Beyond Instructional Design: Open Spaces and Learning Places

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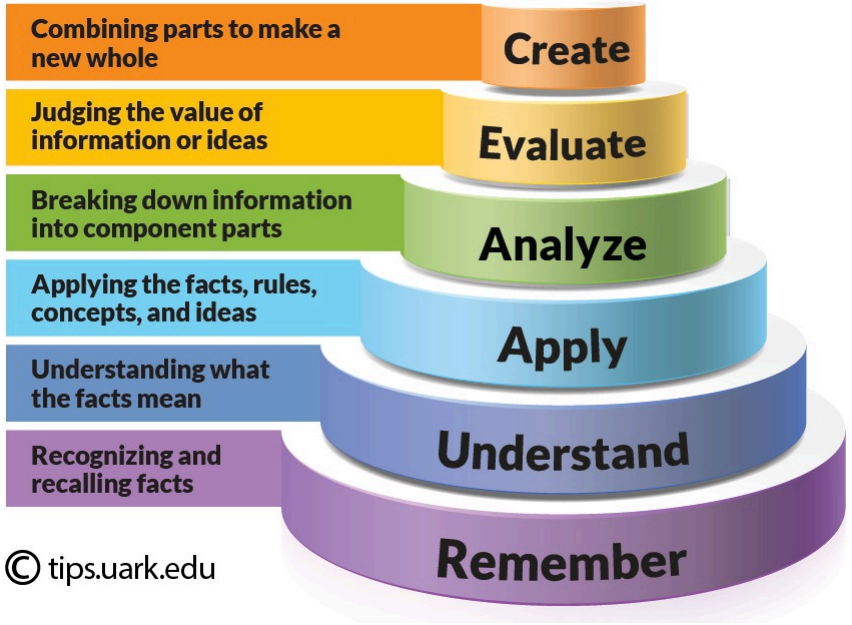
What is Instructional Design Anyway?

- “The practice of creating instructional experiences which make the acquisition of knowledge and skill more efficient, effective, and appealing.”
- The process, in general:
  - determining the current state and needs of the learner,
  - defining the end goal of instruction,
  - and creating some "intervention" to assist in the transition.

Yes, I cited Wikipedia:
https://en.wikipedia.org/wiki/Instructional_design

Some Core Concepts

- Taxonomies and types of learning
  - The role of learning objectives (aka outcomes)
  - Types of outcomes, for example, Bloom's Taxonomy

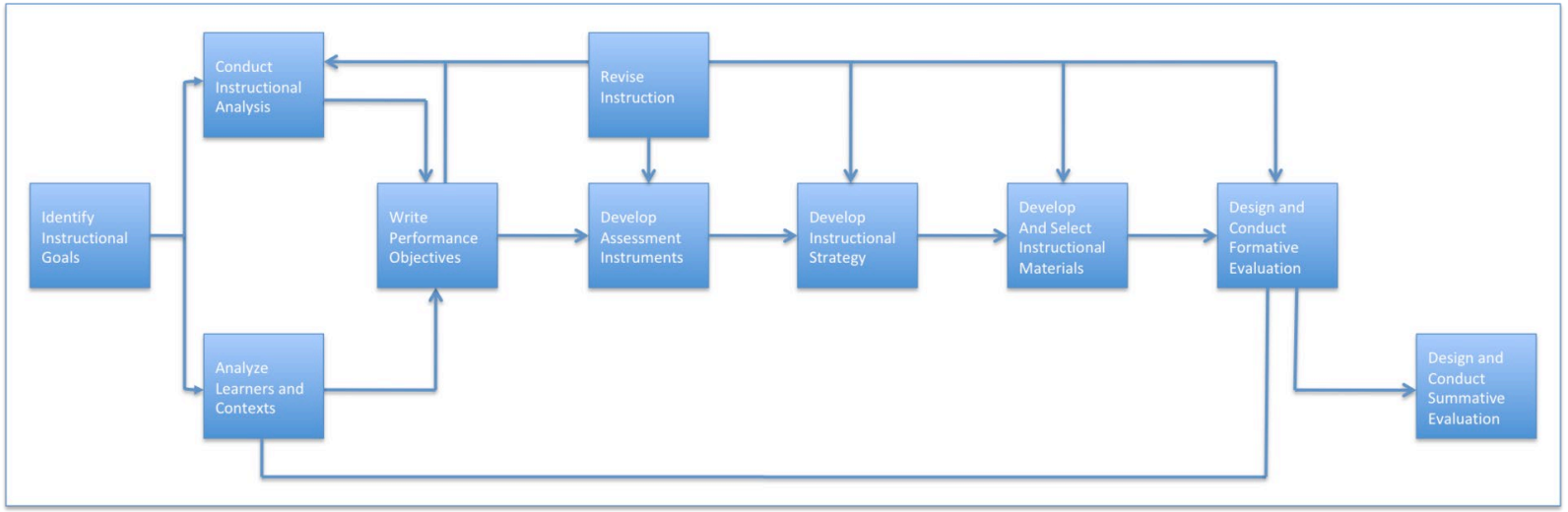


Yes, I'm still citing Wikipedia: https://en.wikipedia.org/wiki/Instructional_design

Image: http://tips.uark.edu/using-blooms-taxonomy/

Some Core Concepts

- The ‘process’ of learning – learning step-by-step
  - For example, Gagne’s nine events
  - Pre-requisites – “ learners acquire prerequisite skills before attempting superordinate’s ones”



Yes, I’m still citing Wikipedia:

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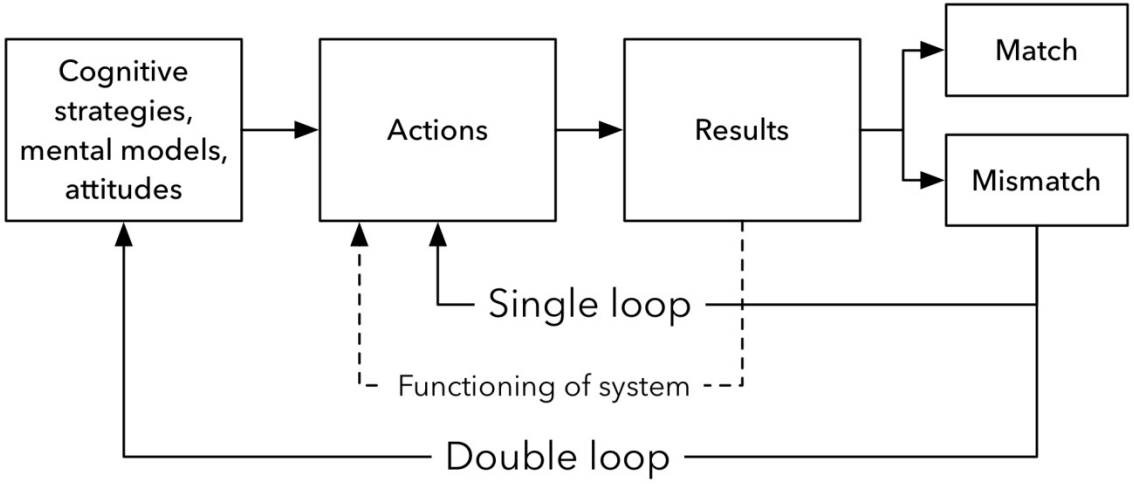
More Core Concepts

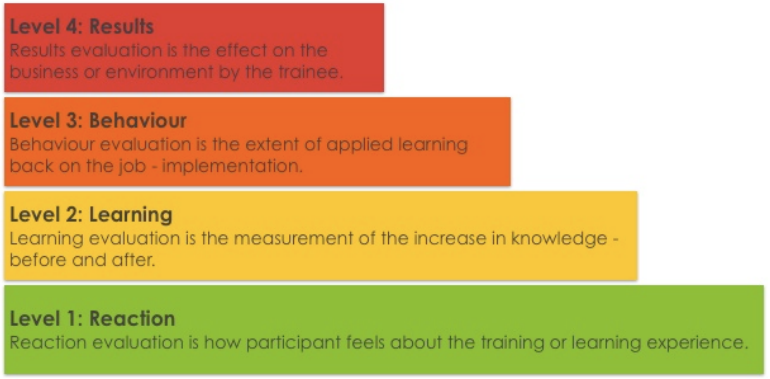
- Instructional design process
  - ADDIE - analysis, design, development, implementation, and evaluation
  - Double Loop – learners' performance informs the design of the instructional process



ADDIE: http://educationaltechnology.net/the-addie-model-instructional-design/
Double Loop from Argyris et al. 1985; see http://infed.org/mobi/chris-argyris-theories-of-action-double-loop-learning-and-organizational-learning/

More Core Concepts

- Transactional distance
  - M.G. Moore - “a psychological and communication space to be crossed, a space of potential misunderstanding between the inputs of instructor and those of the learner”.
  - Shaped by dialogue or interaction, structure of instruction
- Assessment and Evaluation
  - Formative vs Summative assessment
  - Learning design assessment – Kirkpatrick’s scale

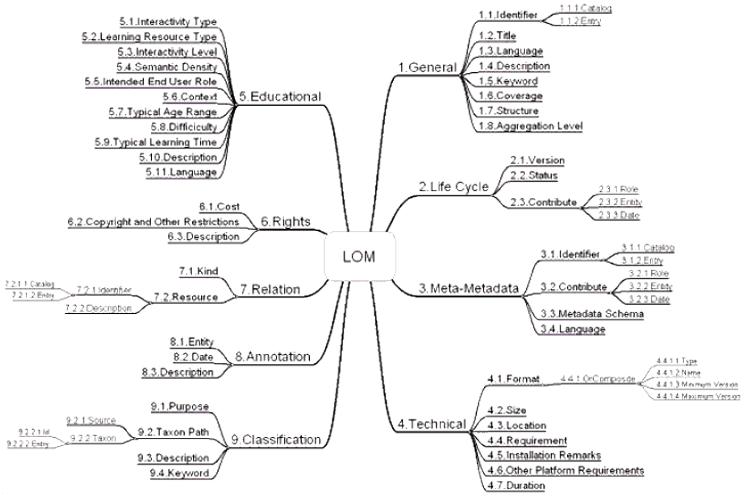


Kirkpatrick's 4 Level Evaluation Model

Moore: http://www.c3l.uni-oldenburg.de/cde/support/readings/moore93.pdf
Kirkpatrick: http://www.kirkpatrickpartners.com/OurPhilosophy/TheKirkpatrickModel
Image: https://www.td.org/Publications/Blogs/Healthcare-Blog/2015/01/Measuring-Training-Success-in-Healthcare

