Vision 2030: Redesigning Education for the Future
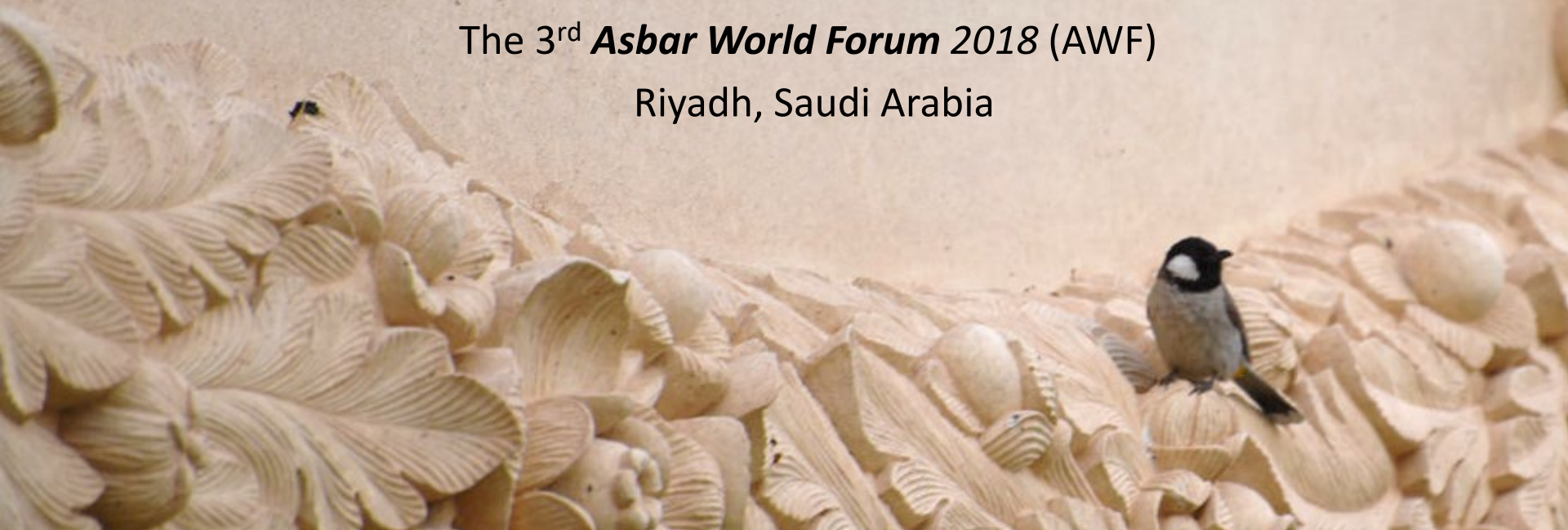
Stephen Downes, National Research Council Canada

presenting to

The 3rd *Asbar World Forum* *2018* (AWF)
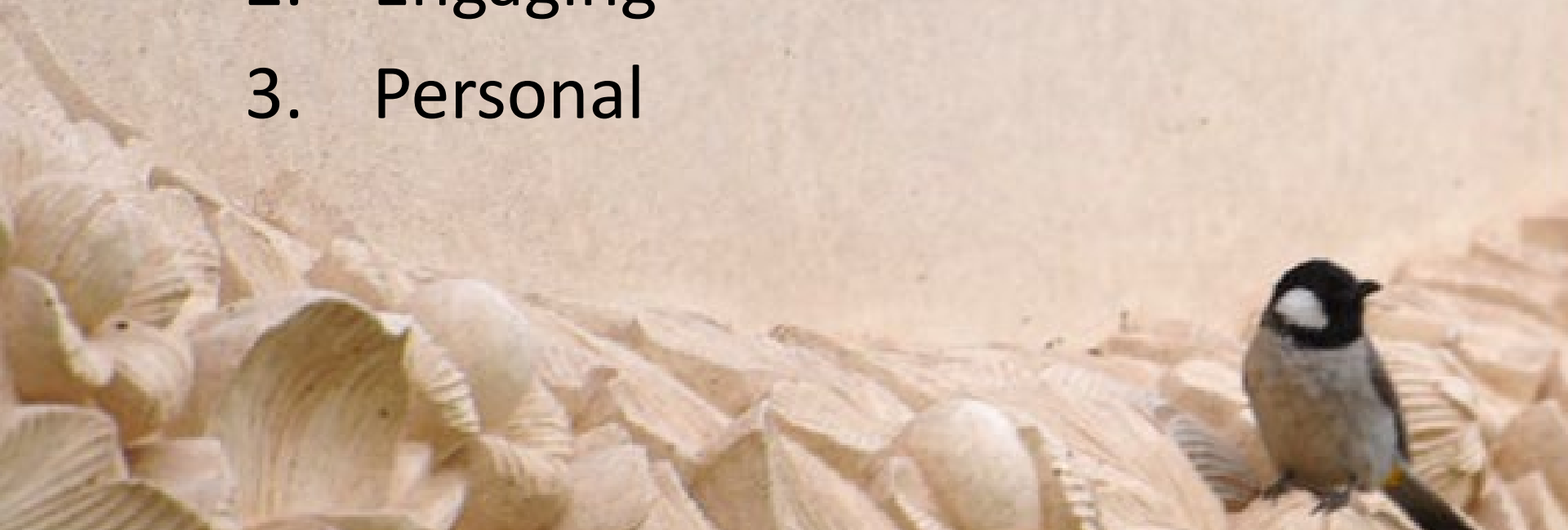
Riyadh, Saudi Arabia

A New Challenge

"With the automation of many of the functions employees currently perform, the emphasis will switch from answering simple queries to dealing with more complex problems that will require higher level of analysis, access to experts and greater autonomy."

