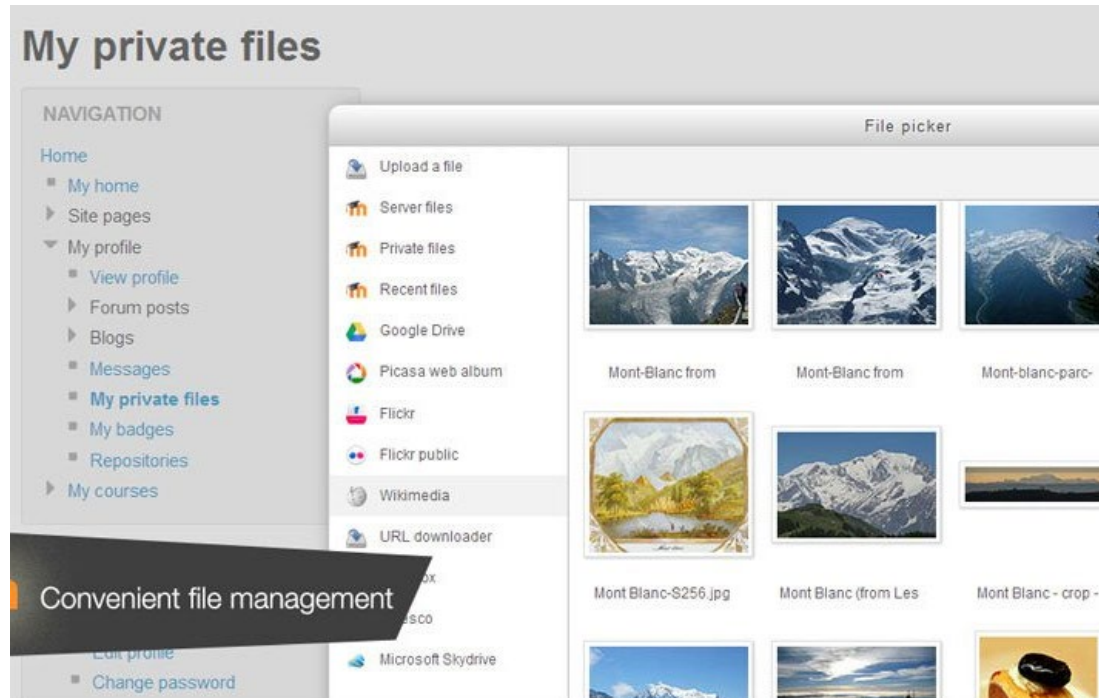
Learning Tools

- LTI Producer – provides features
- LTI Consumer – connects to features

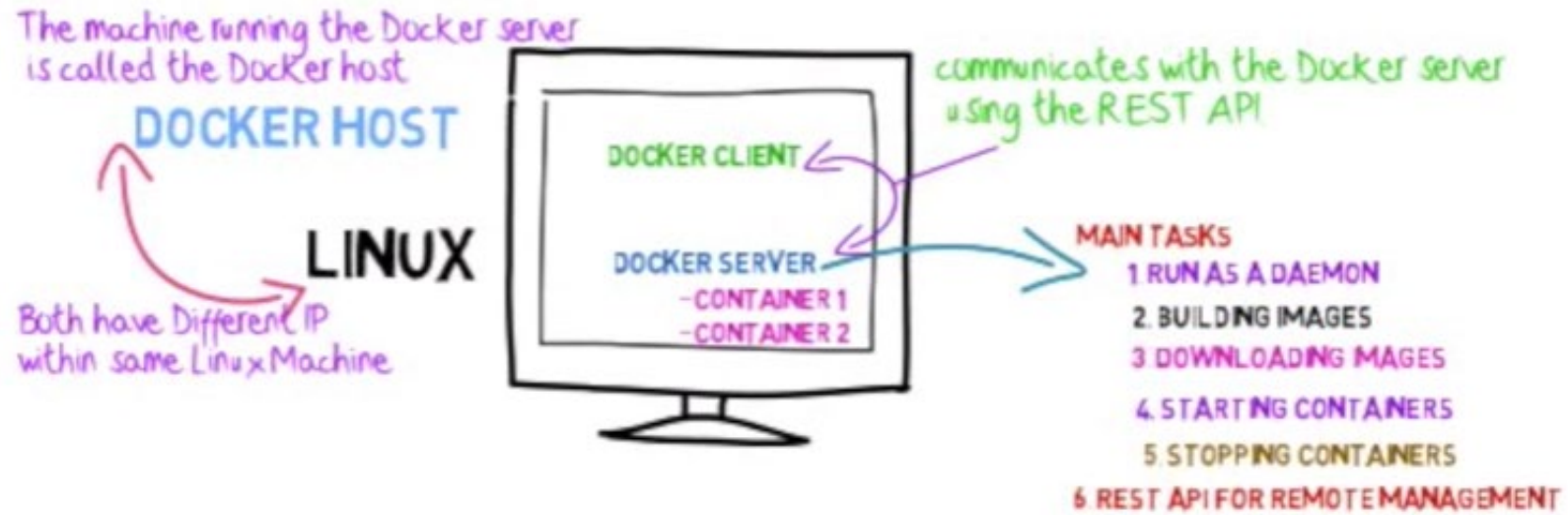
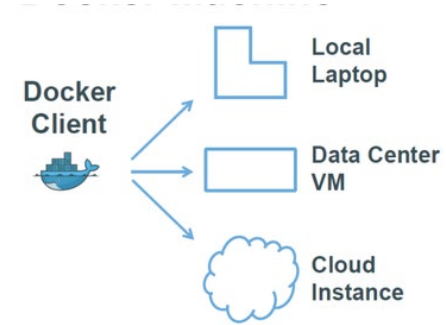


Cloud Storage

- Cloud hosting of Moodle
- File management



Docker



<http://www.tomsitpro.com/articles/docker-enterprise-hub-orchestration,1-2375.html>

- 6 groups
- One for each emerging technology

Each person

- Create your sentence:
 - From the perspective of your critical literacy
 - About the emerging technology

- 6 groups
- Randomized
- Using whatever method you deem appropriate, select one of the members' sentences

1. Results

1. Artificial intelligence will challenge our perspective of change in society.
2. Handheld and mobile computing are tools that will become assistants of life.
3. Blockchains make human beings measurable but don't take into account the subjects' dreams, fears, desires, ie, their actual humanity.
4. Cognition is left to machines so the only cognitive effort left to mankind is to remember where our iPhones are.
5. Games, sims and virtual reality: we could see it coming. Change was coming and it came. And we don't know where it will go from here.
6. Collaborative technologies increase the number of interactions but diminish their quality.

Reflections....

- Autonomy
- Diversity
- Openness
- Interactivity



<http://www.downes.ca>