Some Contemporary Technologies

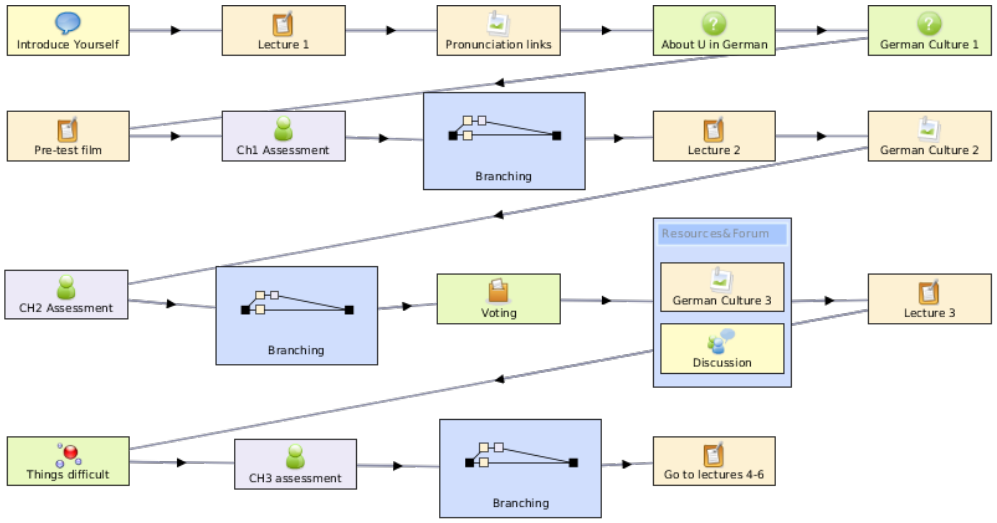
- Learning Management Systems (LMS)
  - Support the ‘intervention’ in the form of learning materials, quizzes and tests, interactions
- Learning Content Management System (LCMS)
  - Supports the creation of learning materials
  - Contents organized by taxonomies
    - For example, IMS Learning Object Metadata, Content Packaging



IMS LOM:
https://www.imsglobal.org/metadata/index.html

More Contemporary Technologies

- Content Sequencing
  - Ordering learning contents in the desired sequence
  - Evolved into IMS 'Learning Design'
    - Based on Rob Koper's "Educational Modeling Language'
  - Learning Activity Management System (LAMS) and other ID tools



IMS Learning Design: http://www.imsglobal.org/learningdesign/index.html
LAMS: https://www.lamsfoundation.org/ LAMS Image: http://www.mychrisalexander.com/lamslearningdesigns.htm

Still More Contemporary Technologies

- Adaptive Learning
  - Orchestrates the provisioning of learning resources according to the individual needs of each learner
  - Elements or Models:
    - Expert model - The model with the information which is to be taught
    - Student model - The model which tracks and learns about the student
    - Instructional model - The model which actually conveys the information
    - Instructional environment - The user interface for interacting with the system

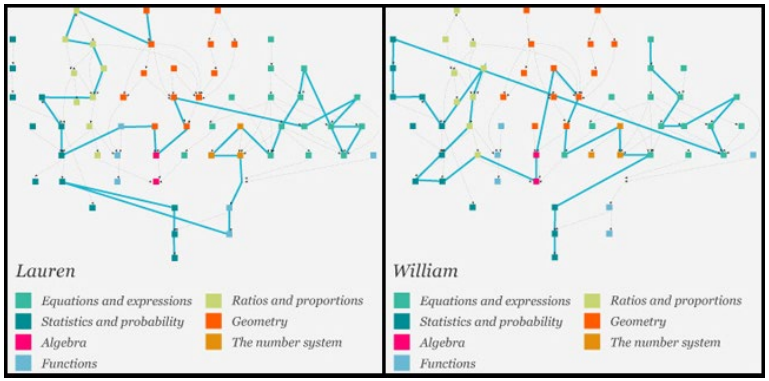
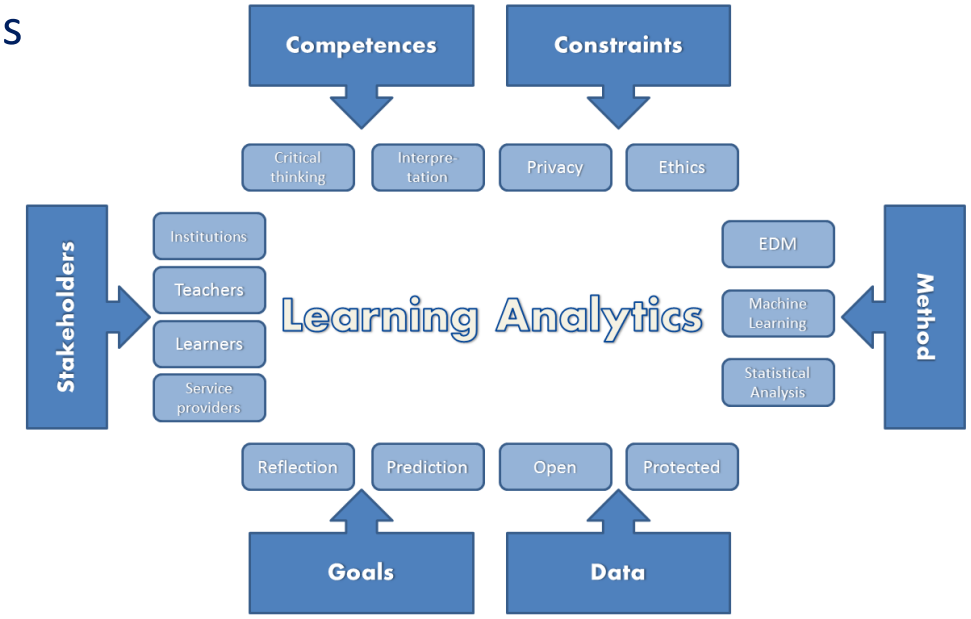


Image: Pearson http://www.englishinstructorexchange.com/2013/08/06/the-role-of-adaptive-learning-in-developmental-education/ See also: https://en.wikipedia.org/wiki/Adaptive_learning

Still More Contemporary Technologies

- Learning Analytics
  - Data collection used to support adaptive learning
    - LAK11: “the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimising learning and the environments in which it occurs.”
  - Predictive analytics – used to model likely learning outcomes and recommend interventions



LAK11: https://tekri.athabascau.ca/analytics/
Image: http://www.greller.eu/wordpress/?p=1467

Today's Technologies

- Social Networks and Learning
  - Social networks as formal learning environments
  - Learning communities
- MOOCs
  - xMOOC – content
  - cMOOC – social
- Integrated Environments
  - IMS LTI
  - Knewton

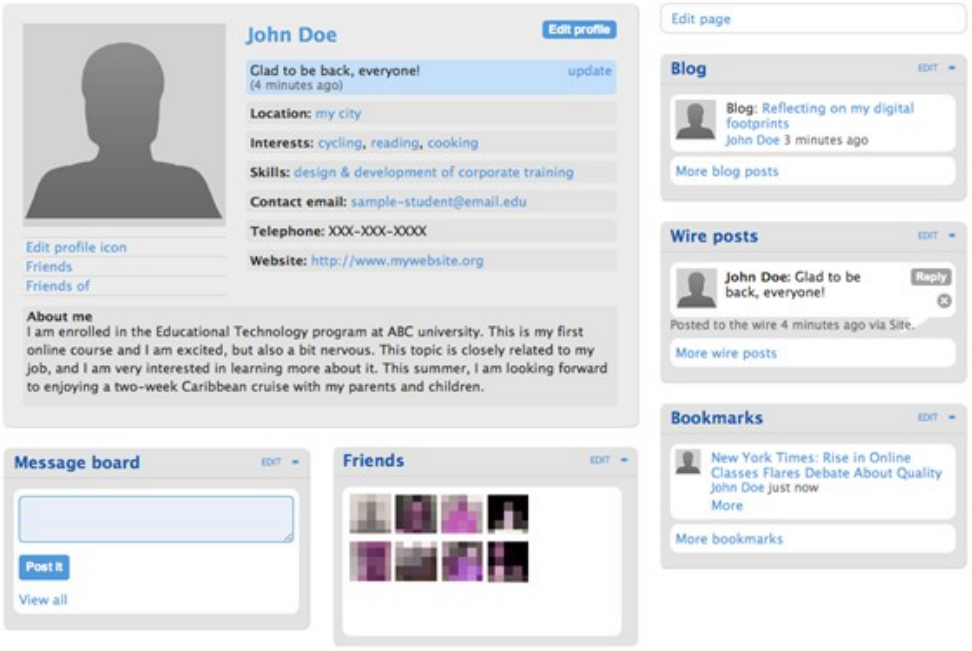


Figure 2. Student profile.