Part One.
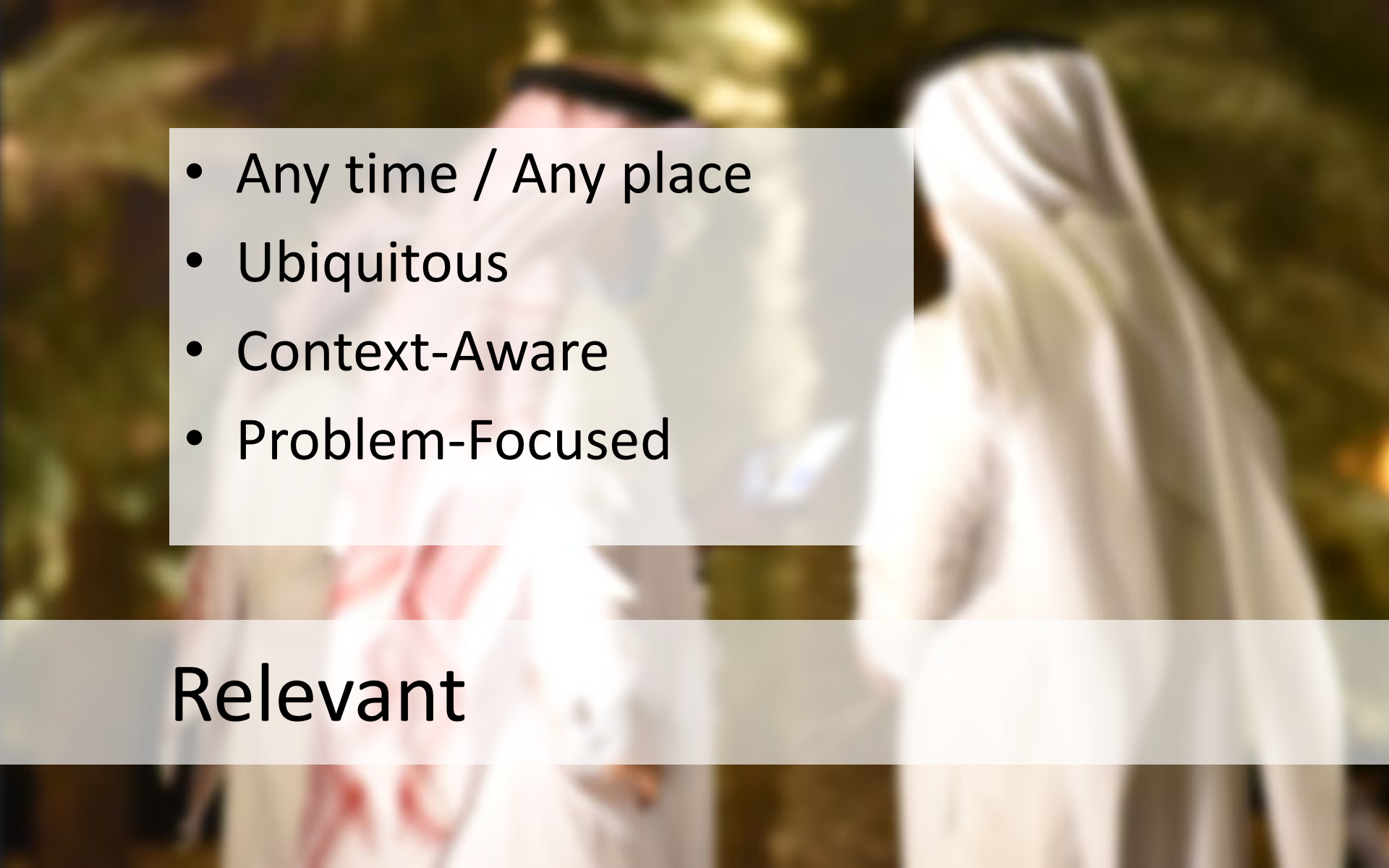# What Does Learning Become?

1. Relevant
2. Engaging
3. Personal

Relevant

- Any time / Any place

- Ubiquitous

- Context-Aware

- Problem-Focused

Relevant

Mobile Learning, Mobile Support

- *Access* - learning as you go, with different devices
- *Device* – smartphone only? Or tablets and laptops?
- *Location* - learners can learn outside their office
- *Design* - content specifically designed for mobile

Content Recommendations

Resource Recommendation
- Collaborative filtering
- Human cognitive modeling
- Content analysis
- Self-assessment
- Sensor & data analysis
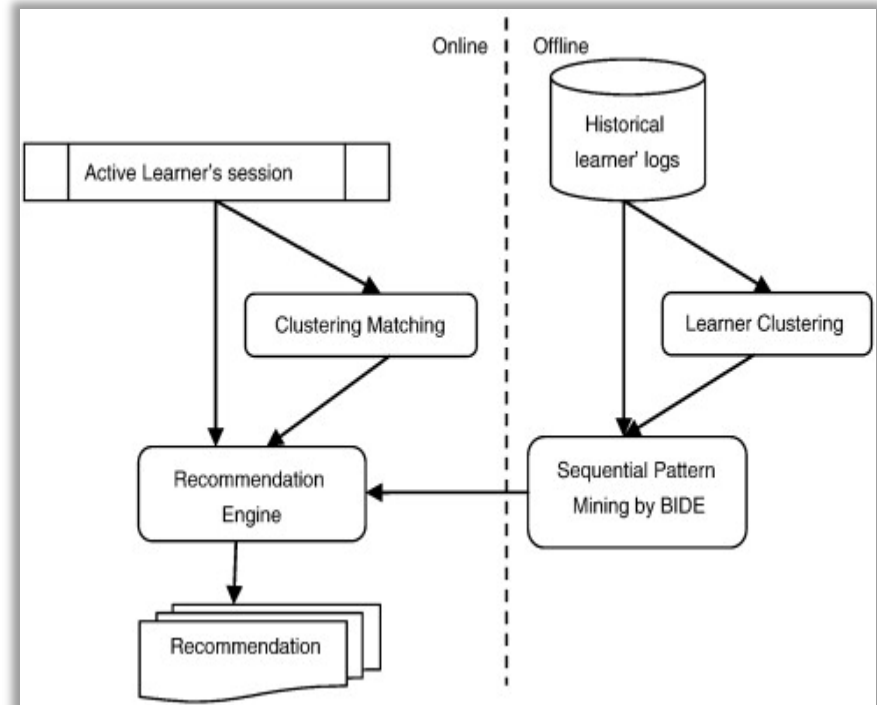
Engaging

- Engaging = Immersive + Wanted
- We have to *want* to be there
- And we have to *believe* that we're there