Formal learning environments: http://www.irrodl.org/index.php/irrodl/article/view/1078/2077
Knewton: https://www.knewton.com/

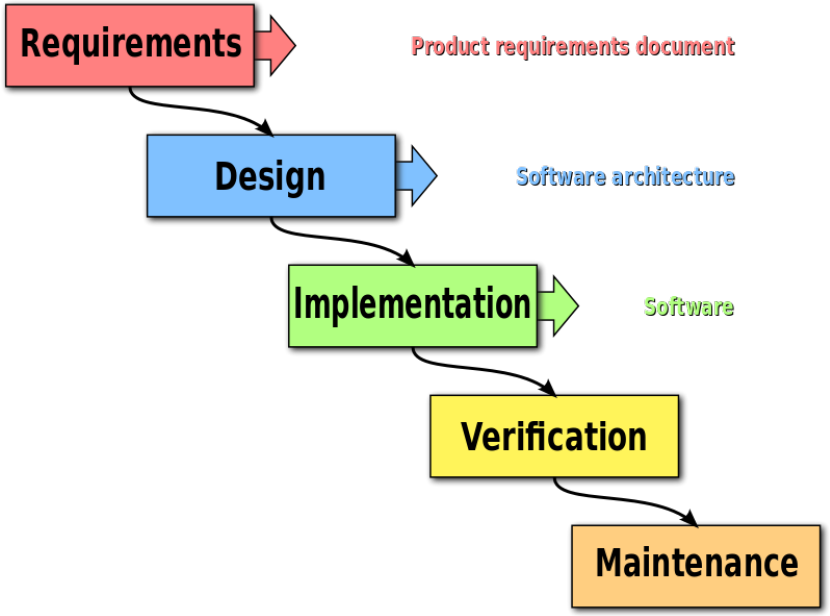
Interlude: Types of Games

- Quiz Games –question and answer format
  - Like Jeopardy, they test memory
- Branch and Tree Games
  - Board games, for example
    - Snakes and Ladders, Monopoly
  - Early Video games
    - Eg. the LaserDisc games
- Open-Ended Environment
  - Sports, like hockey, baseball, etc.
  - Pretty much every video game after the laser disc games

Clark Aldrich: http://www.clarkaldrichdesigns.com/
Laser Disc Games: https://en.wikipedia.org/wiki/Category:Laserdisc_video_games

Planned versus Open-Ended Development

- Waterfall: like ADDIE
- Agile: like open-ended environments



Waterfall: https://en.wikipedia.org/wiki/Waterfall_model#/media/File:Waterfall_model.svg

Knowledge Translation

- CIHR – “CIHR, knowledge translation (KT) is defined as a dynamic and iterative process that includes synthesis, dissemination, exchange and ethically-sound application of knowledge to improve the health of Canadians.”

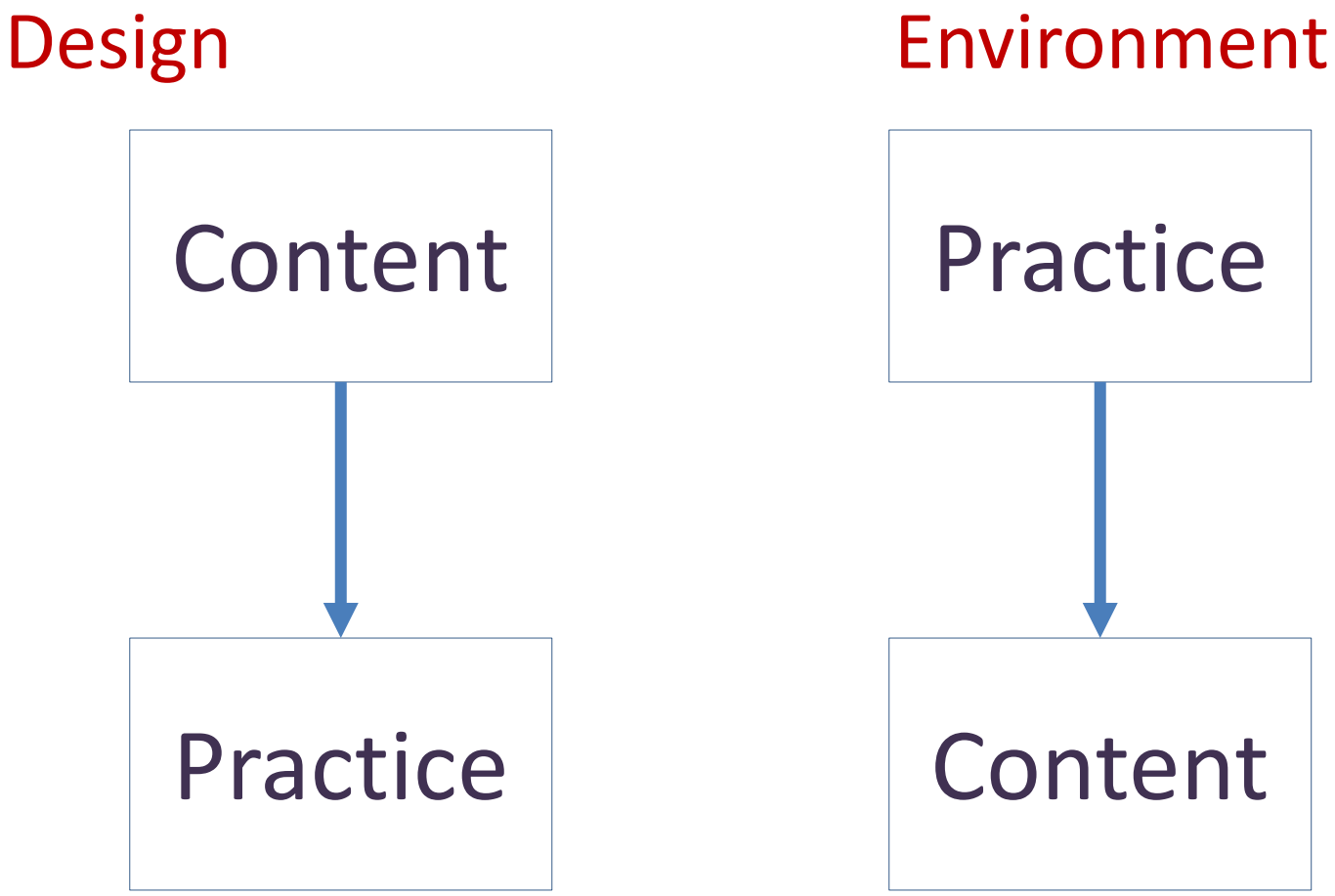
CIHR, http://www.cihr-irsc.gc.ca/e/39033.html

Critcisms of Knowledge Translation

- "research should move beyond a narrow focus on the 'know–do gap' to cover a richer agenda…"
  - situation-specific practical wisdom (phronesis)
  - tacit knowledge shared among practitioners ('mindlines')
  - complex links between power and knowledge; and
  - macro-level knowledge partnerships

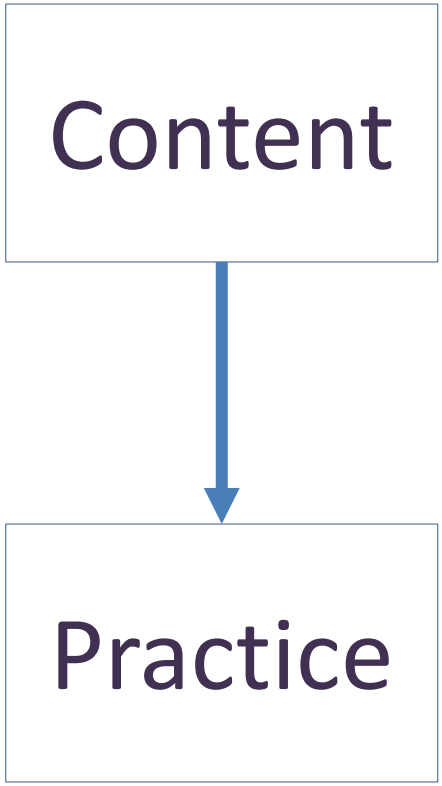
Greenhalgh and Weiringa, http://jrs.sagepub.com/content/104/12/501.full