Engaging

Immersive

Slack, Airtable, Trello: what makes them good? Presence

- Social presence
- Cognitive presence
- Teaching presence
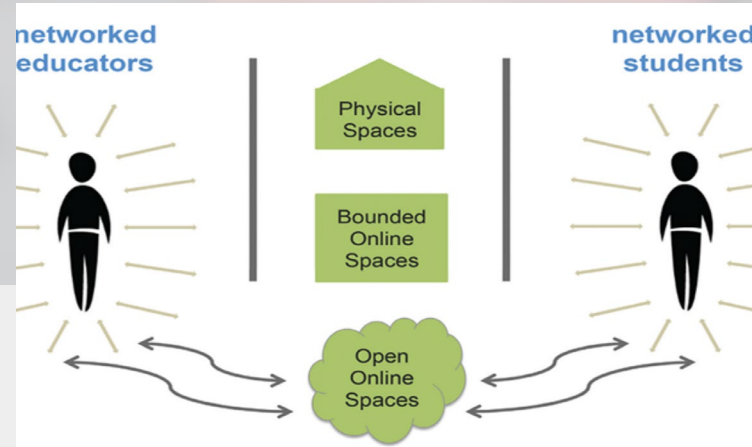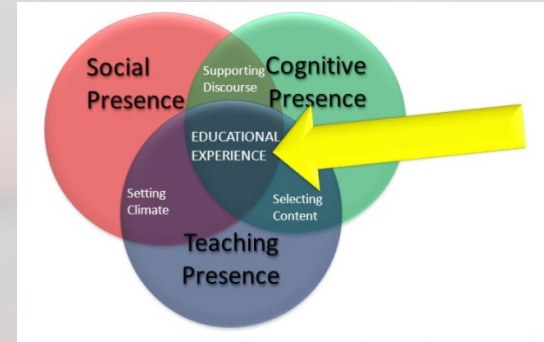
(Anderson, Archer, Garrison)

Engaging

https://pt.slideshare.net/AnantCorp/team-collaboration-slack-airtable-trello-what-makes-them-good-76384318

Presence

Presence is the idea that there is a person at the other end of the interaction... the presence of that person makes us believe, makes it matter

Engaging

1. A Model for Networked Education (*Credit:* Image by **Catherine Cronin** ⬀, buildin... **Networked Teacher** ⬀" by Alec Couros. **CC BY-SA**)

Affordances
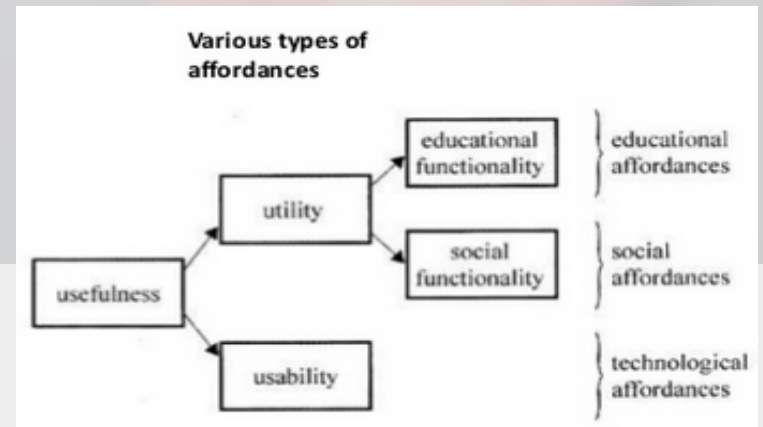
What does *wanted* make you think of…?

- personal, spontaneous, opportunistic
- informal, pervasive, situated
- private, context-aware
- bite-sized, and portable

Jari Laru - https://www.slideshare.net/larux/affordances-short-introductionlarulet2011

Engaging

Various types of affordances

Personal

- Competencies
- Support
- Iteration
- Opportunity

Personal

Competencies
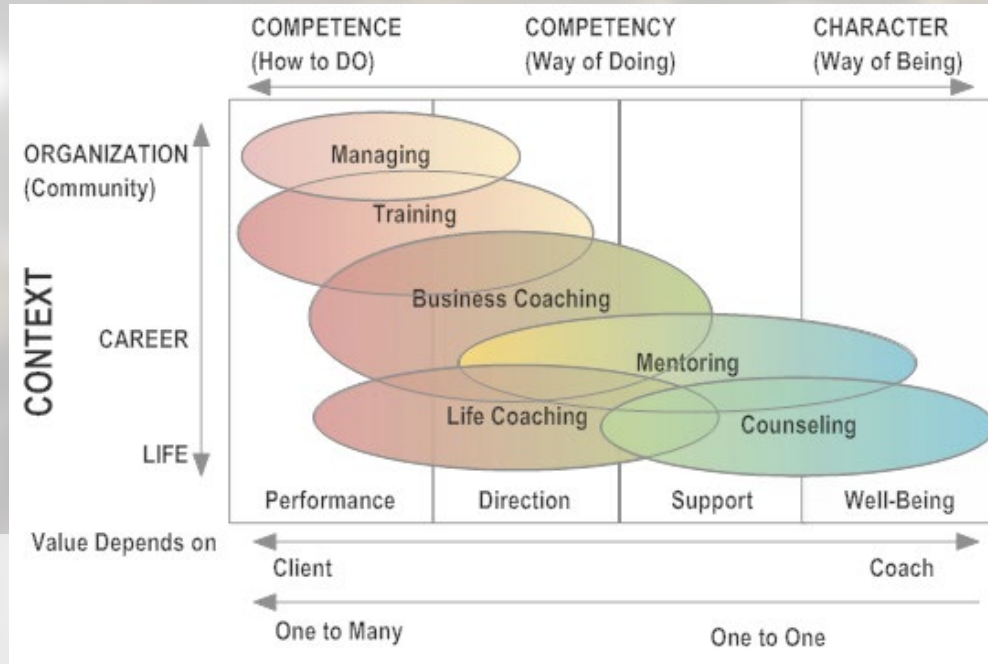
Personal

Support and Iteration

Personal

Personal Learning Plan

- Illuminate Education - data-based learning path
- FilterED Global Filter - specializes in rapid personal path creation
- MiCLUES - personal learning paths through museums and exhibits
- ItsLearning - learning platform
- Apereo OpenSSP - success plan