Design vs Envronment



Design vs Envronment

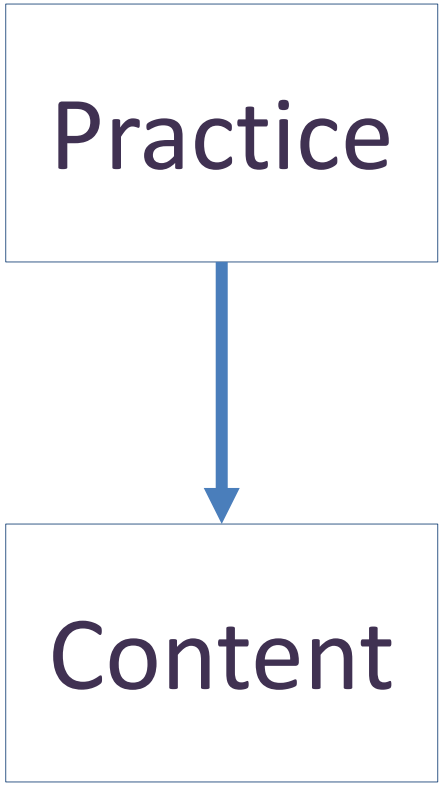
Defines an ideal state



TEST

Person tests you

Defines a desired state

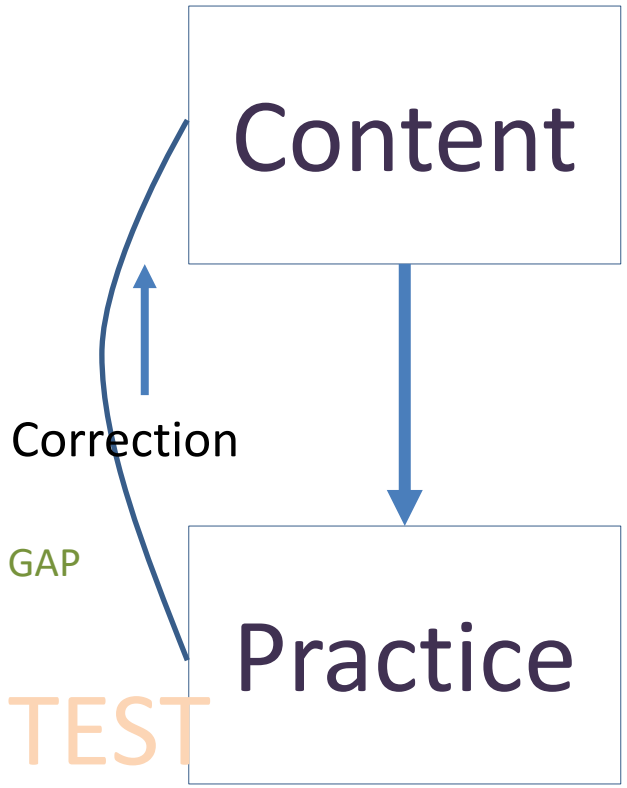


TRY

Person helps you

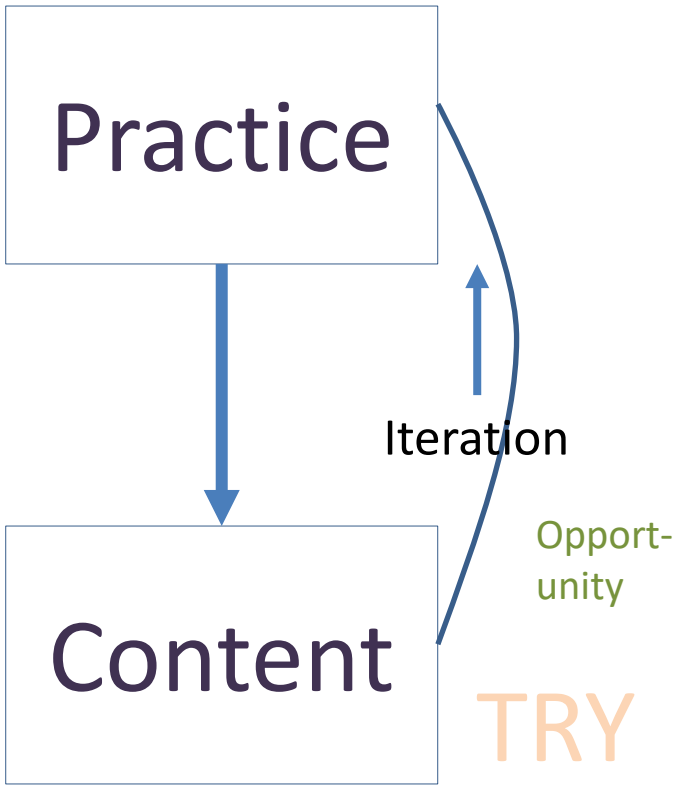
Design vs Envronment

Defines an ideal state



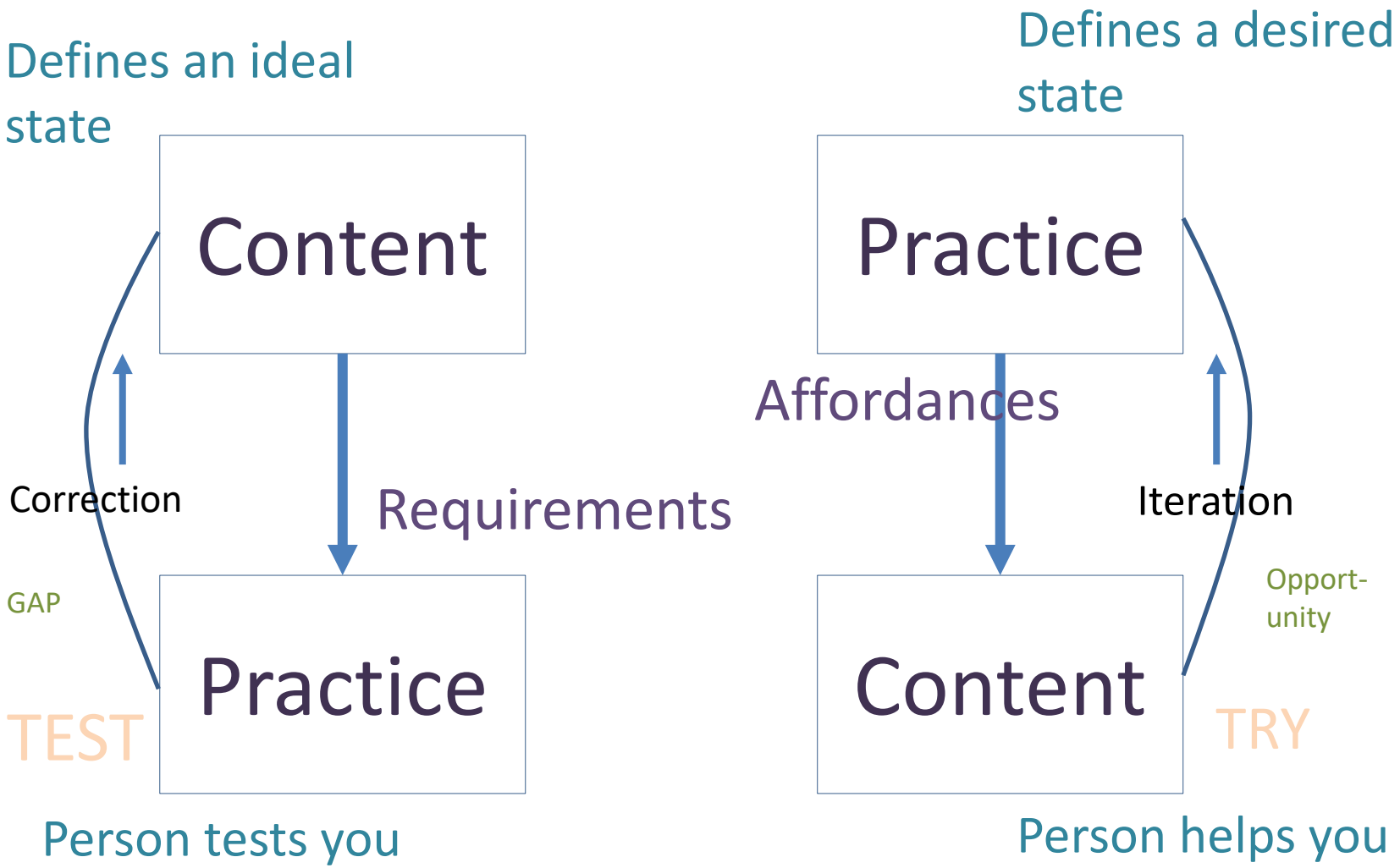
Person tests you

Defines a desired state

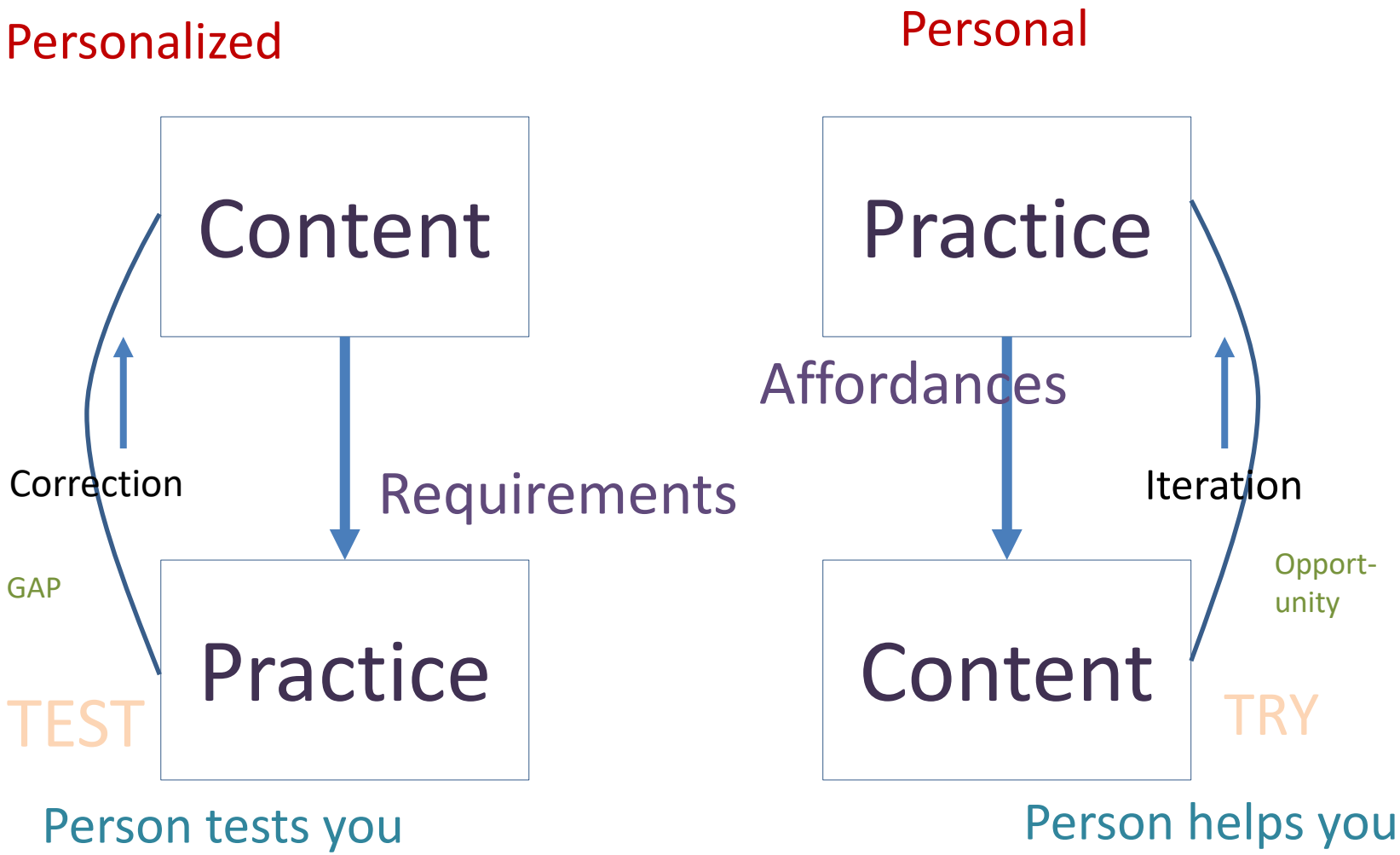


Person helps you

Design vs Envronment

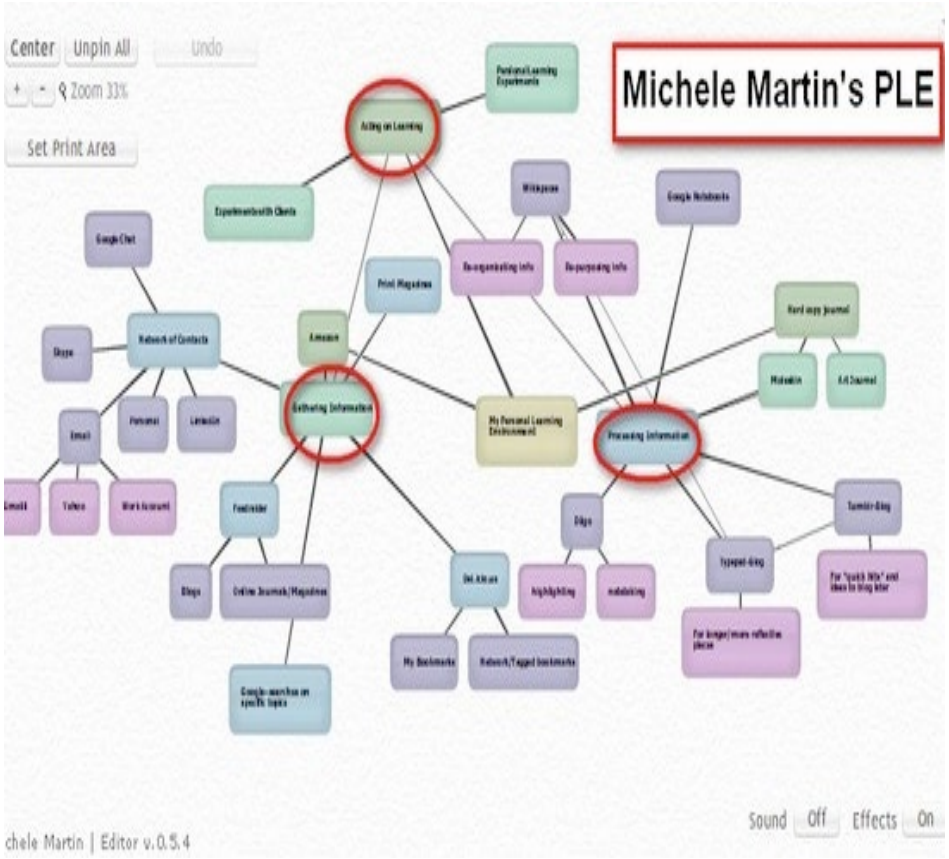


Design vs Envronment



4. Personal Learning Environments

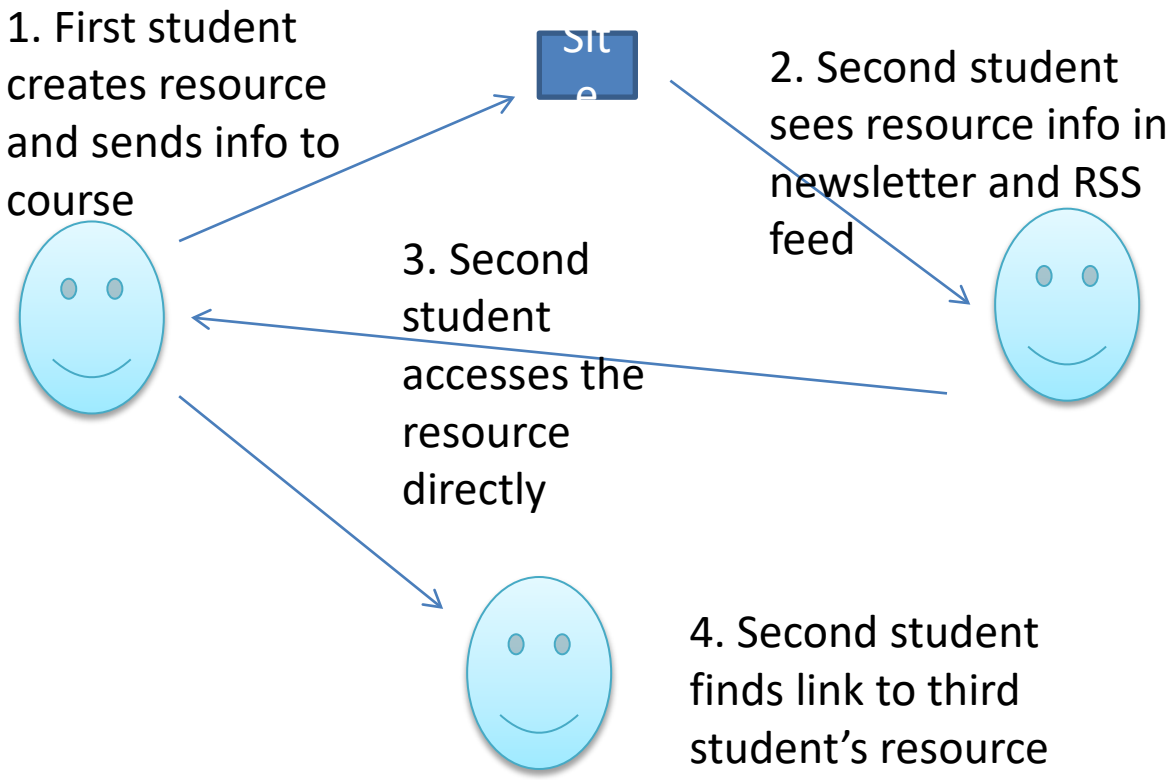
Personal Learning Environments



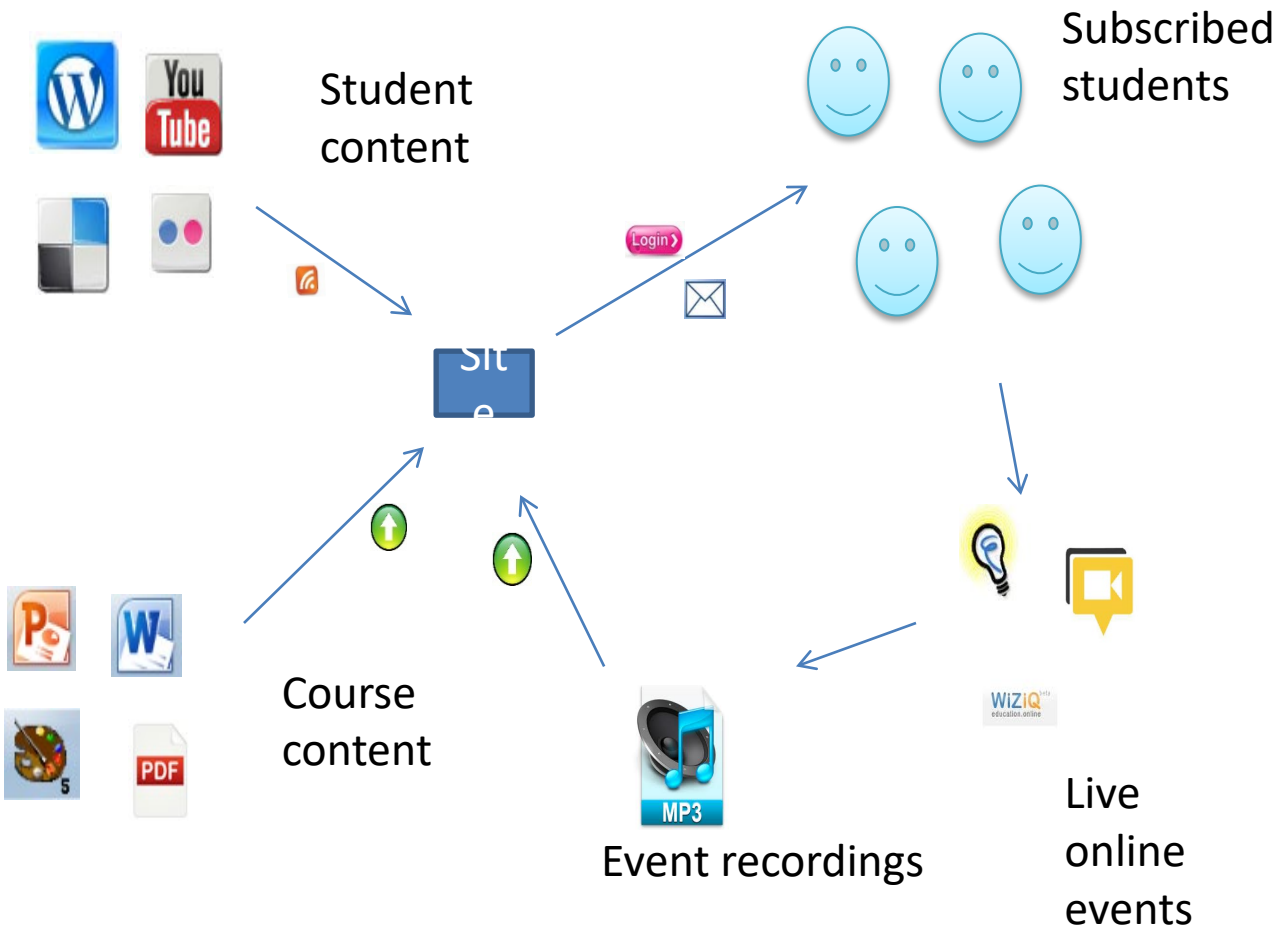
http://dmlcentral.net/blog/howard-rheingold/diy-u-interview-anya-kamenetz