Chloe Murray -
https://prezi.com/9i69gkg75eqc/copy-of-chloe
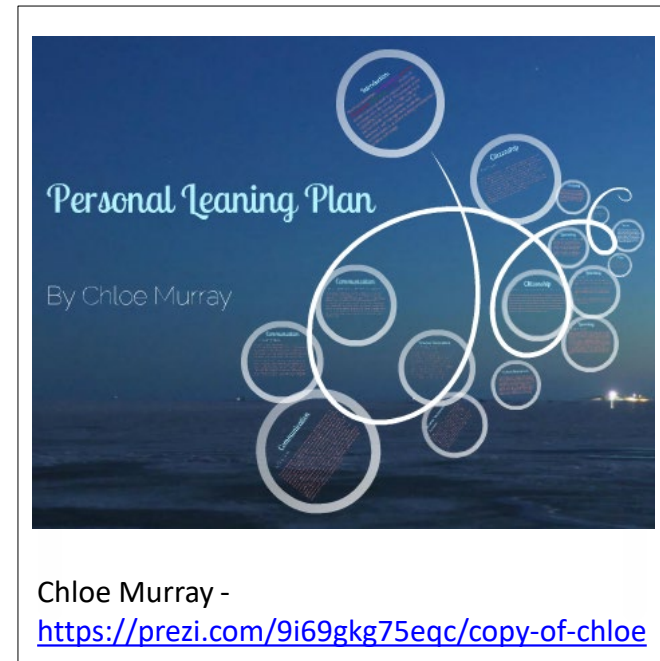
Practice vs Presentation
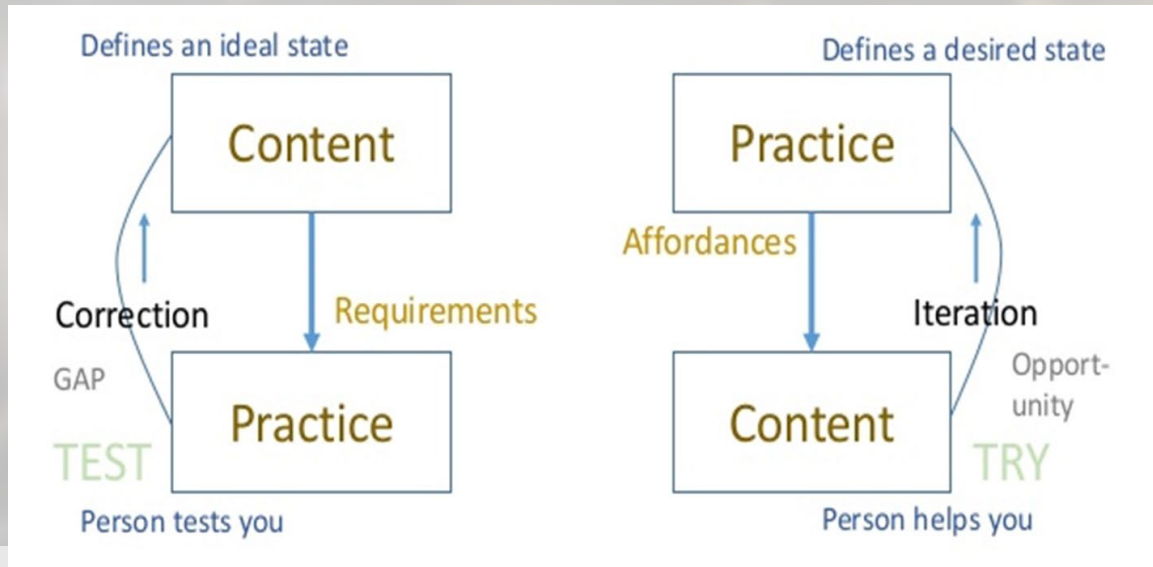
Don't tell me, show me:
- "show me how to think strategically"
- "show me how to reframe an issue"
- "show me how to deal with the ambiguity of the world right now"

Steve Lowenthal -
https://elearningindustry.com/bridging-the-learning-and-doing-gap-3-best-practices

Personal

Part Two.
How Do We provide That?

1. Learning Resources
2. Environments
3. Assessment

Learning Resources
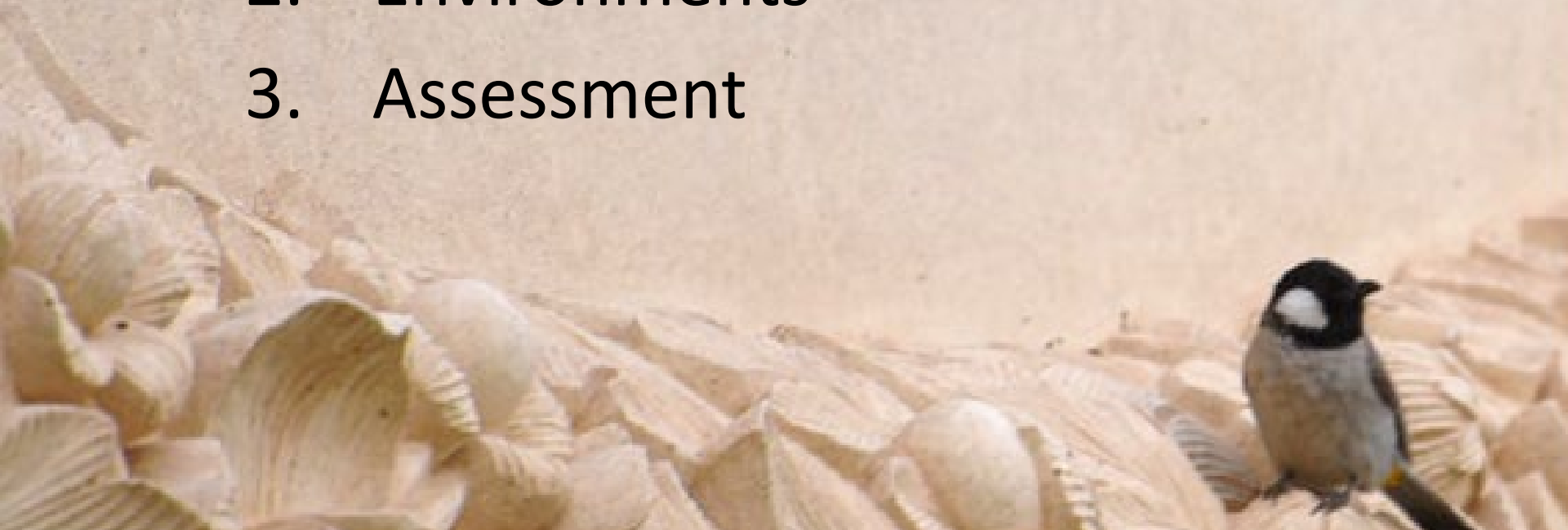
- Open Educational Resources