http://www.downes.ca/post/58150

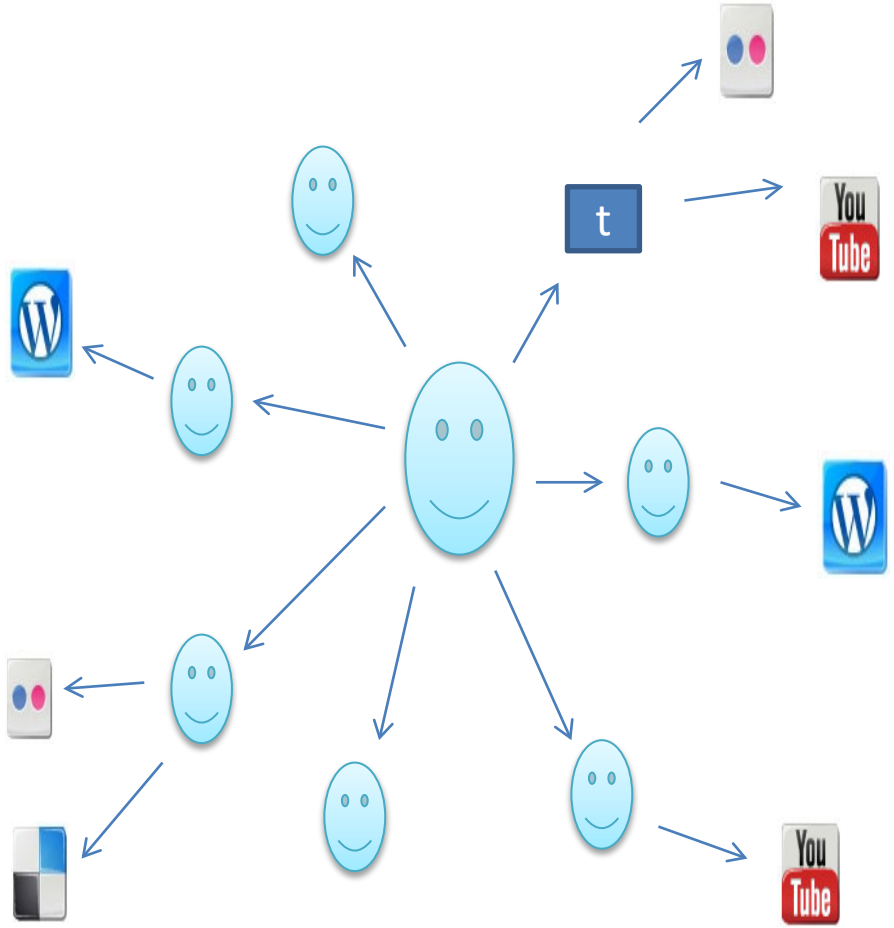
Underlying MOOC Support



Course Provider Perspective

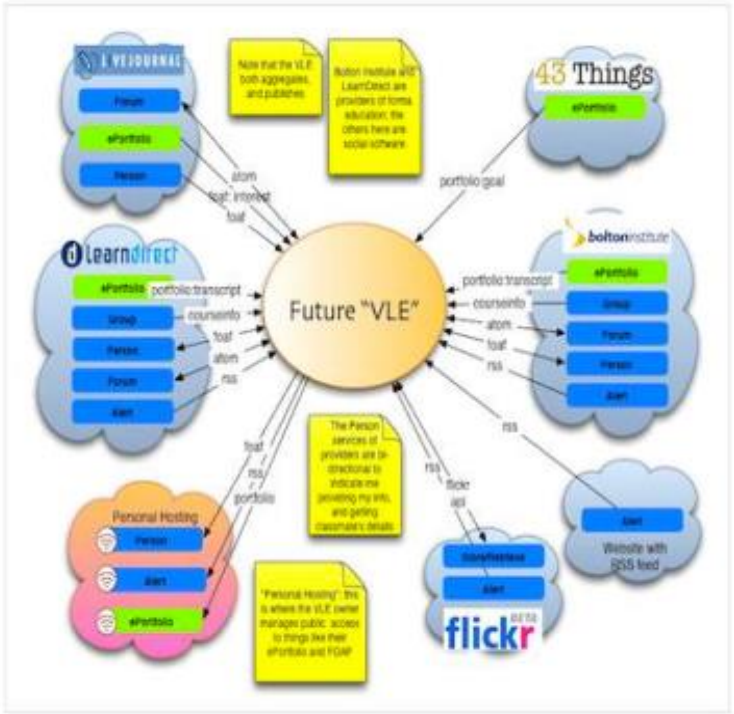


The Student's Perspective



A range of different resources and services

The design is based on putting the learner at the centre



Scott Wilson (left), Tim Hand (right)

https://www.google.com/search?q=ple+diagrams

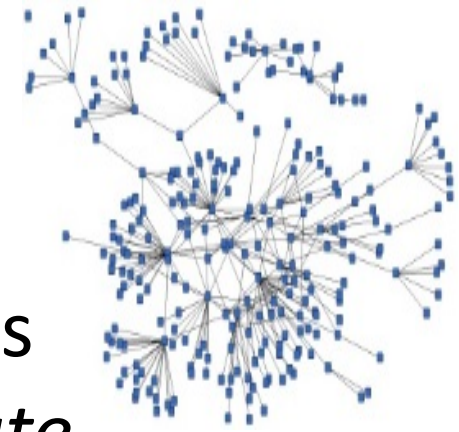
http://www.edtechpost.ca/ple_diagrams/index.php/mind-map-3

5. Learning and Performance Support Systems

LPSS is Built Around the Personal Learning Record

This is a *new* type of data – we call it the *personal graph*.

Each person has their own *private* personal graph.

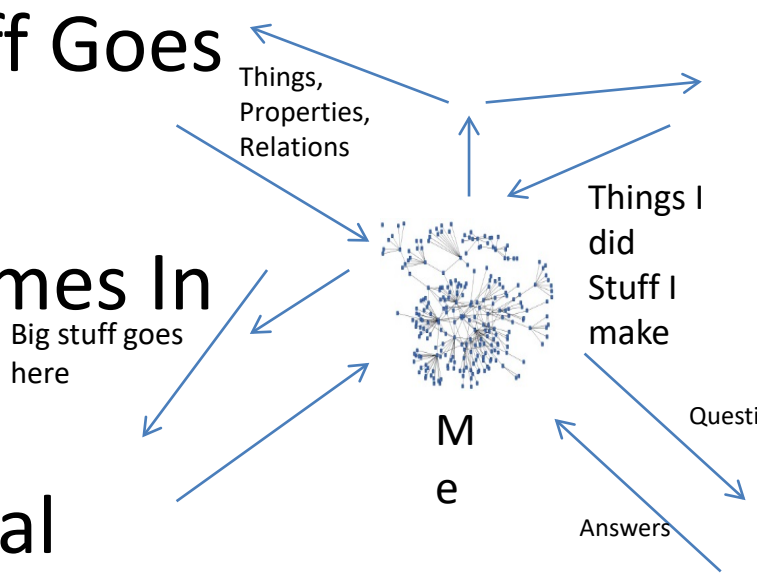


Me

The PLR contains all a person's learning records, including:

- certificates, badges and credentials
- activity records, test results, scores
- Assignments, papers, drawings, things they create

LPSS is Built Around the Personal Learning Record



Learning Activities

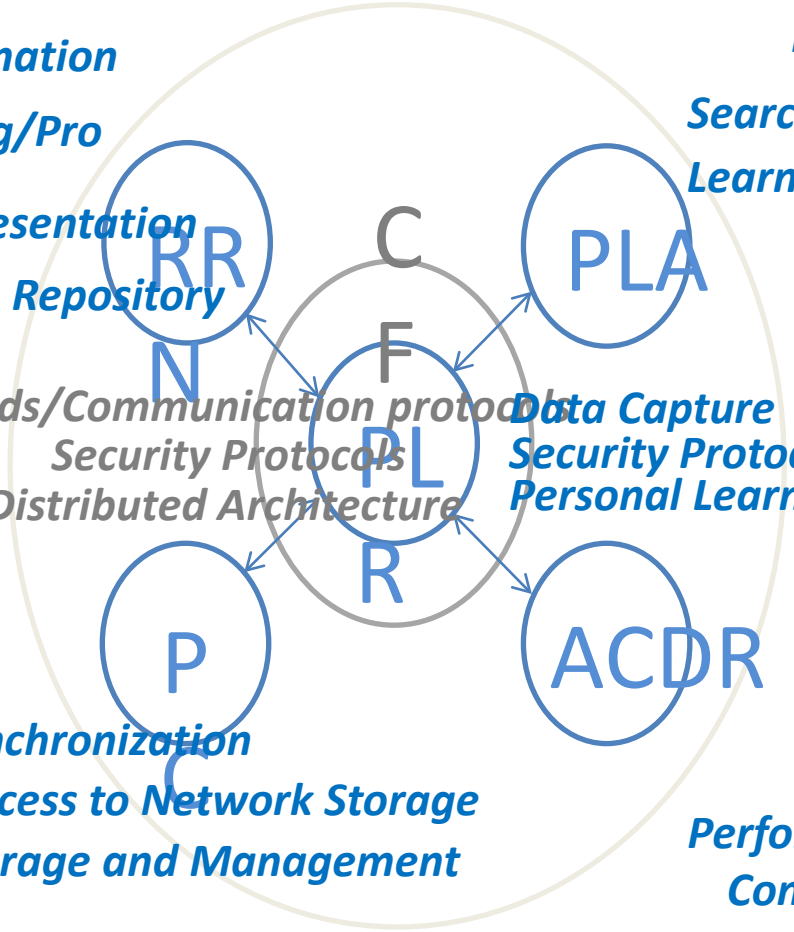
- I read and watch stuff
- I play with toys
- I make stuff

Personal Library

- Pictures
- Books
- Movies

Learning Analytics Servic

LPSS Details



Data, Information Retrieval

Cleansing/Filtering/Profiling/Processing

Data Representation

Prototype Repository

Standards/Communication protocols

Security Protocols

Distributed Architecture

Management Layer

Search/Recommendation Layer

Learning activity sequencing/mode

Data Capture

Security Protocols

Personal Learning Record

Data synchronization

Personal Access to Network Storage

Cloud Storage and Management

Performance Trends Algorithm

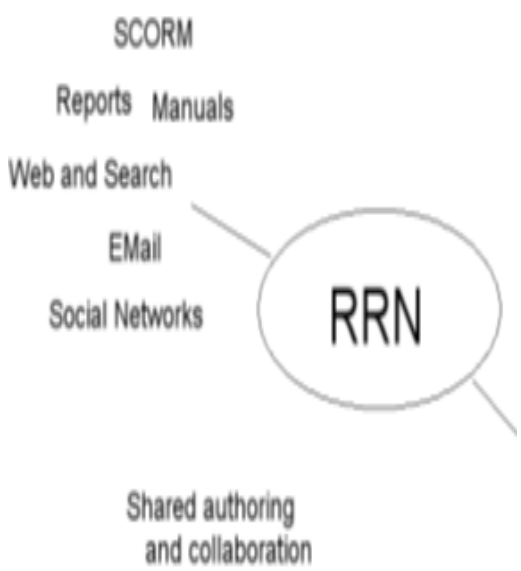
Competence Development

Automated Assessment

Resource Repository Network (RRN)