- Open Data and Data Books

- Personalized Learning Practices

- Performance Support

Learning Resources

Open Educational Resources

https://openstax.org/

https://ocw.mit.edu/

https://www.oercommons.org/
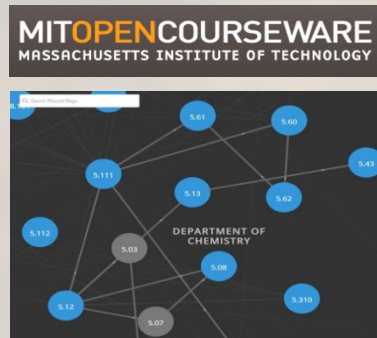
Learning Resources

Open Data and Data Books
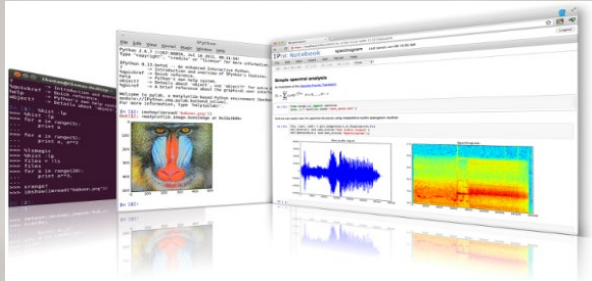
iPython is an interactive programming shell for the Python programming language
https://ipython.org/

The Jupyter Notebook is an open-source web application that allows you to create and share documents that contain live code… http://jupyter.org/

Learning Resources

Personalized Learning Practices

- Moving content broadcast out of the classroom
- Turn class time into contact time
- Providing tutoring
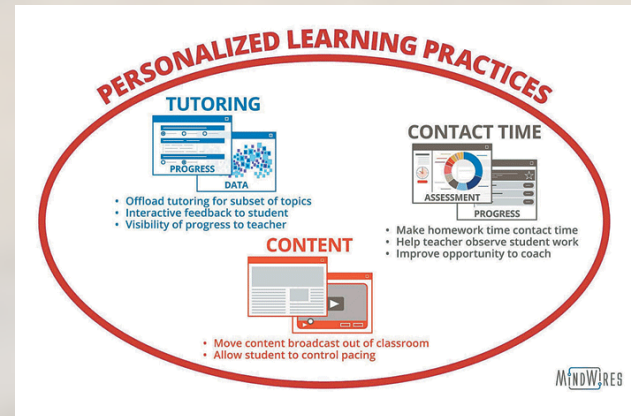
"…a delicate balance between student autonomy and instructor-led direction and scaffolding…"

Feldstein & Hill ([2016](#))

Learning Resources

Types of Student Inquiry
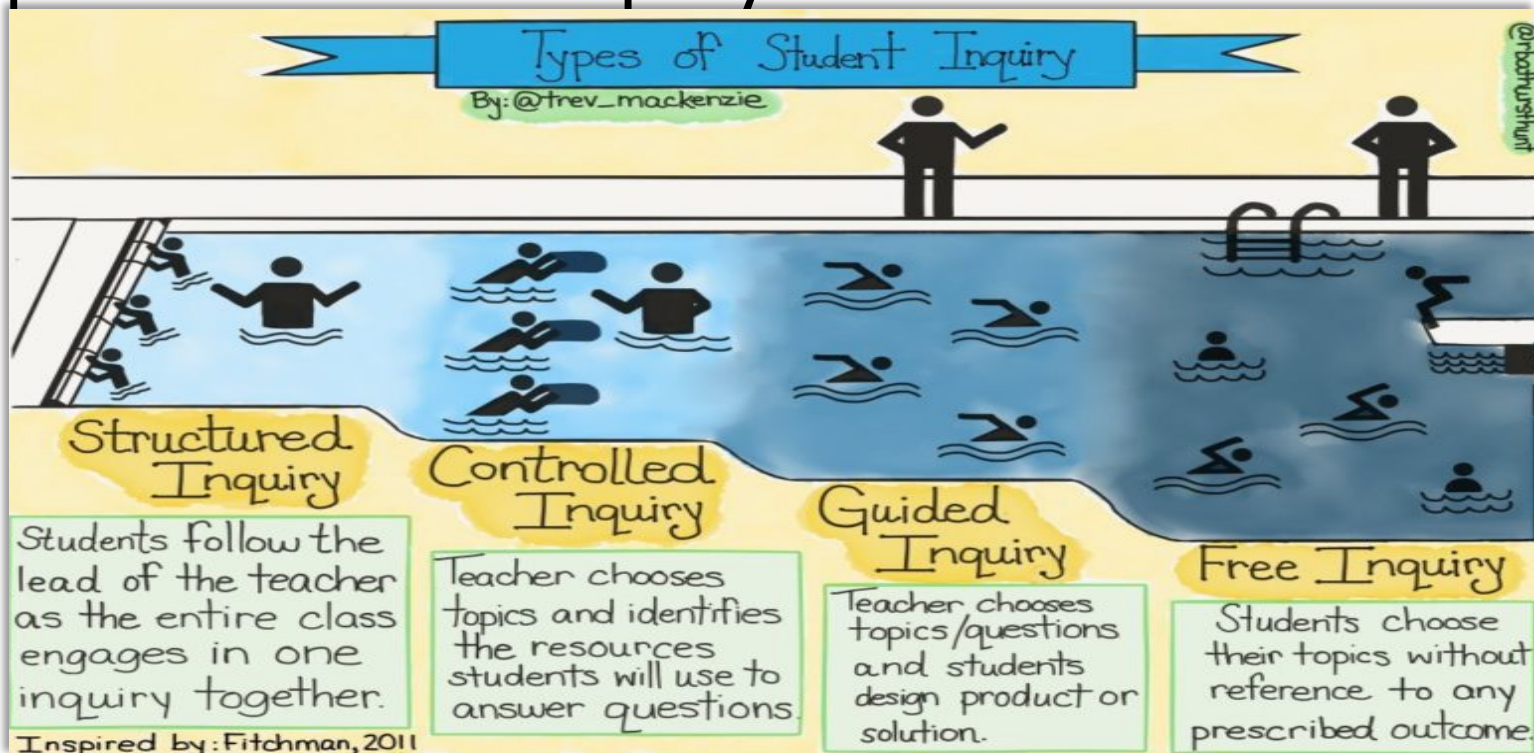
A range of approaches (after Dana Fichtman, Thomas & Boynton, 2011, *Inquiry: a districtwide approach to staff and student learning*) http://sk.sagepub.com/books/inquiry

Performance Support

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

Learning Resources

Environments

- Learning platforms
- Internet of Things
- Social Learning
- LTI, API and JSON
- Cloud Apps and Storage

Environments

Learning Platforms
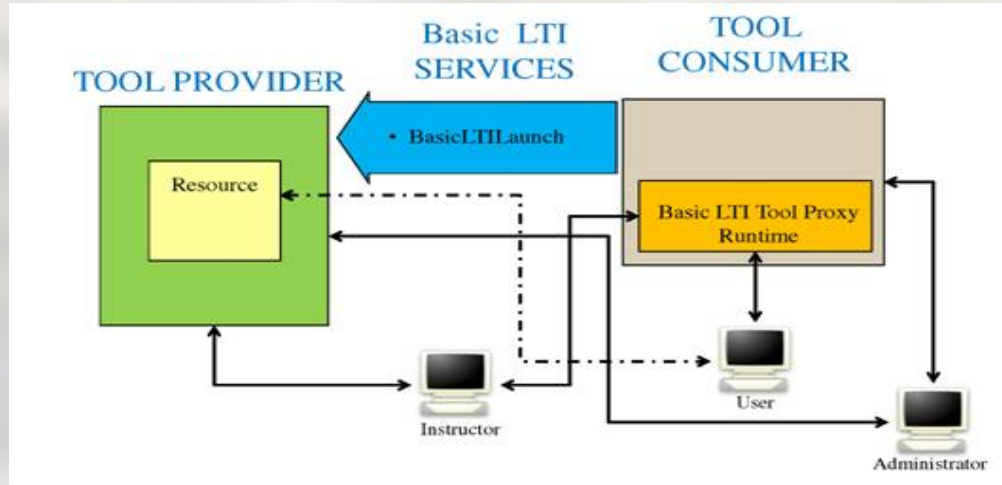
- LTI Producer – provides features

- LTI Consumer – connects to features

https://www.imsglobal.org/specs/ltiv1p0/implementation-guide

Environments

Learning Platforms

- Saba learning management system (LMS)

- Drupal 7 content management system (CMS)

- Moodle LMS

- Kaltura OVP

- CSPS service bus

Self-Paced Online: Take interactive online courses at your own pace

Online Resources: Explore additional multimedia references and features such as videos, blogs and readings

Classroom: Gain insight from expert facilitators from the public, private and academic sectors—as well as your peers

Virtual Classroom: Access learning from the convenience of your own workstation with all the benefits of an instructor's guidance

Mobile Learning: Use your mobile device to make learning even more flexible and accessible

Events, Workshops, Webcasts, Webinars: Attend timely special events on the topics that matter to the public service

Performance Support / Job Aids: Access easy-to-use tools that help you carry out your everyday responsibilities

Crowd / Social Learning: Learn from your peers across the public service through interactive venues like blogs and forums

CSPS GCCAMPUS

Internet of Things

https://www.pcgamesn.com/grand-theft-auto-v/the-best-grand-theft-auto-v-mods

MagicBand. It's a bracelet Disney hands out (story on Gizmodo)
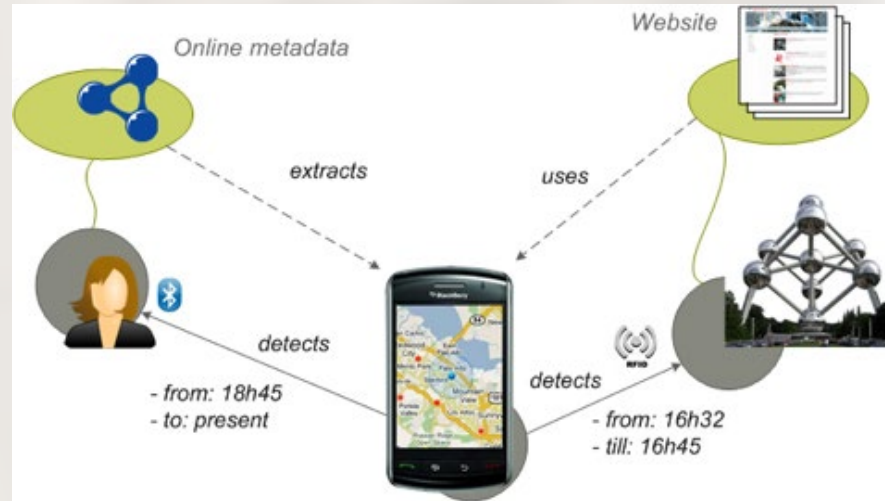
WISE Research Group, 2012 - https://wise.vub.ac.be/project/context-aware-mobile-application-development
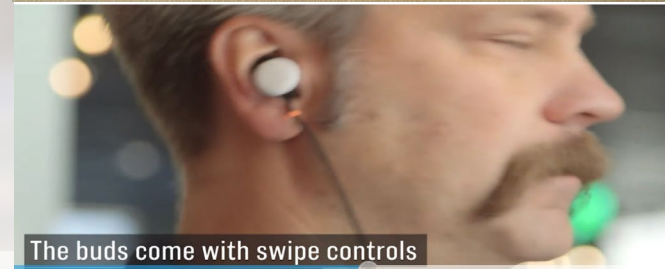
Social Learning

- Based on interaction from difference perspectives

- Ranges from collaborative to cooperative to competitive learning

- Open networks, open standards
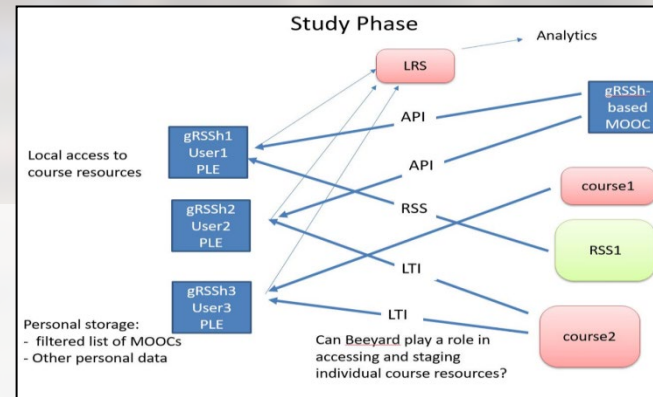
Environments