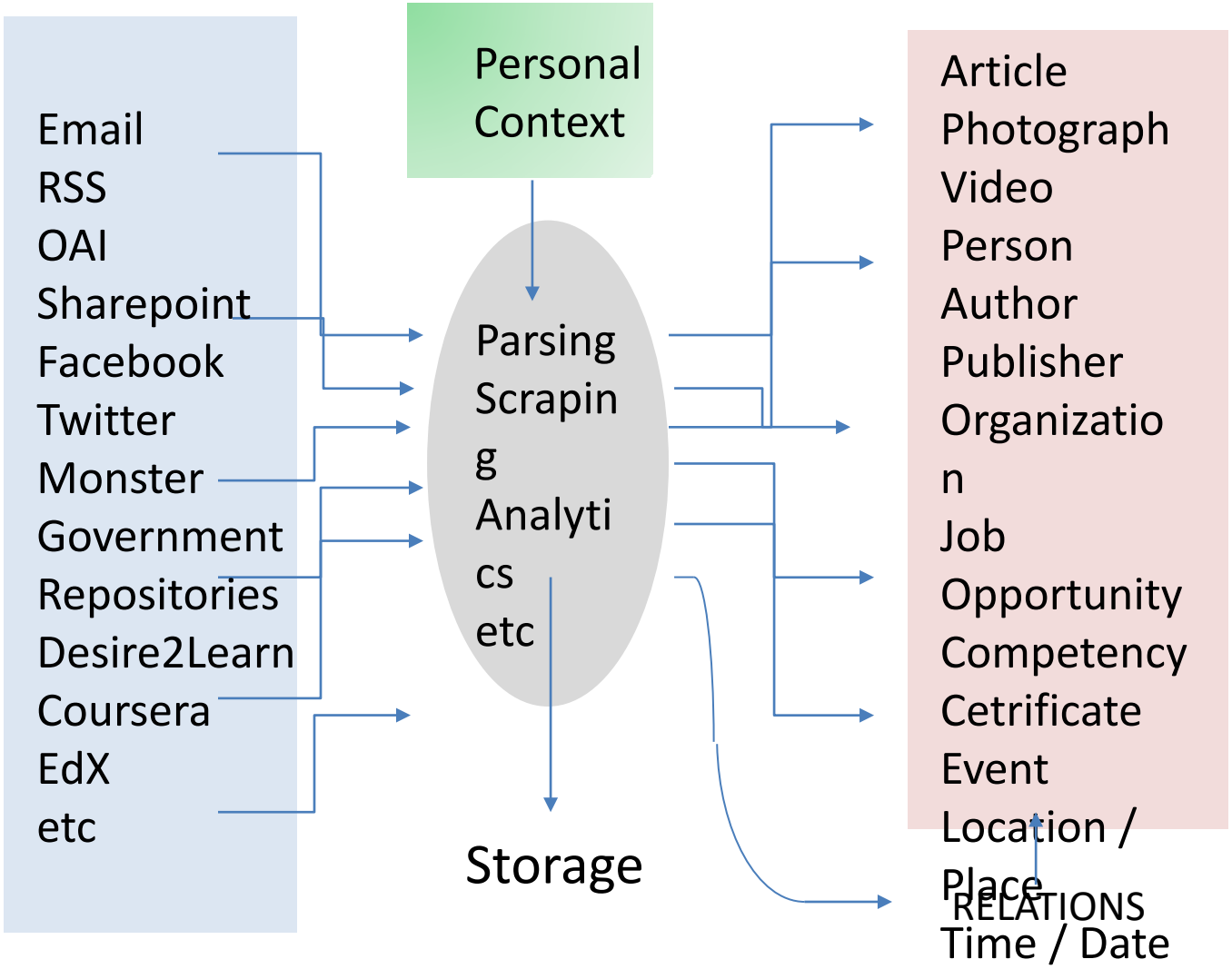
- Assemble resources from multiple locations

Resource Repository Network

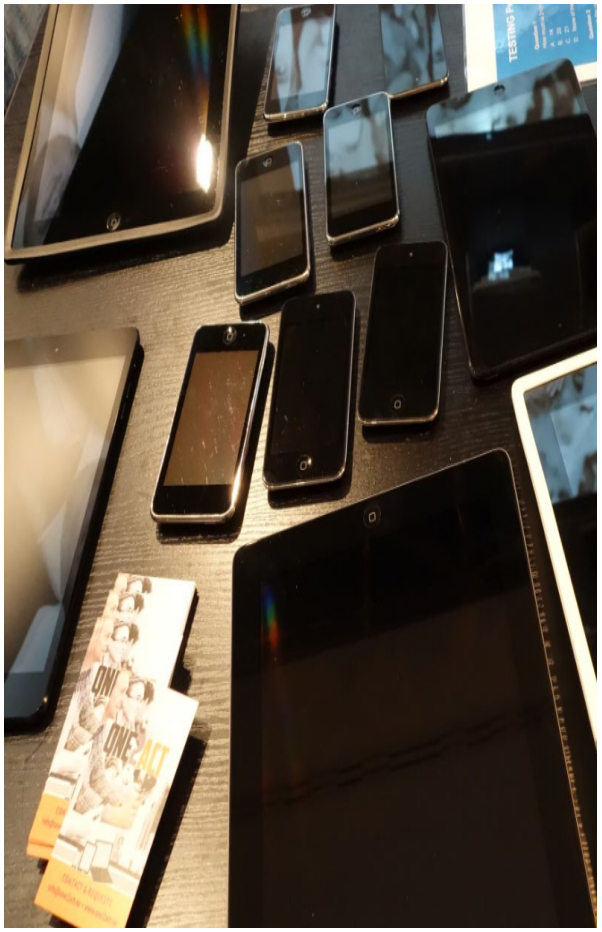


- Manage and discover list of sources and resources
- Maintain authentication and credentials
- Support APIs and metadata standards
- Gather, analyze and sort resources and/or metadata

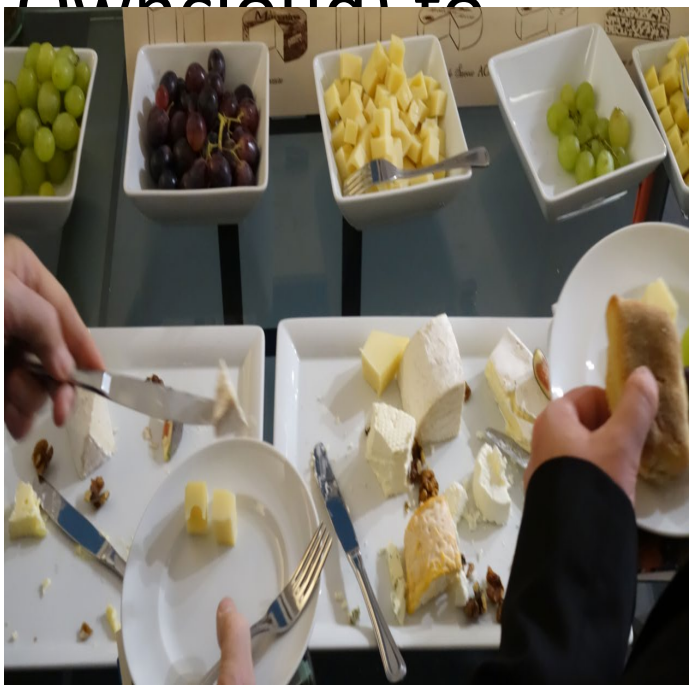
RRN Aggregation and Storage



Personal Cloud



Synchronized cloud data services (including Owncloud) to



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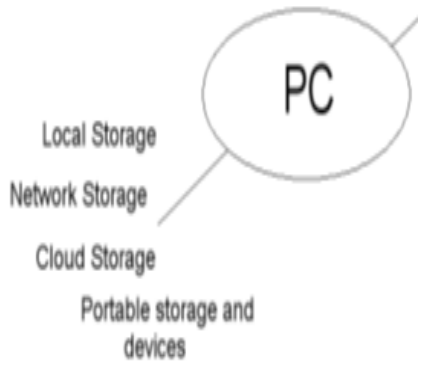
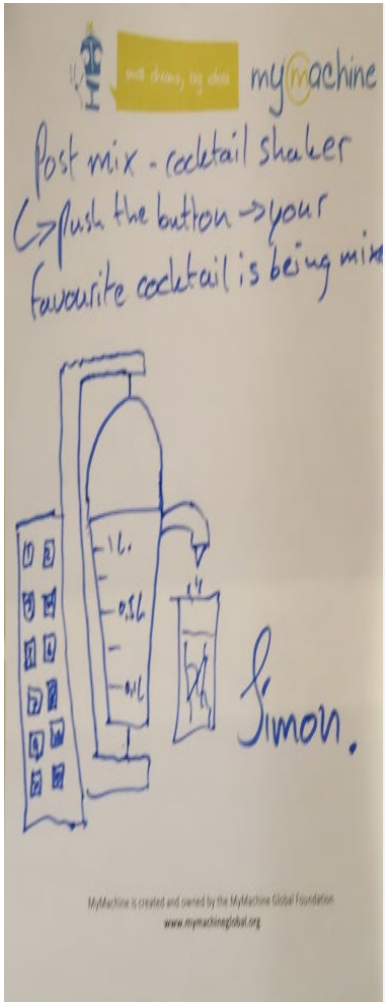


- Manage list of local and remote storage systems
- Maintain security, encryption, authentication and credentials
- Include local or personal device