The buds come with swipe controls

https://www.cnbc.com/2017/10/04/google-translation-earbuds-google-pixel-buds-launched.html

LTI / API / JSON

- Learning Tools Interoperability

- Application Programming Interface

- JavaScript Object Notation and Linked Data

Environments
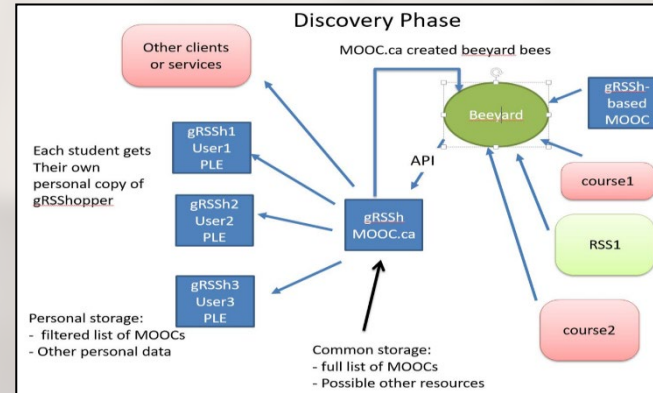
Resource Integration

- Linkage - to other systems

- Single signon - to all services

- Common Services – Listed among other services

- Extending the bus – data and user information exchange

- Learning Tools Interoperability

- Full enterprise integration

CANADA SCHOOL OF PUBLIC SERVICE

Cloud Applications and Storage

Universities are now deploying using Docker Containers managed by Kubernetes on AWS or Digital Ocean
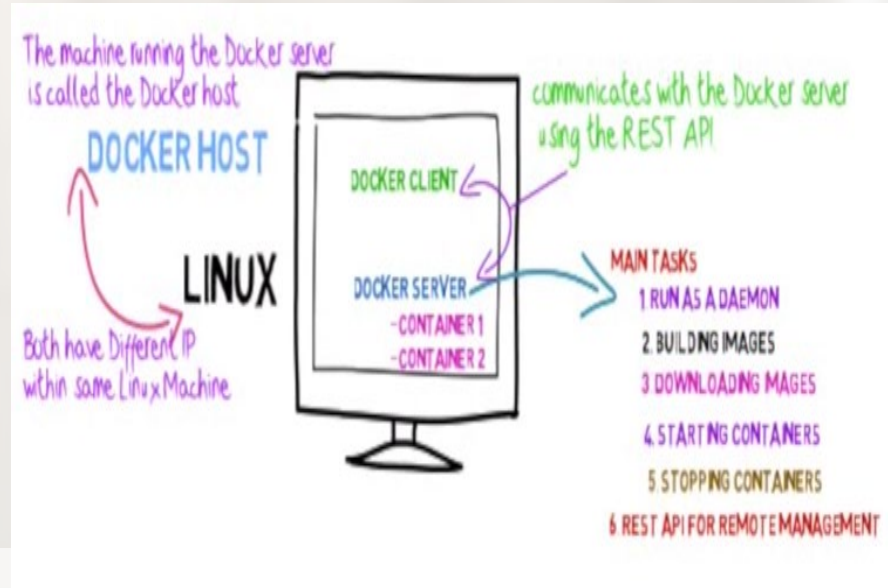
Environments

Assessment

- Competencies and Skills

- Learning records

- Quantified Self / Dashboards

- Feed Forward

Assessment

Competencies and Skills

Learning Plan

Automated Assessment
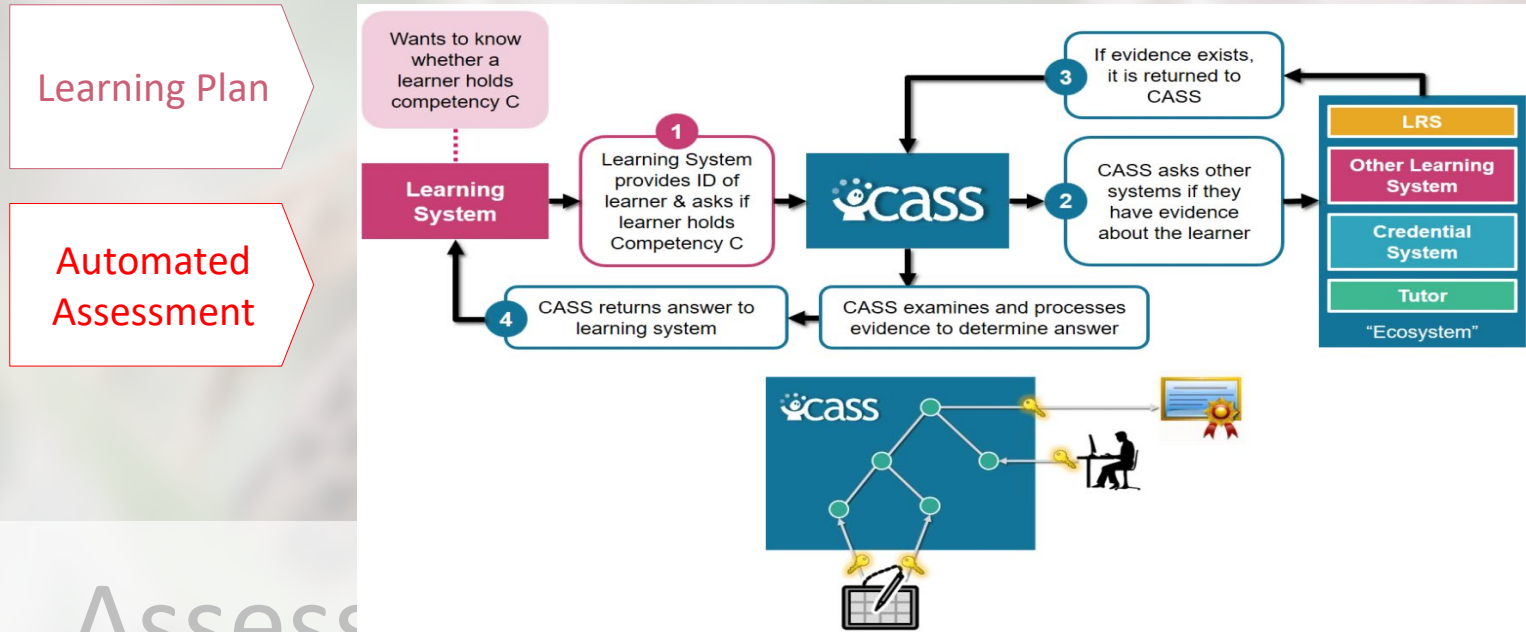
Assessment

Competencies and Skills System (CASS)

- Workforce Planning
- Recruiting and Onboarding
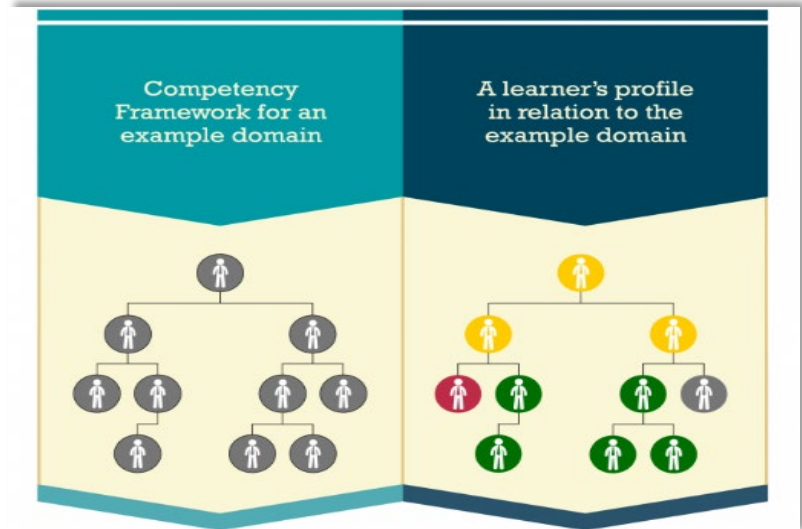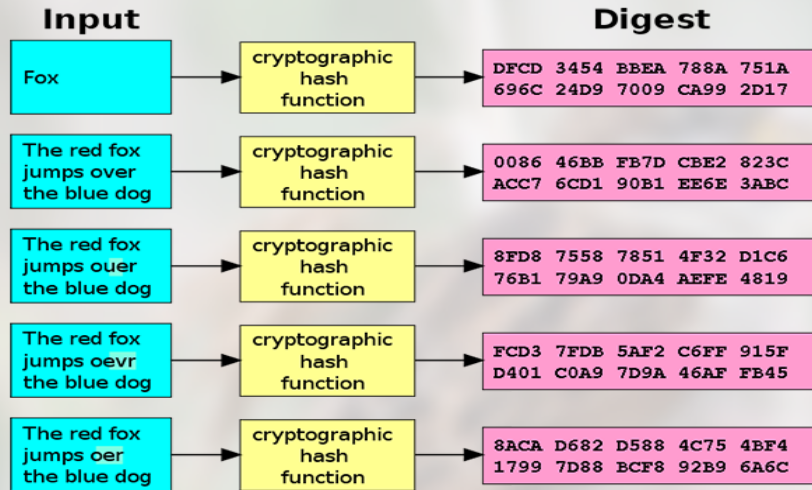- Performance and Goal Management
- Learning Management
- Career and Succession Planning
- Compensation Management

Advanced Distributed Learning (ADL)
https://www.adlnet.gov/introducing-the-next-big-thing-cass/

Learning Records

Input		Digest
Fox	cryptographic hash function	DFCD 3454 BBEA 788A 751A 696C 24D9 7009 CA99 2D17
The red fox jumps over the blue dog	cryptographic hash function	0086 46BB FB7D CBE2 823C ACC7 6CD1 90B1 EE6E 3ABC
The red fox jumps ouer the blue dog	cryptographic hash function	8FD8 7558 7851 4F32 D1C6 76B1 79A9 0DA4 AEFE 4819
The red fox jumps oevr the blue dog	cryptographic hash function	FCD3 7FDB 5AF2 C6FF 915F D401 C0A9 7D9A 46AF FB45
The red fox jumps oer the blue dog	cryptographic hash function	8ACA D682 D588 4C75 4BF4 1799 7D88 BCF8 92B9 6A6C

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.

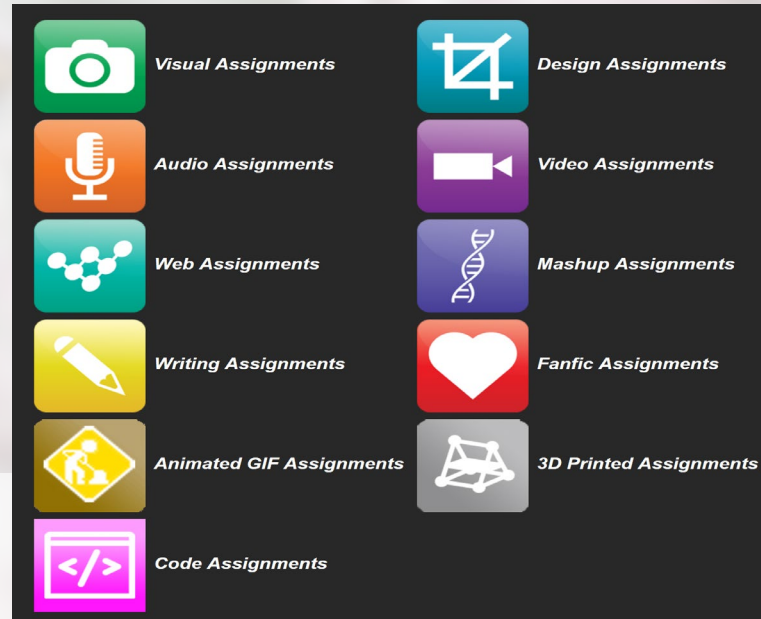http://dmlcentral.net/blog/doug-belshaw/peering-deep-future-educational-credentialing

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

Assessment

Quantified Self

Assessment

Siemens and Long
https://er.educause.edu/articles/2011/9/penetrating-the-fog-analytics-in-learning-and-education

Feed Forward and Share

- Course commentary
- User-generated content
- External content
- Content curation
- Collaborative learning

OERs are now widely available through subject-specific libraries with provisions forauthoring as well

Visual Assignments	Design Assignments
Audio Assignments	Video Assignments
Web Assignments	Mashup Assignments
Writing Assignments	Fanfic Assignments
Animated GIF Assignments	3D Printed Assignments
Code Assignments	

DS106 assignment bank http://assignments.ds106.us/

Assessment

http://www.downes.ca