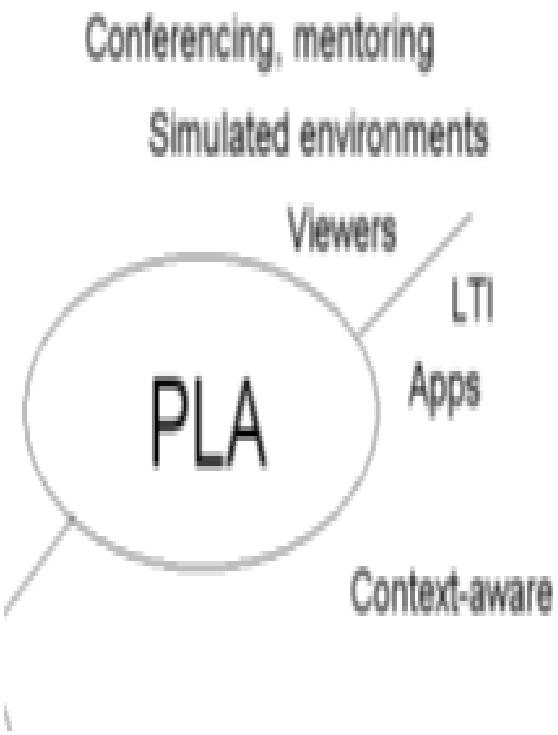
Personal Learning Assistant

Projection of learning services into multiple

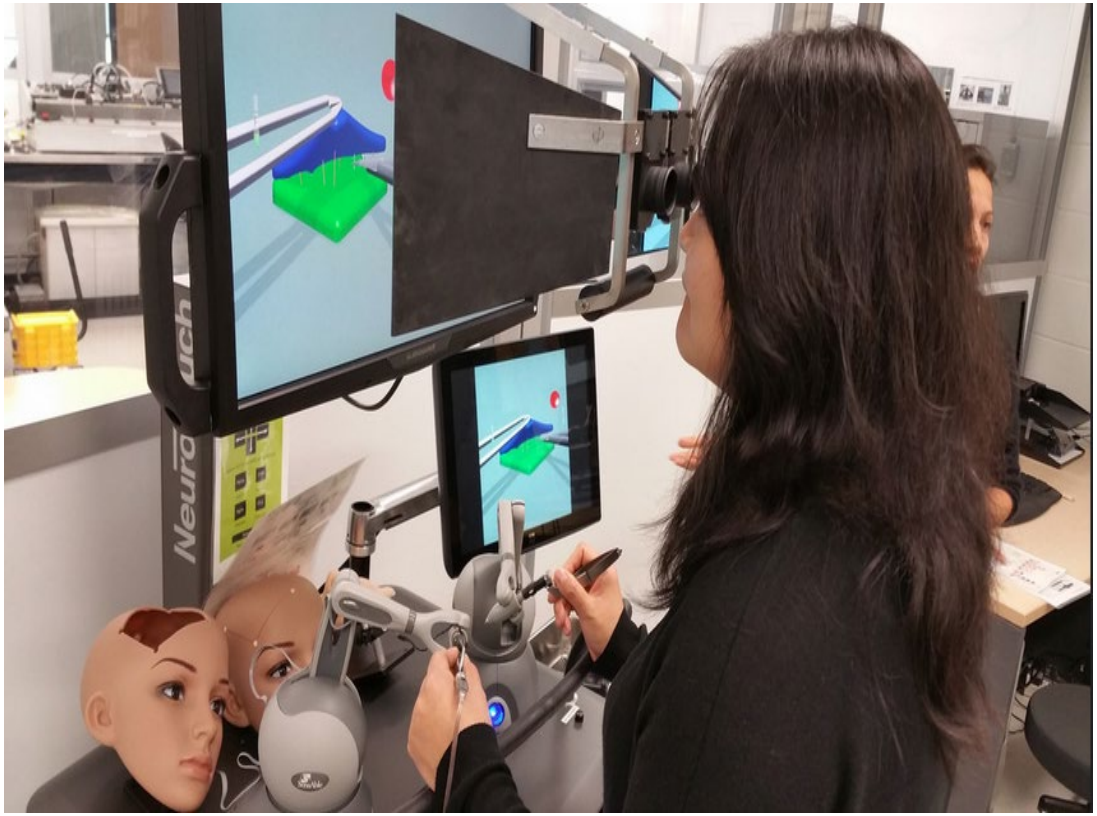


Personal Learning Assistant

- Collect contextual information for system
- Display resources of various formats, including SCORM, LTI, etc.
- Support (scaffolded) authoring environments
- Project LPSS capacity into external software and devices



PLA: Collecting xAPI from Med Sims



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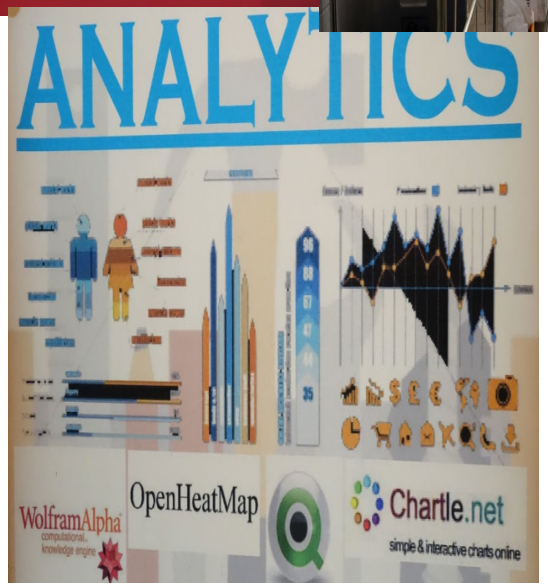
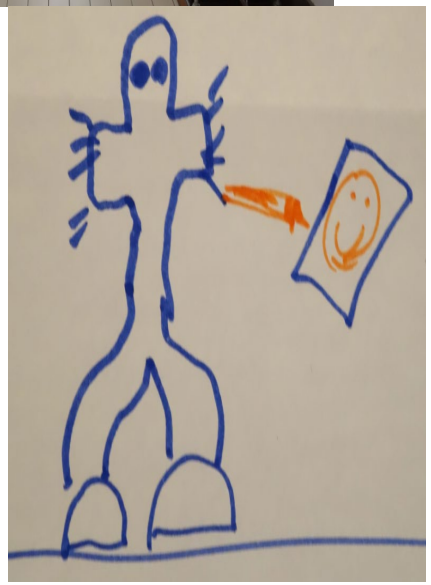
http://www.nrc-cnrc.gc.ca/eng/rd/medical/

Automated Competency Recognition and Development





Automated Competency Recognition and Development

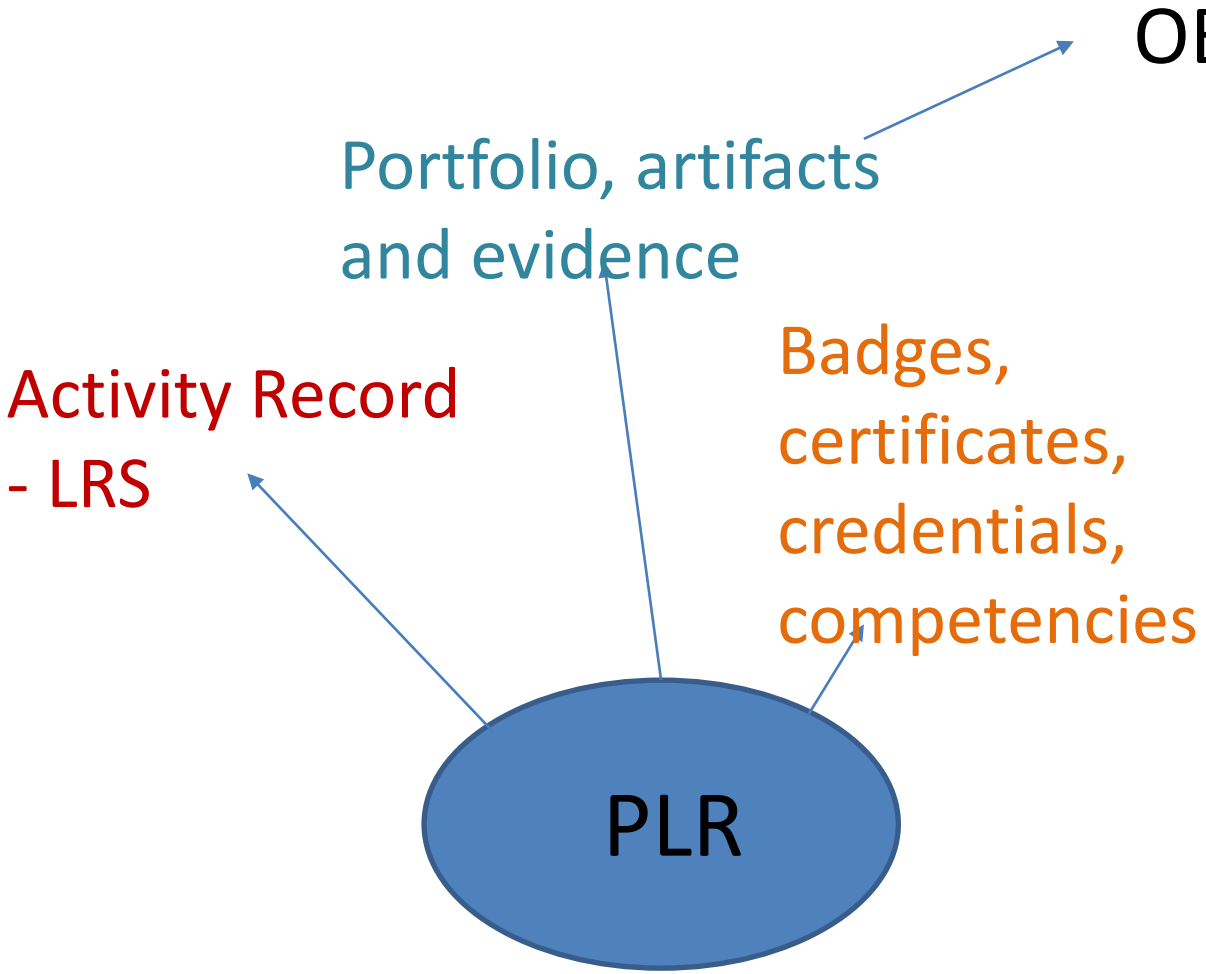
- Import or create competency definitions
- Analyze interactions for skills and learning gaps
- Support development of learning plans
- Provide resource and service recommendations

Personal Learning Record

The Personal Learning Record – data owned by the individual, shared only with permissions

http://halfanhour.blogspot.de/2014/12/eportfolios-and-badges-workshop-oeb14.html

Personal Learning Record



Personal Learning Record

- Collect full record of interactions with all resources, external systems
- Support learning activity data exchange formats (eg. xAPI)
- Collect and present a person's personal portfolio
- Display certifications and credentials (eg. badges)
- Maintain 3rd party certification

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